BayWa r.e.

r.e. think energy

Appendix B: Revised Aboriginal Cultural Heritage Assessment Report

umwelt
Environmental & Social Consultants

BayWa r.e.

BULLAWAH WIND FARM PROJECT

Revised Aboriginal Cultural Heritage Assessment

FINAL

August 2025

BULLAWAH WIND FARM PROJECT

Revised Aboriginal Cultural Heritage Assessment

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Bullawah Wind Farm Pty Ltd

Project Director:	Nathan Baker
Project Manager:	Thomas Buchan
Technical Director:	Luke Wolfe
Report No.	22110/R41
Date:	August 2025

This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

Acknowledgement of Country

Umwelt would like to acknowledge that the Project documented herein was undertaken on Wiradjuri, Baraparapa and Nari Nari Country. We pay respect to their respective cultural heritage, beliefs, and continuing relationship with their sky, lands and waters. We pay our respect to their Elders – past, present, and future.

Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
V1: Final (EIS version)	Luke Wolfe	31 July 2024	Nathan Baker	31 July 2024
V2: Revised Final (RtS)	Luke Wolfe	13 December 2024	Nathan Baker	13 December 2024
V3: Re-revised Final (this version)	Luke Wolfe	12 August 2025	Nathan Baker	14 August 2025

Abbreviations

Abbreviation	Description
ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment report
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASIR	Aboriginal Site Impact Recording
BWF	Bullawah Wind Farm Pty Ltd
DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ILUA	Indigenous Land Use Agreement
GHG	Greenhouse gas (emissions)
GW	Gigawatt
km	Kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
m	Metres
mm	Millimetres
NNTT	National Native Title Tribunal
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NPW Regulation	National Parks and Wildlife Regulation 2019 (NSW)
NSW	New South Wales
NTSCORP	Native Title Services Corporation Limited
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
SEARs	Secretary's environmental assessment requirements
SSD	State Significant Development
WTGs	Wind turbine generators

Definitions

Term	Definition
Ancillary Infrastructure	All permanent infrastructure necessary for the construction and operation of the wind farm with the exception of WTGs and battery storage, including but not limited to internal roads, hardstands, main and collector substations, switchyard, operations and maintenance facility, underground and overhead electricity transmission lines and poles, communication cables (includes control cables and earthing), permanent meteorological masts and water storage tanks.
Associated landholder	The owner(s) of an associated residence. An associated landholder has reached a private agreement with BWF in relation to the Project and management of impacts. An associated landholder is distinct from a host landholder in that no Project infrastructure is proposed to be built on the associated landholder's property.
Associated residence	A residence on privately-owned land in respect of which the owner has reached a private agreement with BWF in relation to the Project and management of impacts.
Battery Storage	Compound and technology for storing and discharging energy. Includes the battery energy storage system (BESS), as well as associated buildings, shipping containers and other infrastructure to contain the chosen technology and to connect the battery storage infrastructure with the WTGs, and substations via underground and/or overhead cables.
Benefit sharing	Benefit sharing aims to distribute benefits generated by a project between the Proponent and the community through mutually agreed opportunities such as funding or sponsoring local community initiatives, programs or projects.
Construction	The construction of the Project, including but not limited to the construction of WTGs, battery storage, ancillary infrastructure but excluding pre-construction works.
Decommissioning	The removal of WTGs, battery storage and ancillary infrastructure.
Development Consent	State significant development consent to carry out the Project granted by the consent authority as nominated under the NSW *Environmental Planning and Assessment Act 1979*.
Development Corridor	This is the area within which all proposed Project infrastructure will be placed and all Project related ground disturbance will occur. The Development Corridor is of variable width (to avoid key site constraints) and has been designed to provide some flexibility for micro-siting of infrastructure. The Development Corridor is shown in **Figure 1.2**.
Disturbance Footprint	This is the actual disturbance area required for the Project. The Disturbance Footprint is shown conceptually in **Figure 1.2**. The actual location and extent of the disturbance footprint will be determined prior to construction, subject to the micro-siting provisions outlined in this EIS and Amendment Report.
Ground Disturbance	Activities that cut into the existing ground surface. To avoid any doubt this does not include activities that occur on the ground surface including but not limited to driving vehicles on the ground, parking vehicles, placing infrastructure or materials such as stockpiles on the ground.

Term	Definition
Heavy Vehicle	As defined under the Heavy Vehicle National Law (NSW) but excluding light and medium rigid trucks (less than eight (8) tonnes and with no more than two (2) axles) and buses containing more than 12 seats.
Host landholder	The owner(s) of a host residence. A host landholder has reached an agreement with BWF to host Project infrastructure within their landholdings and in relation to the management of impacts.
Host residence	A residence on privately-owned land in respect of which the owner has reached an agreement with BWF to host Project infrastructure and in relation to the management of impacts.
Internal Roads	Roads established and/or upgraded within the Study Area for the purposes of constructing, operating, maintaining and decommissioning the Project, and includes all waterway crossings where located within the Project Boundary, but does not include off-site road works areas.
Local Transport Route	The transport route extending from the intersection of the Cobb Highway and Jerilderie Road to the eastern-most site access point located on Northern Boundary Road, as shown in the EIS and Amendment Report.
Micro-siting	The process of locating WTGs, battery storage, ancillary infrastructure and temporary infrastructure during detailed design without further approval, providing that: • ground disturbance is wholly contained within the Development Corridor, with the exception of meteorological masts • no WTG is moved more than 100 m from the relevant GPS coordinates • the revised location of the blade of a WTG is at least 50 m from the canopy of existing hollow-bearing trees; or where the proposed location of the blade of a WTG is already within 50 m of the canopy of existing hollow-bearing trees, the revised location is not any closer to the existing hollow-bearing trees • meteorological masts (temporary and permanent) are installed within the Study Area at all times and within the Development Corridor where reasonable and feasible.
Non-associated Landholder	The owner of a non-associated residence.
Non-associated Residence	A residence on privately-owned land in respect of which the owner has not entered into a private agreement with BWF in relation to the Project's impacts. or A residence on privately-owned land in respect of which the owner has reached an agreement with BWF in relation to the Project's impacts, but the agreement does not cover the relevant impact, or the performance measure for such impact (under that agreement) has been exceeded.

Term	Definition
Off-site Road Works	Includes the following activities: • proposed upgrades to the local transport route • establishment of site access points (occurring on a staged basis, prior to commencing construction in the relevant stage • ground disturbance, clearing/pruning of vegetation associated with the activities described above.
Pre-construction Works	Includes the following activities: • surveys • building/road dilapidation surveys • investigative drilling, excavation or salvage • minor clearing or translocation of native vegetation • establishing temporary site office and compounds • installation of environmental impact mitigation measures, fencing, enabling works, meteorological masts • flora and fauna investigations and pre-clearing surveys, inspections, specific habitat feature removal and relocation • adjustments to services/utilities, signage etc. including associated vegetation • removal and heritage artefact salvage • off-site road works.
Port to Hay Transport Routes	The two (2) indicative transport routes extending from the Port of Newcastle to the intersection of the Cobb Highway and Jerilderie Road. Minor works will be required along the Port to Hay Transport Routes to carry out the Project, however these works do not form part of the proposed Project and will be subject to separate approval processes, in consultation with relevant roads authorities.
Project Area	The Project Area encompasses all land within and including the Project Boundary as shown in **Figure 1.2**.
Project Boundary	The outer boundary of the Project Area as shown in **Figure 1.2**. The Project Boundary is the maximum spatial extent of potential land access defined by the boundaries of the host landholder properties (i.e. all agreed lots owned by host landholders).
Rehabilitation	The restoration of land disturbed by the Project to its former condition (as much as practicable), to ensure it is safe, stable, and non-polluting.

Term	Definition
Residence	Has the same meaning as a 'dwelling' as defined under the Standard Instrument – Local Environmental Plan, and also includes: • Residences that have development consent, but have yet to commence or complete construction. • Proposed residences that are subject to a development application that has been lodged prior to the DA for the Project but is yet to be determined. • A residence does not include moveable dwellings (i.e. tents, caravans or other portable devices used for human habitation), or any derelict dwelling or dwelling that has been built illegally, as confirmed by the relevant Council.
Study Area	For the purposes of this assessment, the Study Area comprises the Development Corridor as well all areas of disturbance associated with off-site road works.
Substation	Infrastructure required to collect the internal electrical reticulation to increase the voltage for transmission to connect to the grid. Typically includes step-up transformers, an array of cable marshalling, busbars, various voltage and current transformers, operation and facilities building (with parking), communication facilities and tower, diesel generator, lighting, a buried earth grid, lightning masts, power conditioning equipment, a reactive power control system, and network support equipment as required and agreed with Transgrid (or other transmission network system operator).
Telecommunications facility	A telecommunications facility is any part of the infrastructure of a telecommunications network or any line, cable, optical fibre, equipment, apparatus, tower, mast, antenna, dish, tunnel, duct, hole, pit, pole or other structure in connection with a telecommunications network. Telecommunications facilities provide for transmission of voice, data, image, graphic and video information between or among points by wire, cable, optical fibre, microwave, radio, satellite or similar facilities.
Temporary facilities	Temporary facilities used for the construction, repowering and/or decommissioning of the Project, including but not limited to the temporary workforce accommodation, site offices, amenities, construction compounds and laydown areas (including stockpiling and materials storage areas), on-site borrow pits, rock crushing facilities, concrete or asphalt batching plants, minor 'work front' construction access roads and temporary meteorological masts.

Executive Summary

Introduction

Bullawah Wind Farm Pty Ltd (BWF) proposes to develop the Bullawah Wind Farm (the Project), located approximately 36 km south east of Hay, within the South West Renewable Energy Zone (South West REZ). The Project Area is located within the Hay Shire, Murrumbidgee and Edward River Local Government Areas (LGAs). The Project will include the installation, operation, maintenance and decommissioning of up to 141 wind turbine generators (WTGs), battery storage, ancillary infrastructure and temporary facilities associated with construction of the Project. The Project design incorporates up to 141 wind turbines, with a maximum blade-tip height of 300 m above ground level.

Umwelt was engaged by BWF to undertake an Aboriginal Cultural Heritage Assessment (ACHA) in relation to the development of the Project. The Project is State Significant Development (SSD) as defined under State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) and requires development consent under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*, meaning that the need for approvals under the NSW *National Parks and Wildlife Act 1974* are not applicable (i.e., Section 90A).

Umwelt's assessment of the Project followed the general guidance of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Code of Practice) (DECCW, 2010b) (Code of Practice) and Section 3.1 of the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011). A program of Aboriginal community consultation was undertaken with reference to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Consultation Requirements) (DECCW, 2010a).

The Project EIS, including the original ACHA (Version 1), was placed on public exhibition between 27 August 2024 and 23 September 2024. BWF received feedback from the community and Government Agencies, including Heritage NSW. The ACHA was then revised (Version 2) to provide targeted responses to Heritage NSW's advice on the EIS (and ACHA specifically). BWF has since received feedback from DPHI and relevant Government agencies on the Amended Project, including H-NSW. Advice was received from H-NSW as part of request for information (RFI) 2 (i.e. RFI 2), raised by DPHI on 27 May 2025. This version of the ACHA (Version 3) has been revised to address H-NSW advice as part of a broader response to RFI 2.

A record of Heritage NSW's advice and Umwelt's response to each matter is provided in **Section 1.14**, including references to specific sections of this report that have been updated as a result.

Fieldwork Program

Systematic survey of the Study Area and its surrounds identified 31 new Aboriginal sites. Generally consistent with regional and local archaeological data, the recorded sites primarily comprised open artefact sites (comprising one (1) or more lithic objects), with or without identified areas of potential archaeological deposit (PAD).

Of the 31 sites identified, 22 (70.97%) were open artefact sites. The survey also recorded a single culturally modified tree (n=1, 3.23%), a single earth mound (n=1, 3.23%), and a single hearth (n=1, 3.23%).

In addition, the survey recorded six (6) (19.35%) 'site complexes', comprising large geographic and/or topographic areas with more than one (1) site feature represented (e.g. comprising open artefact sites within associated hearths).

In general, open artefact and hearth sites, collectively, were identified on the eroding edges of elevated landforms (i.e., dune). Lithic objects, where exposed, generally translocated up to 5 m from the edges of the dunes onto adjacent flats and in most instances, were visible on the ground surface. Likewise, hearths comprised eroded exposures of heat-altered clayey soils and/or scattered/remnant remains of clayey heat retainers dispersed between 0.5 m and 5 m from a central foci. Observed remnant hearth retainers comprised amalgamations of clayey soil into roughly 10 cm diameter balls, though fragments of the aforementioned were also common.

Test excavations identified a total of thirty-one (31) lithic items, all of which satisfied pre-established criteria for identification as artefacts, and were recovered from test pits excavated for the current assessment (the 'lithic assemblage'). Of the areas subject to test excavation, lithic objects were only recovered from two (2) site complexes, Bullawah Site Complex 5 (AHIMS ID #48-6-0332), and Bullawah Site Complex 6 (AHIMS ID #48-6-0337). Of those, 94% of the 31 objects were recovered from 14 tests pits in Bullawah Site Complex 6 (AHIMS ID #48-6-0337).

In general, objects were recovered from the upper 20 cm of all test pits, with only 13% recovered in deeper strata (maximum depth of recovered objects was 40 cm below ground surface). Though impeded by overall low artefact numbers, landform distribution of lithic objects suggested greater recovery from test pits excavated within 'dune' contexts, with those within 5–10 m of the dune-flat interface reporting comparatively higher concentrations. Lithic objects recovered from flat contexts, while rare, were generally recovered from the upper 0–10 cm, suggesting objects were the result of 'wash-in' effects of erosional processes.

Management Recommendations

A management strategy to address the potential impacts of the Project on the known and potential Aboriginal heritage resource of the Study Area is presented below.

- A total of 20 Aboriginal sites are recommended to be avoided, along with the hearths located within the identified site complexes (refer to **Table 9.4)**. Protection of Aboriginal sites is discussed further in Section **10.2.5** below.
- A total of 27 Aboriginal sites within the Development Corridor will be directly impacted by the Project, resulting in complete or partial loss (refer to **Table 9.2**), provided that micro siting to avoid and minimise impacts is unachievable at all locations. A test excavation and/or salvage program for these sites would then be undertaken, as discussed in **Section 10.2.1** and **Section 10.2.2** below.
- No specific harm minimisation measures are required in respect of the off-site road works areas.

This management strategy has been revised based on consultation with H-NSW held on 3 June 2025 to discuss Item 6 of its advice received under RFI 2, in relation to additional post-approval management/ mitigation measures. Umwelt's proposed additional measures, as supplied to H-NSW, were deemed to be acceptable as formally recorded in the H-NSW 'DOC number' identified as 'DOC25/431224'.

These additional post-approval management/mitigation measures are set out below where relevant, and include:

- Commitment to more frequent AHIMS extensive searches during ACHMP preparation and implementation, to address any new AHIMS sites registered by PEC/other projects in the region.
- Expansion of the unexpected finds protocol to address both a) standard measures to manage unexpected finds that align with the current archaeological understanding (i.e. low subsurface concentrations of flaked lithic objects, as assessed), and b) additional measures to manage unexpected finds of higher scientific and/or cultural significance (e.g. higher than expected concentrations of lithic objects, hearths etc.).
- Commitments to RAP consultation beyond standard practices during the preparation and implementation of the ACHMP, to ensure proactive engagement with RAPs and effective planning for, and implementation of, agreed management/mitigation measures.

It is recommended that this strategy be detailed in an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Project, which should be prepared in consultation with RAPs. The scope of the proposed management is to be included in the ACHMP and must be considered in relation to the extent of previous archaeological investigations completed for archaeological resource of the Study Area.

Subject to the granting of Development Consent and ACHMP approval, this document will guide the management of Aboriginal cultural heritage within the Study Area.

The Aboriginal consultation process has identified that the local Aboriginal community place high importance on the Aboriginal objects in the Study Area.

Salvage Program

Given their contents and significance, surface collection is considered an appropriate and effective mitigation option for the 27 Aboriginal sites within the Development Corridor, in the event that these sites cannot be avoided through micro-siting. A systematic salvage program will be undertaken within the Study Area prior to the commencement of any Project-related ground clearance works.

The ACHMP for the Project will include a detailed research design and methodology for the surface collection program.

Care & Control of Recovered Aboriginal Objects

Following post-surface collection analyses of recovered Aboriginal objects, RAPs will be consulted regarding the appropriate treatment of recovered Aboriginal objects. Requirement 26 of the Code of Practice (DECCW, 2010b) provides standard procedures for the deposition of lithic artefacts. In the absence of a formal Care Agreement, these standard procedures will be followed.

Post-fieldwork Analysis and Reporting

Following the completion of the salvage program, all recovered lithic objects i.e. those recovered during the surface collection program, will be subject to macroscopic attribute analysis, with the number of attributes recorded per specimen differing by technological type.

All objects recovered will be temporarily stored until an appropriate option for long-term management of cultural materials is determined in consultation with RAPs. A report detailing the results of the archaeological salvage program undertaken will be completed within one (1) year of the fieldwork component of the program.

Copies of the final salvage report will be provided to all RAPs and Heritage NSW within 14 days of completion.

Protection of Aboriginal Sites

BWF has made a commitment that the 20 Aboriginal sites (including individual hearth locations within broader 'site complexes') identified in **Section 9.3.2** of this report will be avoided and protected from impact as part of the Project. The sites should be documented in the ACHMP as being items of heritage and environmental significance which are to be avoided.

Fencing and/or barricades may also be erected during Project works to provide ongoing protection, with details to be provided in the ACHMP. In the instance of trees requiring protection, fencing and/or barricades will be established such that they do not interfere with tree growth. A program of inspection will also be implemented by an appropriately qualified person to provide an ongoing assessment of tree condition, and to provide suitable management advice, if needed.

In recognition of the quantity of active and/or proposed projects in the South West region, the implementation of a frequent (e.g. quarterly) search program of the AHIMS register will be necessary during the preparation and implementation of the ACHMP to identify and address any new Aboriginal sites that may have been registered within or surrounding the Project.

In addition, BWF will participate in quarterly reporting to EnergyCo, an agreed process for renewable energy proponents in the South West REZ. The results of this search program would feed into the quarterly reporting to EnergyCo.

Aboriginal Community Consultation

To ensure proactive engagement with RAPs and effective planning for, and implementation of agreed management/mitigation measures, a systematic program of RAP consultation will occur during the preparation and implementation of the ACHMP, which will be implemented for the duration of the Project. Protocols for RAP engagement must also be documented in the ACHMP and include specific measures including but not limited to RAP engagement, dispute investigation and resolution, and community access protocols. The ACHMP may also seek to develop an Aboriginal Community Consultative Committee (CCC) to establish a standardised forum for open discussion between stakeholders, including but not limited to BWF, RAPs and other Aboriginal stakeholders (if identified), local council/s and other stakeholders on any issues directly relating to the heritage and environmental performance, and Aboriginal community relations associated with the construction and operation of the Project.

AHIMS Site Cards

AHIMS site cards must be submitted to Heritage NSW within a reasonable time (as per Section 89A of the NPW Act) for all newly recorded Aboriginal archaeological sites within the Study Area.

In the event that a previously unidentified Aboriginal site is discovered within the Study Area at any point during the life of the Project, an AHIMS site card for that site should be submitted to Heritage NSW as promptly as possible.

Previously Unrecorded Aboriginal sites and/or Objects

Provisions regarding the appropriate management action(s) for any previously unrecorded Aboriginal sites and/or objects identified within the Study Area throughout the life of the Project must be incorporated into the ACHMP. Management action(s) will vary according to the type of evidence identified, its significance (both scientific and cultural) and the nature of potential impact/s.

Previously Unrecorded Aboriginal Objects

Provisions regarding the appropriate management action(s) for any previously unrecorded Aboriginal archaeological sites/materials identified within the Study Area throughout the life of the Project (including construction, operations and decommissioning phases) must be incorporated into the ACHMP.

Management actions would be dependent on the nature and extent of identified Aboriginal sites, and may include the following:

- Isolated lithic objects or low-density concentrations (e.g. <10 lithic objects/m2)
- High density open artefact sites (e.g. >100 lithic objects/m2)
- Hearths, earth mounds and middens (i.e. accumulations of shell, bone etc)
- Culturally modified trees
- Skeletal remains (refer **Section 10.2.10**).

Human Skeletal Remains

In the event that potential human skeletal remains are identified throughout the life of the Project, the standard procedure outlined in this report must be followed.

Aboriginal Cultural Heritage Awareness Training

An Aboriginal cultural heritage awareness training package will be developed for use throughout the life of the Project.

This package will be developed in consultation with RAPs and completed prior to the commencement any ground disturbance works.

Aboriginal cultural awareness training will be mandatory for all staff and contractors whose roles may require interaction with Aboriginal sites and/or involve consultation with Aboriginal stakeholders.

Table of Contents

Figures

Tables

Appendices

1.0 Introduction and Background

1.1 Introduction

Bullawah Wind Farm Pty Ltd (BWF) proposes to develop the Bullawah Wind Farm (the Project), located approximately 36 km south east of Hay, within the South West Renewable Energy Zone (South West REZ). The Project Area is located within the Hay Shire, Murrumbidgee and Edward River Local Government Areas (LGAs). The Project will include the installation, operation, maintenance and decommissioning of up to 141 wind turbine generators (WTGs), battery storage, ancillary infrastructure and temporary facilities associated with construction of the Project. The Project design incorporates up to 141 wind turbines, with a maximum blade-tip height of 300 m above ground level.

Umwelt has been engaged by BWF to undertake an Aboriginal Cultural Heritage Assessment (ACHA) in relation to the development of the Project. BWF intends to provide a reliable and affordable source of energy for the people of New South Wales (NSW) through the development of the Project. The Project will also contribute to reducing greenhouse gas (GHG) emissions associated with energy generation and provide significant economic benefits to the Riverina region of NSW.

The Project is State Significant Development (SSD) as defined under *State Environmental Planning Policy* (Planning Systems) 2021 (Planning Systems SEPP) and requires development consent under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*, meaning approval under the NSW *National Parks and Wildlife Act 1974* (i.e., Section 90A) is not required. However, it is necessary to generally adhere to the other provisions and requirements of the NPW Act (refer **Section 2.0**).

This ACHA addresses the Aboriginal cultural heritage aspects of the NSW Planning Secretary's Environmental Impact Assessment for the Project (SSD-50505215), which are detailed in **Table 1.1** below.

Table 1.1 SEARs Requirements

Requirement	Where Requirements Have Been Addressed in ACHA
An assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) 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 results of archaeological test excavations (if required);	Throughout the ACHA, in particular **Section 9.0** to **Section 10.0** and **Appendix A**
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* (DECCW, 2010).	Refer to **Section 3.0**, **Section 9.0** and **Section 10.0**

1.2 The Project Area

The Project Area, shown in **Figure 1.1**, encompasses all land within and including the 'Project Boundary', defined for the purposes of this report as comprising the maximum spatial extent of potential land access defined by the boundaries of the host landholder properties (i.e. all agreed lots owned by host landholders).

The Project Area encompasses approximately 20,629 hectares (ha) of predominantly grazing land.
The Project Area is zoned as RU1 Primary Production within the Hay Local Environment Plan (LEP) 2011, the Murrumbidgee LEP 2013 and Conargo LEP 2013. Within the Project Area, BWF has identified:

- a Development Corridor of approximately 4,274 ha, in which all proposed Project infrastructure will be placed and all Project related ground disturbance will occur
- an indicative Disturbance Footprint of approximately 656 ha, which equates to approximately 3% of the total Project Area.

A full schedule of land (including relevant Lots and DPs) is provided in the EIS (Umwelt 2024).

1.3 Project Overview

The key components of the Project include:

- Up to 141 (three (3) blade) WTGs with a maximum blade-tip height of 300 metres (m) above ground[1].
- A 359 MW / 718 MWh battery energy storage facility.
- Permanent ancillary infrastructure including internal roads, hardstands, main and collector substations, a switchyard, operations and maintenance facilities, underground and overhead electricity transmission lines and poles, telecommunications facilities and utility services, permanent meteorological masts and water storage tanks.
- Temporary facilities including temporary workforce accommodation (if required), site offices, amenities, construction compounds and laydown areas, on-site borrow pits, rock crushing facilities, concrete or asphalt batching plants, minor 'work front' construction access roads, temporary meteorological masts, environmental management and monitoring and signage.
- Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points to facilitate delivery of wind turbine components to the Project Area as required.

Project construction and grid connection will occur in two (2) stages. The conceptual staging plan for the Project involves:

- Stage 1 (South), located mostly south of North Boundary Road, connecting to the existing 220 kV transmission line which runs through the Study Area.

[1] The EIS Project included up to 143 (three (3) blade) WTGs. Amendments to the Project (discussed in **Section 1.4** below) have now reduced this quantity to 141.

- Stage 2 (North), located north of North Boundary Road, connecting to the approved (but not yet constructed) 330 kV Eastern Section of Project EnergyConnect, which will also run through the Study Area.

1.4 The Amended Project

Several amendments were proposed for the Project in response to public submissions and agency advice received on the Project EIS during the exhibition period, along with technical advancements to the design of the Project. These amendments are all design refinements and do not materially change the nature of the Project.

A summary of the key proposed amendments to the EIS Project are provided in **Table 1.2** and are described in detail in the Amendment Report.

Table 1.2 Proposed Project Amendments

No.	Description
1	**Construction staging amendments** – BWF has identified that Stage Two (North) is now likely to commence sooner than was previously indicated in the Project EIS, and may commence prior to Stage One (South). As a result, a greater overlap between the construction periods for Stage One (South) and Stage Two (North) is now anticipated. Consequently, the peak workforce has increased from 350 workers at the height of construction as identified in the Project EIS, to 380 workers in this Amendment Report. As a result this amendment also reduces the overall duration of the construction period from 44 to 35 months.
2	**Transport route amendments** – The Amended Project encompasses two (2) port options, being Port of Newcastle (considered in the EIS but with impacts only being assessed for the "Local Transport Route" component) and Port Adelaide (a new port option considered in the Amendment Report). Accordingly, BWF is now seeking consent for any and all impacts associated with off-site road works and modifications between the nominated Ports and the Project Area, noting that consent associated with the SSDA is wholly limited to works within NSW. The Amended Project proposes five (5) Port to Hay Over-size Over-mass (OSOM) transport route options. This includes three (3) route options from the Port of Newcastle, and two (2) route options from the Port Adelaide.
3	**WTG amendments** – The Amended Project includes two (2) potential scenarios with respect to WTG dimensions. The Project EIS identified a maximum turbine size, being a tip height of up to 300 m and a blade length of up to 100 m. BWF has subsequently identified a maximum alternate turbine size (being a tip height of up to 233 m and a blade length of up to 80 m) for the purposes of identifying and assessing required road upgrades to the Port to Hay Transport Routes. However, BWF is seeking to retain flexibility to install a larger turbine (up to 300 m tip height and 100 m blade length), should the necessary Port to Hay upgrades be undertaken by the NSW Government or a third party.
4	**Obstacle lighting amendments** – The provision of obstacle lighting on select WTGs and meteorological masts (where masts are installed prior to WTG installation or are not in close proximity to a boundary WTG (>900 m) in accordance with CASA requirements.
5	**Project design refinements** - Includes the removal of two (2) WTGs, related infrastructure and associated disturbance from the Project design.

The scope of this report, as it relates to the key proposed amendments, is limited to the Project design refinements (i.e. item 5 in **Table 1.2**). Accordingly, this updated Revised ACHA has been prepared based on the current 141 WTG layout that resulted from changes in design in response to Government and agency advice received during the Amendment Report phase i.e. the removal of two (2) WTG from the Project design, being WTG 37 and WTG 38, as illustrated on **Figure 1.2**.

The removal of these WTG has made a neutral or marginally positive change with respect to Aboriginal cultural heritage impacts of the Project. H-NSW did not provide any advice in relation to this design change matter, but it has been incorporated into this updated Revised ACHA for completeness and to ensure the latest design is represented.

1.5 The Study Area

For the purposes of this assessment, the Study Area comprises:

- The Development Corridor, defined as comprising all lands within which all proposed Project infrastructure will be placed, and all Project related ground disturbance will occur. The Development Corridor is of variable width (to avoid key site constraints) and has been designed to provide some flexibility for micro-siting of infrastructure. The overall Amended Project layout, including the proposed Development Corridor is shown in **Figure 1.2**.
- All areas of disturbance associated with off-site road works. Off-site road works are shown in below in **Figure 1.3.**

The Project falls between the townships of Steam Plains and Hay South, approximately 36 km south east of the township of Hay, in the Riverina region of south western NSW. Reference to the Geographical Names Register of NSW indicates that the Study Area falls within the boundaries of the Hay Shire, Murrumbidgee and Edward River Local Government Areas (LGAs) and is situated in the Parishes of Dunkeld and Hay South, and in the Counties of Townsend and Waradgery, respectively.

Oolambeyan National Park is located immediately north of the Project Area and the localities of Four Corners Booroorban and Willurah are located to the east, west and south, respectively. Topographically, the environs of the Study Area are characterised by wide, alluvial plains consisting of early Quaternary sediments interspersed with a diverse system of shallow creek beds, dry lakes, and often deflated aeolian sand dunes[2]. Saltbush shrublands (*Atriplex sp*.) and a mixture of exotic and native grasses dominate the Study Area and environs, with Cypress Pine (*Callitris sp*.) and River Red Gum (*E. camaldulensis*) occupying the environs of the sandy ridges and watercourses, respectively. The majority of the Study Area is dominated by grazing paddocks and agricultural lands, with localised electrical infrastructure and farm tracks also represented.

[2] Discussed in further detail in **Section 4.1**

1.6 The Proponent

The proponent for this investigation is Bullawah Wind Farm Pty Ltd (BWF), a subsidiary of BayWa r.e. Based in 34 countries, BayWa r.e. is a leading global renewable energy developer, service provider, distributor and energy solutions provider, and is actively shaping the future of energy. BayWa r.e. delivers end to end project solutions, ongoing operations management and is an Independent Power Producer with an expanding energy trading business. BayWa r.e. has successfully brought over 5.5 gigawatts (GW) of renewable energy online, while managing over 10 GW of renewable energy assets.

Through its subsidiary, BayWa r.e. Projects Australia Pty Limited, BayWa r.e. has hubs in Brisbane, Melbourne and Sydney, focussing on delivering wind, solar, battery storage and hydrogen projects within Australia and New Zealand. BayWa r.e. Projects Australia has commissioned over 270 MW of solar and wind projects, and their project pipeline reports more than 5.7 GW under development. Key details of the Proponent are provided in **Table 1.3**.

Table 1.3 Proponent Details

Requirement	Details
Full Name/s	Bullawah Wind Farm Pty Limited
Street Address (Project Site)	4549 Jerilderie Road, Hay South, NSW 2711
ABN	ABN 15 660 244 182

1.7 Assessment Objectives

The overarching objectives of the Aboriginal cultural heritage assessment detailed in this report were as follows:

- To identify the Aboriginal cultural heritage values of the Study Area using a combination of background research, archaeological survey, targeted test excavation and Aboriginal community consultation.
- To provide, on the basis of significance and impact assessments, an appropriate management strategy for the identified cultural heritage values of the Study Area.
- To present the outcomes of Aboriginal community consultation, undertaken during the preparation of this report, and presenting the views of Aboriginal people regarding the likely impact of the Project on their cultural heritage.
- To compile an Aboriginal archaeological report to inform the relevant section of the EIS and assist the consent authority in its assessment of the development application.

1.8 Assessment Approach

The current assessment was undertaken in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) and the Consultation Requirements (DECCW, 2010a) and included the following:

- Searches of the Aboriginal Heritage Information Management System (AHIMS) for all Aboriginal sites within the current Study Area and surrounds.

- Review of the environmental context of the Study Area and environs, with specific consideration to its implications for past Aboriginal land use.
- Review of relevant archaeological and ethnohistoric information for the Study Area and environs.
- Archaeological survey and targeted test excavation within the Study Area.
- To identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the Study Area.
- To provide Registered Aboriginal Parties (RAPs) with information about the scope of the proposed works and Aboriginal heritage assessment process.
- To facilitate a process whereby RAPs can:
- Contribute culturally appropriate information to the proposed assessment methodology.
- Provide information that will enable the cultural significance of Aboriginal objects and/or places within the Study Area to be determined.
- Have input into the development of cultural heritage management options.
- To prepare and finalise an Aboriginal Cultural Heritage Assessment report (ACHAR) with input from RAPs.

1.9 Native Title

The National Native Title Tribunal register contains determinations of native title made by:

- the High Court of Australia
- the Federal Court of Australia
- or a recognised body such as South Australia's Supreme Court and Environment Resources and Development Court.

A search of the National Native Title Tribunal register was undertaken on the 7 April 2024. No Native Title Claims and no Indigenous Land-Use Agreements (ILUAs) have been registered or notified by the National Native Title Tribunal as being in place over the Study Area.

1.10 Project Team

Luke Wolfe (Principal Archaeologist, Umwelt) was the Technical Lead and primary author of the current assessment report. Additional technical input and support was provided by Dr Brent Koppel (Archaeologist, Umwelt), Alison Fenwick (Archaeologist, Umwelt) and Chantelle Laucht (Archaeologist, Umwelt).
The fieldwork component/s of the current assessment were undertaken by Luke Wolfe, Andrew Crisp (Senior Archaeologist, Umwelt), Dr Brent Koppel, Alison Fenwick, Chantelle Laucht, Sarah Mané (Archaeologist, Umwelt) and Alistair Campbell (Environmental Consultant, Umwelt).

Technical review of this report and other associated documentation was undertaken by Ryan Desic (Principal Archaeologist, Umwelt). Management, coordination and technical support was provided by

Lauren Evans (Umwelt, Principal Environmental Planner) and Nathan Baker (Umwelt, Principal Environmental Consultant).

Archaeological survey was undertaken by a combined field team of Umwelt archaeologists and Registered Aboriginal Party (RAP) field personnel indicated in **Section 7.0.** Aboriginal community consultation for this assessment was undertaken in accordance with the Consultation Requirements (DECCW, 2010a). Full details of the consultation process undertaken are provided in **Section 3.0**. Aboriginal organisations and/or individuals consulted as part of this assessment are listed in **Table 1.4**.

Table 1.4 Registered Aboriginal Parties

Organisation/Individual	Primary contact person
Bangerang Aboriginal Corporation	Kevin Atkinson
Griffith LALC	Stephen Young
Hay LALC	Ian Woods
Konanggo Aboriginal Cultural Heritage Services	Robert Young
Miyagan Culture and Heritage	Marie Murray
Mutthi Mutthi Group	Patricia Winch
Nari Nari Tribal Council	Jamie Woods
Pappin Family Aboriginal Corporation	Mary Pappin
Alice Pettit	-
Galen Pettit	-
Daryl Singh	-
Terence Singh	-
Yarkuwa Indigenous Knowledge Centre	Tracy Hamilton
John Jackson	-

1.11 Report Structure

This report contains 11 sections. This section (**Section 1.0**) has provided background information on the assessment undertaken and provides a description of the Study Area. The remainder of the report is structured as follows:

- **Section 2.0** summarises relevant statutory controls relevant to the Study Area.
- **Section 3.0** documents the Aboriginal community consultation process undertaken for this assessment.
- **Section 4.0** summarises relevant environmental and landscape information for the Study Area and environs.
- **Section 5.0** summarises relevant ethnohistoric information for the Study Area.
- **Section 6.0** summarises relevant archaeological information for the Study Area and environs.
- **Section 7.0** describes the results of the fieldwork program.
- **Section 8.0** provides a significance for all Aboriginal sites within the Study Area.

- **Section 9.0** discusses the proposed activity and its associated impacts.
- **Section 10.0** outlines for the management recommendations for the Study Area.
- **Section 11.0** lists the references cited in-text.

Details of where to locate the report content stipulated in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) are provided in **Table 1.5**.

Table 1.5 Heritage NSW Requirements Reference Table

Requirement	Refer to
How the requirements for consultation with Aboriginal people have been met (as specified in clause 80C of the National Parks and Wildlife Regulation 2019 (NPW Regulation)	**Section 3.0**
A description of the Aboriginal objects and declared Aboriginal places located within the area of the Project	**Section 6.2** and **Section 7.0**
A description of the cultural heritage values, including the significance of the Aboriginal objects and declared Aboriginal places, that exist across the whole area that will be affected by the proposed activity and the significance of these values for the Aboriginal people who have a cultural association with the land	**Section 3.2.3 and Section 8.1**
The views of those Aboriginal people regarding the likely impact of the Project on their cultural heritage (if any submissions have been received as a part of the consultation requirements, the report must include a copy of each submission and your response)	**Section 3.2.3**
Actual or likely harm posed to the Aboriginal objects or declared Aboriginal places from the proposed activity, with reference to the cultural heritage values identified	**Section 9.0**
Any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places	**Section 10.0**
Any practical measures that may be taken to avoid or mitigate any actual or likely harm, alternatives to harm or, if this is not possible, to manage (minimise) harm	

1.12 Acknowledgements

Umwelt and BWF would like to thank and acknowledge the assistance of all Aboriginal peoples who participated in the engagement process and fieldwork components of the assessment and contributed their cultural knowledge to aid in the protection and management of their cultural heritage within the Study Area.

In the production of this ACHAR, Umwelt undertook a program of consultation with Aboriginal peoples to ensure their recognition, that their voices were heard, and that their interests, concerns and knowledge were documented, as appropriate. **Both Umwelt and BWF respectfully acknowledge that any cultural information contained herein remains the property of Aboriginal peoples and is only reproduced in this report with permission**. Where relevant, sensitive cultural information has been omitted from this report by request. Umwelt acknowledge the right of Aboriginal peoples in Australia to give or withhold free, prior, and informed consent (FPIC) for the use of their traditional lands, resources, knowledge, or intellectual property (Lehr, 2014, p.4).

The currently accepted model utilised in Australia for the protection of cultural heritage, traditional knowledge and traditional cultural practises, which was adopted for this assessment more broadly, uses the nomenclature 'Indigenous Cultural and Intellectual Property' (ICIP), following the *Our Culture: Our Future*

Report (Janke et al 1999). The term has a recognised meaning both in Australia and internationally, and has been adopted by Umwelt as an acknowledgement of Aboriginal cultural heritage, traditional knowledge and practises.

Umwelt acknowledges that this report utilises some technical terminology to describe and interpret Aboriginal cultural connections to their respective Country that is often founded within an archaeological framework. All attempts have been made to avoid unnecessary generalisations about the past occupation of the Study Area and environs. Documented resources relating to pre-colonisation Aboriginal peoples are generally scarce, and consequently local newspapers and European accounts provide much of the early documented lives of Aboriginal peoples. As these resources are often written from a Euro-centric perspective, which Umwelt acknowledges rarely reflect the views of Aboriginal peoples today. Where such resources have been referenced, every attempt has been made to provide an objective interpretation of the available literature.

Umwelt also notes that the term 'Aboriginal', when used in this report, denotes Aboriginal peoples of Australia and their respective cultures, following the terminology prescribed in Section 4 (1) of the *Aboriginal Land Rights Act 1983* and Section 5 (1) of the *National Parks and Wildlife Act 1974*. However, in using the term, an attempt has also been made to refrain from being overly generic and as such, the names/terms: 'Wiradjuri/Nari Nari' and 'Wiradjuri/Nari Nari Peoples' have also been used, where relevant and/or possible. These names attempt to reflect and acknowledge the diversity of cultures and beliefs of Aboriginal peoples, broadly and within Wiradjuri and Nari Nari Country and surrounds.

1.13 Copyright

1.14 Revisions to this ACHA in Response to Submissions and additional Heritage NSW advice

The Project EIS, including the original ACHA (Version 1), was placed on public exhibition between 27 August 2024 and 23 September 2024. BWF received feedback from the community and Government Agencies, including Heritage NSW (H-NSW). A Revised ACHA (Version 2) was prepared to provide targeted responses to Heritage NSW's advice on the EIS. **Table 1.6** below summarises the advice received and the responses provided, including references to specific sections of the report that have been updated accordingly.

The Revised ACHA (Version 2) was provided to H-NSW by DPHI seeking advice on the assessment of the Submissions and Amendment Reports. BWF has since received feedback from DPHI and relevant Government agencies on the Amended Project, including H-NSW. Advice was received from H-NSW as part of request for information (RFI) 2 (i.e. RFI 2), raised by DPHI on 27 May 2025.

This updated Revised ACHA (Version 3, this version) has been prepared to provide targeted responses to H-NSW's advice received during their assessment of the Amended Project. **Table 1.7** below summarises the advice received and the responses provided, including references to specific sections of the report that have been updated accordingly. Umwelt acknowledges that:

- Additional advice was also received from H-NSW in relation to the 'Addendum ACHA' i.e., the ACHA prepared to assess impacts associated with the off-site transport routes. That additional H-NSW advice

(i.e., items 9 to 12 of H-NSW advice received under RFI 2) is addressed separately in the Addendum ACHA.

- Accordingly, only the H-NSW advice provided with regard to the main wind farm site (and Revised ACHA) (i.e., items 1 to 8) are addressed in the table below.
- Items 11 and 12 were provided in the context of the original Addendum ACHA within the H-NSW advice received under RFI 2, but relate to issues resolved in this updated Revised ACHA and RFI 2 responses to DPHI. These items have been addressed in **Table 1.7** below, as well as the Addendum ACHA.

Table 1.6 Response to Heritage NSW Advice on the Project EIS ACHA

Heritage NSW Advice	Umwelt Response	Where Addressed?
<u>Aboriginal Community Consultation</u> 1. Please provide additional documentation of the consultation undertaken for the project comprising all correspondence sent and comments received. Specifically, please include Stage 1 notifications and registrations and evidence that the draft assessment methodology (Stage 2/3) and the draft ACHAR (Stage 4) were provided to all Registered Aboriginal Parties. This additional documentation can comprise of copies of dated email records with all relevant email addresses shown and/or delivery/ read receipts of the correspondence.	All available RAP correspondence has been included in the consultation package provided to H-NSW.	*Records have been supplied to H-NSW separately.*
<u>Landform mapping and predictive modelling</u> The ACHAR outlines that the study area is comprised of a predominantly flat landscape with intermittent elevated landform elements throughout. Landforms variably mentioned throughout the ACHAR as being present within the study area include alluvial fans, floodplains, undulating plains, sandplain, depressions, flats, dunes, dune ridges, source bordering dunes, residual rises, lunettes. Information presented in the archaeological background sections indicates that slightly elevated topographies within the landscape are generally of high archaeological sensitivity. The predictive model presented in Section 6.4, however, does not include detailed landform analysis and does not include consideration of a number of site types/ features known to occur in the local region. The following is required to ensure that the archaeological potential of the study area has been adequately assessed and is appropriate for the scale of the current project. 2. As per Requirement 2 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW ('the Code of Practice; DECCW 2010), please provide landform mapping using standard classifications, preferably referencing landform units as defined in the 'Landform' chapter of the Australian Soil and Land Survey Field Handbook (3rd Edition). Mapping should also include relevant details such as contour lines.	In general, the assessment identified two (2) key landform elements *sensu* Speight 2009, i.e. 'flats' and 'dunes'. Umwelt emphasises that the extremely low relief of the Hay Plain (generally <5 m) presents challenges for typical landform modelling following the prescribed definitions of Speight 2009. In response to the Heritage NSW's comment regarding landscape elements, those listed in the comment and identified throughout the report are variations of the aforementioned two (2) landforms. Umwelt does note however, that every effort has been made to amend the report to simplify the landscape classification, as discussed. The landscape and topography discussion in **Section 4.1** has also been amended to reflect the aforementioned. Additionally, the predictive model presented in **Section 6.4** has also been updated.	**Section 4.1** **Section 6.4**
3. As per Requirement 4a of the Code of Practice, please update the predictive model to integrate the distribution of known sites/ features using the landscape/ landform descriptions derived from Requirement 2. Archaeological sensitivity mapping may help support the predictive model.	As discussed in the response to Heritage NSW's comment above, the applicable section/s have been updated to reflect the landform definitions applied throughout the report.	**Section 4.1** **Section 6.4**

Heritage NSW Advice	Umwelt Response	Where Addressed?
4. As per Requirement 4 of the Code of Practice, please update the predictive model to include consideration of all relevant site types/ features known to occur in the local region and include the decisions and reasoning behind the predictions made. We note that the current archaeological predictions presented in Section 6.4 do not include consideration of site types such as earth mounds, burials and modified trees (carved or scarred) and there is very limited consideration of potential archaeological deposits beyond the general statement that "Subsurface potential for extant lithic artefacts is likely to be low".	The predictive model has been updated to include additional details regarding anticipated landform context, supported by regional site examples. The predictive model now also includes a standalone table with each anticipated site type discussed in context, as outlined above.	**Section 6.4**
<u>Clarification regarding the assessment of Aboriginal cultural heritage</u> 5. Please confirm whether the previously recorded Aboriginal sites within the project area were reinspected during the site survey and clarify how it has been determined that they do not have potential to extend into the Development Corridor. Additional mapping which shows the site boundaries for these previously recorded sites would help to address this matter, noting that maps should be at a scale appropriate to the site and its relationship to other sites, important features, and the project boundary. Multiple maps may be required to effectively convey this information.	**Section 7.2** has been updated with additional discussion regarding inspection of previously recorded Aboriginal sites within or near the Study Area.	**Section 7.2**
6. Please update Table 7.1 to include details of site extents for all newly recorded sites and clarify how boundaries have been determined as per Requirements 6 and 7 of the Code of Practice.	**Table 7.1** has been updated to include all site dimensions and a summary of site extent rationale.	**Table 7.1**

Heritage NSW Advice	Umwelt Response	Where Addressed?
7. We note that Bullawah AS10_2023 (AHIMS #48-6-0323) has been assessed to have "high subsurface potential within lunette dune" pg.53 and that the site has the potential to be directly impacted by the project (Table 9.2). Where areas are assessed as having the potential to contain Aboriginal objects and/or values, additional investigation in the form of test excavations is required to ensure adequate consideration of their nature, significance and extent and ensure that appropriate mitigation measures are developed to minimise/mitigate harm to the site. Please provide justification for why this site was not subject to test excavations. Where adequate justification cannot be provided, additional investigation/ test excavations would be required.	Bullawah AS10_2023 (AHIMS #48-6-0323) has been removed from **Figure 9.1.** When the extent of Bullawah AS10_2023 is reviewed against the locations of proposed Project infrastructure (i.e. the Disturbance Footprint), it is evident that portions of Bullawah AS10_2023 (AHIMS #48-6-0323), which retain subsurface potential, can be avoided. This is also shown on **Figure 9.1** It is Umwelt's opinion that test excavation will not be necessary to inform impact mitigation strategies for this site.	**Figure 9.1** **Table 9.2**
8. The impact assessment presented in Section 9.1 of the ACHAR states that "PEC-E-PAD25 (AH/MS ID #48-6-0230) comprises an area of PAD with unknown archaeological resource. Further targeted assessment and/or salvage would be integrated into standalone management measures post-approval if the area cannot be avoided." We note that this site was not subject to testing and no recommendations have been proposed in the ACHAR regarding any potential test and salvage excavations required to investigate or manage this site. Please provide justification for why this site was not subject to test excavations. Where adequate justification cannot be provided, additional investigation/ test excavations would be required.	**Section 9.1** has been updated with newly received information. Umwelt notes that "PEC-E-PAD25 (AHIMS ID #48-6-0230) had not been recorded prior to the survey program undertaken by Umwelt, and consequently was not incorporated into the testing program. However, Umwelt also notes that Navin Officer Heritage Consultants (Navin Officer) completed a testing program within the boundaries of "PEC-E-PAD25 (AHIMS ID #48-6-0230) and reported generally low concentrations of subsurface lithic objects (specifically, two (2) artefacts recovered from eighteen test pits, i.e. 11%). As a result, it has been concluded that test excavation is not required. Additionally, the current assessment concluded that, based on Navin Officer's testing results, the scientific value of "PEC-E-PAD25 (AHIMS ID #48-6-0230) was consistent with other areas of PAD/open artefact sites tested in Umwelt's test excavation program. Management measures assigned to "PEC-E-PAD25 (AHIMS ID #48-6-0230) will be consistent with other open artefact sites of similar scientific significance for portions that extend into the Development Corridor only.	**Section 9.1**

Heritage NSW Advice	Umwelt Response	Where Addressed?
9. Section 7.1 of the ACHAR states that: "Vehicles were utilised for parts of the survey to achieve greater coverage." As per Requirement 5 of the Code of Practice, vehicle traverses are considered to be reconnaissance activities only. While they may be used to inform and design a pedestrian survey strategy, if they are to be used in the assessment, vehicle traverses must be recorded and reported separately from pedestrian survey activities, as they will not allow for suitable survey effectiveness calculations. Please clarify whether the survey coverage data and results presented in the ACHAR relates only to pedestrian survey results or includes vehicle survey results and update the ACHAR, where required, to address this matter.	Umwelt acknowledges that this was not initially clear in the report. The intent of utilising vehicles was only for reconnaissance purposes and in some instances, to avoid areas of long grass that otherwise posed a safety risk (i.e. an increased risk of snake encounters in long grass). Text in **Section 7.1** of the report has now been amended, and any use of vehicles is now shown in mapping and reflected in associated survey calculations, where relevant.	**Section 7.1**
10. The ACHAR states that "survey and recording was completed according to landform element units", however, survey results and effective survey coverage data are not presented in terms of landforms but rather by arbitrary transect numbers. In accordance with Requirements 9 and 10 of the Code of Practice, the survey results must be presented in a format that allows for an assessment of the effectiveness of the survey for each landform unit and then for the study area as a whole.	Umwelt refers Heritage NSW to Section 12.1.2 (p. 92) of the report, which states that "…transect survey and recording were completed along pre-defined linear sections of the Development Corridor". In preparing the proposed survey methodology, Umwelt referred to Requirement 5c of the Code of Practice which considers that a "subject area boundary" is appropriate to use as the basis for defining survey transects. In this instance, the 'Development Corridor' was used as the 'subject area boundary' and linear transects were completed within, where possible.	N/A
11. As per Requirement 5 of the Code of Practice, please include the survey track logs and detailed mapping of the areas subject to survey and differentiate between vehicle and pedestrian survey.	**Figure 7.1** has now been updated to show survey track logs, as requested.	**Figure 7.1**

Heritage NSW Advice	Umwelt Response	Where Addressed?
<u>Clarifications regarding the assessment of off-site road works</u> 12. The ACHAR states that "disturbance areas associated with off-site road works were opportunistically inspected during fieldwork activities using as combination of vehicle and pedestrian survey" pg.50. Based on information provided in the ACHAR, the off-site road works includes activities that will require ground disturbance associated with road widening and the construction of site access points. As Aboriginal objects may occur in disturbed contexts and/or below levels of existing disturbance, additional information is required to demonstrate these areas have been adequately considered and assessed in the ACHAR. Additional information must include: a) a description of the landforms/ soil landscapes present in these areas, b) how the predictive model applies to these areas,` c) mapping and survey results showing the location of areas inspected (ensuring differentiation between vehicle and pedestrian survey data) and effective survey coverage, and d) additional discussion and evidence to support the conclusion that these areas are highly disturbed and have a low likelihood of Aboriginal sites being present. Evidence may include, but not necessarily be limited to, photos of current disturbance levels and a review of historical aerial imagery covering the areas to be subject to ground disturbance. Should this assessment identify any areas of potential archaeological deposit that may be subject to harm as a result of the project, additional investigation (i.e. survey and/or test excavations) would be required.	Umwelt acknowledges Heritage NSW's comment and notes that additional clarification has been provided to describe the fieldwork associated with the off-site road works. **Section 7.2** and the corresponding survey discussion in the Aboriginal Archaeology Report (**Appendix A**) have now been split under two (2) subheadings, corresponding to the Development Corridor and Off-Site Road Works. The descriptions of the survey strategy, outcomes (addressing comments a-d) have now been included.	**Section 7.2**
<u>Significance assessment</u> 13. Please update the cultural significance assessment presented in Section 8.1 to include reference to the Bullawah-Culturally Modified Tree1 2023 (AHIMS #48-6-0336) as a site noted by Registered Aboriginal Parties as retaining significant cultural value as a 'women's business' site.	Text has been added to **Section 8.1** of this report to reflect the cultural significance of Bullawah-Culturally Modified Tree1 2023 (AHIMS #48-6-0336), to address Heritage NSW's comment.	**Section 8.1**

Heritage NSW Advice	Umwelt Response	Where Addressed?
14. The ACHAR includes reference to "ground-edge" and "grinding" lithic objects and "grinding implements" (e.g. see Section 12.1.2.3 of AR). Please clarify what site/s these artefacts were identified at and confirm whether the presence of such objects has been considered when assessing the archaeological significance of the relevant site/s, noting that such artefacts are typically associated with high research potential.	Section 1.1.2.3 of **Appendix A** has been updated to include reference to any open artefact site where ground-edge and/or grinding implements were recorded. Umwelt notes that, in general, few identified ground-edge and/or grinding implements were intact and the majority were highly fragmented. Umwelt considers that this limits their research potential, and any associated significance will remain unchanged. Notwithstanding this, opportunities for further analysis (e.g. residue) of these objects may be available following surface collection, where relevant.	**Section 1.1.2.3 in Appendix A**
<u>Management measures and recommendations</u> 15. Please update the management recommendations relating to Bullawah-Culturally Modified Tree 1 2023 (AHIMS #48-6-0336) to ensure that consideration is given to the gender-sensitivity of the tree as a 'women's business' site. For example, confirm whether any protective measures (such a fencing and any monitoring of site condition) should be undertaken by female representatives.	Umwelt notes that RAP representatives did not identify specific sensitivities regarding management of this site during the survey program or subsequent report review phases of the assessment.	N/A
16. The ACHAR states that "hearth sites retain an overall moderate significance and where possible, should be avoided." pg.71. Please confirm what management measures (e.g. salvage excavation) would be required should it not be possible to avoid hearth sites	Umwelt has provided a salvage excavation strategy for hearths, which is now presented in **Section 10.2.2** of the report. Hearth locations are also now shown in **Figure 10.1**.	**Section 10.2**
17. The ACHAR states that "hearths contained within site complexes are to be treated as standalone sites and in the first instance are to be avoided" pg.67. To ensure the efficacy of this recommendation, please provide detailed mapping of the site complexes showing the location of the hearths/ areas to be avoided within these site complexes and confirm whether any protective measures (such as fencing) should be in place during the proposed works and/or during any proposed collection of surface artefacts associated with these site complexes.	The Aboriginal site management figure has been updated to identify individual hearth locations in response to Heritage NSW's comment.	**Figure 10.1**

Heritage NSW Advice	Umwelt Response	Where Addressed?
18. The ACHAR recommends that three sites including Bullawah Hearth 1 2023 (AHIMS # 48-6-0335), Bullawah Earth Mound 1 2023 (AHIMS # 48-6-0336) and Bullawah Culturally Modified Tree1 2023 (AHIMS # 45-6-0336) are demarcated with fencing and/or barricades prior to works in the area. To ensure the efficacy of this management measure, please update the recommendation to include details of any specific protective buffers that should be in place for these sites and ensure that these buffers are appropriate for the nature and extent of each site.	**Section 10.2** has been updated and now includes appropriate site-specific fencing requirements.	**Section 10.2.5**

Note: the H-NSW advice documented in **Table 1.6** was received based on its review of the original ACHA prepared for the EIS (Version 1), and was previously addressed by Umwelt during the submissions phase of the Project i.e. in the Revised ACHA (Version 2).

Table 1.7 Response to Heritage NSW Advice on the Revised ACHA

Heritage NSW Advice	Umwelt Response	Where Addressed?
1. Our previous advice requested provision of additional documentation of the Aboriginal community consultation undertaken for the project, comprising all correspondence sent, and comments received in relation to Stage 1, Stage 2/3 and Stage 4 (and any project updates as sent to maintain active consultation) (comment #1). The response provided indicated that all available Registered Aboriginal Party (RAP) correspondence has been included in Appendix E of the revised ACHAR, however this Appendix E (RAP responses to Draft ACHAR) only contains a single email thread and the documentation in Appendix C (Consultation Records) is incomplete. Heritage NSW therefore reiterates our request that the applicant provide evidence to demonstrate complete and adequate consultation. Specifically, please provide the following: a. Evidence that the draft assessment methodology (Stage 2/3) was provided to all fourteen RAPs and copies of any responses received. b. Evidence that the draft ACHAR (Stage 4) was provided to all fourteen RAPs and copies of any responses received. c. Evidence that the revised ACHAR was provided to all fourteen RAPs and any copies of any responses received. Please note that this documentation can comprise of copies of dated email records with all relevant email addresses shown and/or delivery/ read receipts of the correspondence and may be provided to Heritage NSW separately for our review and records.	Umwelt has provided additional evidence of RAP consultation in the format requested i.e., email records with all relevant email addresses shown and/or delivery/read receipts of the correspondence. This evidence of consultation has been supplied to H-NSW separately (as it may contain sensitive information), as a standalone package of information, for its review and records, as necessitated by this and other H-NSW advice. H-NSW reviewed the consultation package and provided six (6) questions which were addressed via email on 13 August 2025. Following this, H-NSW confirmed that the responses provided adequately addressed this matter. **This outcome is formally recorded in the H-NSW 'DOC number' identified as 'DOC25/646215'.**	N/A

Heritage NSW Advice	Umwelt Response	Where Addressed?
2. Heritage NSW understands that twelve (12) previously recorded Aboriginal sites that fell within or near the Disturbance Corridor (i.e. within 500m) were reinspected during the survey completed for the project. Please confirm that site card updates have been submitted to the Aboriginal Heritage Information Management System (AHIMS) as a record of the current condition of these sites.	Noted, however this is generally not a requirement under the Code of Practise. Further, the visual inspection of these sites occurred to a) determine if there was an immediate risk of harm to previously recorded sites, and b) provide RAPs with the opportunity to see these sites. We note that many of the AHIMS records do not have site cards. Regardless of the above, Umwelt has prepared new sites cards and/or updated relevant site cards and submitted these to AHIMS as a record of the current condition of these sites.	N/A

3. Our previous advice requested justification for why PEC-E-PAD25 (AHIMS ID #48-6-0230) was not subject to test excavations and stated that where adequate justification could not be provided, additional investigation / test excavations would be required (comment #8). The revised ACHAR refers to the results of test excavations completed within the boundaries of PEC-E-PAD25 (AHIMS ID #48-6-0230) by Navin Officer Heritage Consultants (Navin Officer) as part of the assessment completed for Project EnergyConnect Eastern Section (SSI-9172452), concluding that additional test excavations were therefore not required as part of the current project. The conclusion that additional test excavations are not required, however, is not consistent with information presented in the Revised ACHAR prepared by Navin Officer (2022). The testing completed by Navin Officer, for example, was limited to the location of the proposed tower/s and was not designed to investigate the nature and extent of the PAD beyond their project impact area. We further note that in relation to the site Navin Officer (2022: 151) concluded that: "The remaining area of PEC-EPAD25 must still be regarded as having potential to contain Aboriginal cultural objects/deposits, therefore any adjustment to the tower location outside of the tested area, and within the remaining PEC-E-PAD25 would require further archaeological text excavation." Please clarify this discrepancy and provide justification for why additional assessment and investigation of PEC E PAD 25 (and also likely PEC-E PAD24) is not warranted to inform the impact assessment for the current project. Where adequate justification cannot be provided additional investigation or management measures must be developed in relation to these sites.	As discussed with H-NSW on 3 June 2025 this advice was provided in the absence of PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E-PAD 25 (AHIMS #48-6-0230) being mapped by Umwelt. Umwelt subsequently mapped PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E-PAD 25 (AHIMS #48-6-0230), generated new figures showing the boundaries of these areas (in response to Item 4 below, and as it relates to addressing this matter), supplied these to H-NSW for review and then consulted on this matter directly on 3 June 2025. The Umwelt position on this matter being that no further test excavations are warranted for the Project as there is suitable justification for the existing program. **H-NSW reviewed Umwelts justification, and supporting additional information, and confirmed that the responses provided adequately addressed this matter i.e. no further test excavations are warranted. This outcome is formally recorded in the H-NSW 'DOC number' identified as 'DOC25/431224'.** On the basis of the justifications reproduced below, and with H-NSW confirmation of the matter (ref: DOC25/431224), no further test excavations have been undertaken for the Project, inclusive of any further testing at PEC-E PAD25 and (and PEC-E PAD24). PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E-PAD 25 (AHIMS #48-6-0230) are mapped by Umwelt in response to Item 4 in **Figure 9.1B(a-b)**. **Justifications for the existing program of test excavations, as accepted by H-NSW (ref: DOC25/431224), are summarised as follows:** • The collective dataset of the Umwelt (2023-24) and Navin Officer (2022) fieldwork programs have adequately characterised the archaeological landscape, having systematically and comprehensively tested the subsurface potential of all representative landforms within the Project Area, including those represented by PEC-E PAD 25 (and PEC-E PAD24). • Umwelt completed a comprehensive, standalone test excavation program across the Development Corridor to characterise the subsurface potential of all landform elements represented (generally "flats" and "dunes"). Comprising 120 test pits, the test excavation program was designed to test representative landforms present. This methodology was approved in full	N/A, see also: **Figure 9.1B(a-b)**

Heritage NSW Advice	Umwelt Response	Where Addressed?
	consultation with RAPs, with all feedback presented in the Revised ACHAR (Umwelt 2025). • Umwelt acknowledges Navin Officer's conclusions of the subsurface archaeological potential for the remainder of PEC-E PAD 25 (and PEC-E PAD24). However, the collective dataset (i.e. Umwelt 2024, Navin Officer 2022) concludes that the broader subsurface potential of the environs comprises low artefact concentrations in generally disturbed contexts, across all representative landforms. Navin Officer concluded that the boundaries of PEC-E-PAD25 displayed "evidence of continuous ground disturbance", which consistent with Umwelt's findings, suggests the majority of the artefacts contained within the boundaries were the result of deflated topsoils. • Umwelt does not believe that further testing within these areas would contribute meaningful data that would otherwise alter our assessment and/or management/mitigation measures presented within the Revised ACHAR. Noting however that our response to Item 6 provides commitments for additional management/mitigation measures as discussed with H-NSW on 3 June 2025. • Following Section 3.1 of the Code of Practise, Umwelt notes that the existing archaeological dataset suggests the majority of recorded objects in subsurface contexts comprise flaked objects and/or flake debris, which in Umwelt's interpretation, does not align to the definition of 'potential conservation value' are present within the boundaries of PEC-E PAD 25 (and PEC-E PAD24), which follows that that 'unnecessary excavations' would not comply with the Code of Practice.	

Heritage NSW Advice	Umwelt Response	Where Addressed?
4. Please update Figure 9.1B to include the boundaries of PEC-E PAD24 (AHIMS #48-6-0233) and PEC E PAD 25 (AHIMS #48-6-0230).	Umwelt mapped and then generated new figures showing the boundaries of PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E PAD 25 (AHIMS #48-6-0230). Those figures also provide context of the Project, its Development Corridor and Disturbance Footprint, Umwelt's survey and testing already completed, and testing undertaken by Navin Officer. These figures were then supplied to H-NSW to inform direct consultation on this matter, and to inform consultation regarding Item 3 above. **The figures supplied to H-NSW were deemed to be acceptable as formally recorded in the H-NSW 'DOC number' identified as 'DOC25/431224'.** The supplied figures that identify PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E-PAD 25 (AHIMS #48-6-0230) are reproduced in this Revised ACHA (Version 3) in **Figure 9.1B(a-b)**.	**Figure 9.1B(a-b)**
5. The Revised ACHAR contains discrepancies in the assessed scientific significance of PEC-E PAD24 (AHIMS #48-6-0233) and PEC E PAD 25 (AHIMS #48-6-0230). Table 8.2, for example, states that they are both of 'Moderate' scientific significance, while Table 9.2 lists their scientific significance as 'low'. Please clarify this discrepancy and update for accuracy/consistency.	**Table 8.2** and **Table 9.2** of this Revised ACHA (Version 3) have been updated to reflect a consistent assessed scientific significance of 'low'.	**Table 8.2** **Table 9.2**

6. Please clarify whether the proposed management measures for PEC-E PAD24 (AHIMS #48-6-0233) and PEC E PAD 25 (AHIMS #48-6-0230) are consistent with any management requirements for these sites as identified in the Navin Officer assessments and confirm how these (and any other sites that may be subject to other project approvals) will be managed. This should include identification of the interaction and/or administrative management requirements as relevant (e.g., management commitments for sites covered by other ACHMPs/approvals such as Project EnergyConnect - Eastern Section - SSI-9172452, alignment of management plan commitments, discrepancies in proposed management, procedures for notification of works where a site is also covered by other approvals, and so on).	Consultation with H-NSW was held on 3 June 2025 to discuss this matter, and Umwelt subsequently provided additional post-approval management/mitigation measures in response. **Umwelt's proposed additional measures, as supplied to H-NSW, were deemed to be acceptable as formally recorded in the H-NSW 'DOC number' identified as 'DOC25/431224'.** These additional post-approval management/mitigation measures are outlined in **Section 10.2**, and include: • Commitment to more frequent AHIMS extensive searches during ACHMP preparation and implementation, to address any new AHIMS sites registered by PEC/other projects in the region (refer to **Section 10.2.5**) • Expansion of the current unexpected finds protocol to address both a) standard measures to manage unexpected finds that align with the current archaeological understanding (i.e. low subsurface concentrations of flaked lithic objects, as assessed), and b) additional measures to manage unexpected finds of higher scientific and/or cultural significance (e.g. higher than expected concentrations of lithic objects, hearths etc.) (refer to **Section 10.2.9**). • Commitments to RAP consultation beyond standard practices during the preparation and implementation of the ACHMP, to ensure proactive engagement with RAPs and effective planning for, and implementation of, agreed management/mitigation measures (refer to **Section 10.2.6**). In preparing these additional measures Umwelt acknowledged inconsistency between the mitigation measures presented by Umwelt (2025) and Navin Officer (2022) however this is justifiable as set out below: • Umwelt recommended surface collection as a suitable management measure on the basis that the collective dataset of both Umwelt (2025) and Navin Officer (2022) suggested that the majority of Aboriginal objects were located within a surface context, and that the anticipated concentrations of subsurface objects were insufficient to warrant a more extensive salvage program.	**Section 10.2**

Heritage NSW Advice	Umwelt Response	Where Addressed?
	• Navin Officer (2022:204 ['AH4']) recommended suitable management for 'PADs' comprised an archaeological subsurface test excavation program being carried out in parts of any PADs where project activities would have direct impact and a test excavation program has not already been completed in the area of impact. • Neither PEC-E PAD24 (AHIMS #48-6-0233) and PEC-E-PAD 25 (AHIMS #48-6-0230) are directly listed under the aforementioned 'AH4' mitigation measures provided in Table 10.1 (Navin Officer 2022:202-276). Since neither PAD reported significant subsurface objects in those areas tested, Umwelt concludes that further test excavation would provide little beneficial information to inform management outcomes to Aboriginal objects contained therein. • Notwithstanding this, and based on H-NSW feedback regarding Project EnergyConnect - Eastern Section - SSI-9172452 (and the prevalence of unexpected (subsurface) finds on that project, and in the region more broadly), Umwelt revised its management measures (as reproduced above, and outlined in **Section 10.2**) to address various scenarios involving Aboriginal objects of higher significance (e.g. higher artefact concentrations, middens etc.), if identified during construction activities.	

Heritage NSW Advice	Umwelt Response	Where Addressed?
7. Our previous advice requested that the survey results be presented in a format that allows for an assessment of the effectiveness of the survey for each landform unit and then for the study area as a whole as per Requirements 9 and 10 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales ('the Code of Practice'; comment #10). The response provided by the applicant states that the 'subject area boundary' is appropriate to use as the basis for defining survey transects as permitted by Requirement 5c of the Code of Practice. While this is true, the issue raised by Heritage NSW was not in relation to the definition of survey units but rather how survey results have been presented and analysed. We note that regardless of how a survey unit or transect is defined (e.g. whether by subject area boundary, landform, or other arbitrary termination as permitted by Requirement 5c), the Code of Practice still requires that landform data be recorded for each survey unit (Requirement 5b) and that analysis of survey coverage be presented in terms of landform units (Requirement 10). We request that the consultant please be aware of this distinction for future projects.	• Umwelt is aware of this distinction and will ensure survey results are presented in a more appropriate format for future projects. • For this Project, Umwelt elected to undertake these calculations and include them in this version of the Revised ACHA (Version 3), prior to it being re-supplied to all Project RAPs, as necessitated by this and other H-NSW advice.	**Table 1.2 and Table 1.3 of Appendix A**

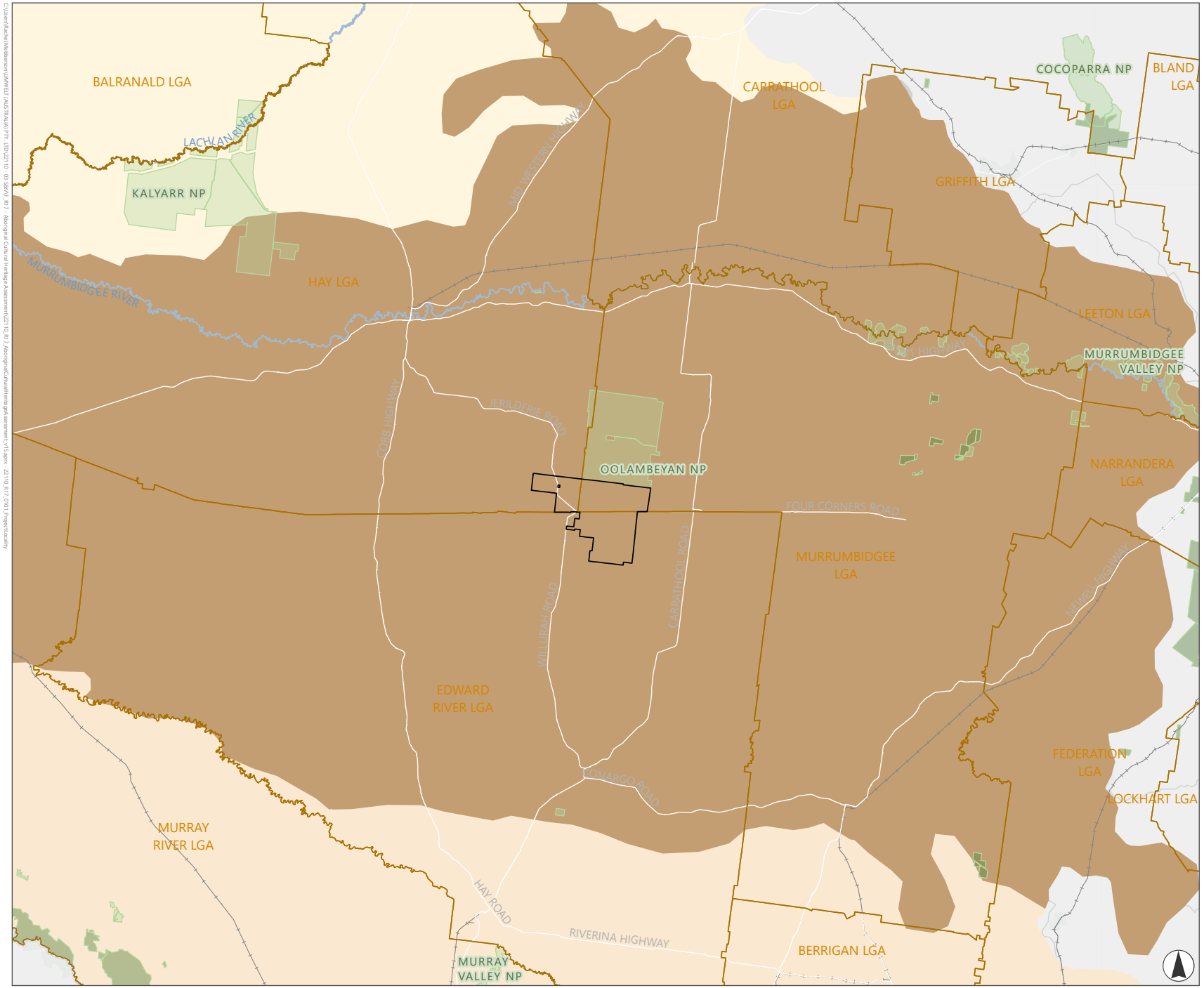
Heritage NSW Advice	Umwelt Response	Where Addressed?
8. Our previous advice requested clarification regarding which newly recorded Aboriginal sites contained "ground-edge" and "grinding" lithic objects and "grinding implements" (comment# 14). We note that, while the Section 1.1.2.3 of the Archaeological Report (Appendix A of the revised ACHAR) has been updated to state that there were approximately nineteen (19) of such artefact types identified and that they were present at eight (8) sites, it is still unclear which sites they occur at. We note that the presence of such artefacts has implications for understanding past human behaviour and the types of activities that occurred within the landscape. Further, as the response indicates that "opportunities for further analysis (e.g. residue) of these objects may be available following surface collection", it is important to establish which Aboriginal sites contain this artefact class. To address this, Heritage NSW requests that a list or table of the Aboriginal sites containing these artefact types be provided, noting that this should also be incorporated later into the proposed ACHMP along with related research questions and methods to address them.	Umwelt has extracted this information from our spatial data and added it to this version of the Revised ACHA (Version 3), prior to it being re-supplied to all Project RAPs, as necessitated by this and other H-NSW advice.	**Table 1.4 of Appendix A**
11. We note that Mitigation Measure ACH02 in Appendix 3 (Updated Mitigation Measures) of the Amendment Report to refers to surface collection of 29 Aboriginal sites. In contrast, the updated assessment for the project (as per the revised ACHAR and Addendum ACHAR) indicate that surface collection is to occur at 27 Aboriginal sites if they cannot be avoided through micro-sitting. Please clarify this discrepancy and update for accuracy as required.	This issue related to the Amendment Report prepared for the Project, not the Revised ACHA or Addendum ACHA. Therefore, it has been addressed separately in an updated mitigation measures table, which has been prepared by Umwelt and provided to DPHI in response to RFI 2. We confirm that surface collection is to occur at 27 Aboriginal sites if they cannot be avoided through micro-sitting.	Updated mitigation measures table provided separately to DPHI in response to RFI 2

Heritage NSW Advice	Umwelt Response	Where Addressed?
12. Please update management measure ACH07 in Appendix 3 (Updated Mitigation Measures) of the Amendment Report to refer to Table 9.4 of the Revised ACHAR as the most up-to-date table that identifies the Aboriginal sites to which BWF has committed to avoiding and protecting from impact.	This issue related to the Amendment Report prepared for the Project, not the Revised ACHA or Addendum ACHA. Therefore, it has been addressed separately in an updated mitigation measures table, which has been prepared by Umwelt and provided to DPHI in response to RFI 2. ACH07 within the Projects updated mitigation measures now correctly refers to the most up-to-date table within this Revised ACHA (Version 3) (refer to **Table 9.4**) that identifies the Aboriginal sites to which BWF has committed to avoiding and protecting from impact.	Updated mitigation measures table provided separately to DPHI in response to RFI 2, see also: **Table 9.4.**

Note: the H-NSW advice documented in **Table 1.7** was received based on its review of the Revised ACHA (Version 2), and has been addressed by Umwelt in this revision of the ACHA (i.e. Version 3).

FIGURE 1.1

Project Locality

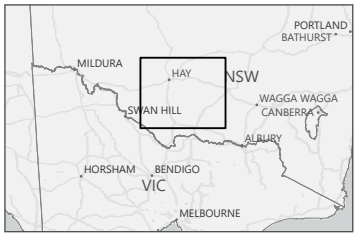


Legend

- Project Boundary
- Local Government Area
- National Parks
- State Forest
- Electricity Transmission Line
- Road
- Railway Line
- Hydroline

Riverina IBRA Bioregion

- Lachlan Subregion
- Murray Fans Subregion
- Murray Scroll Belt Subregion
- Murrumbidgee Subregion
- Robinvale Plains Subregion



0 10 20

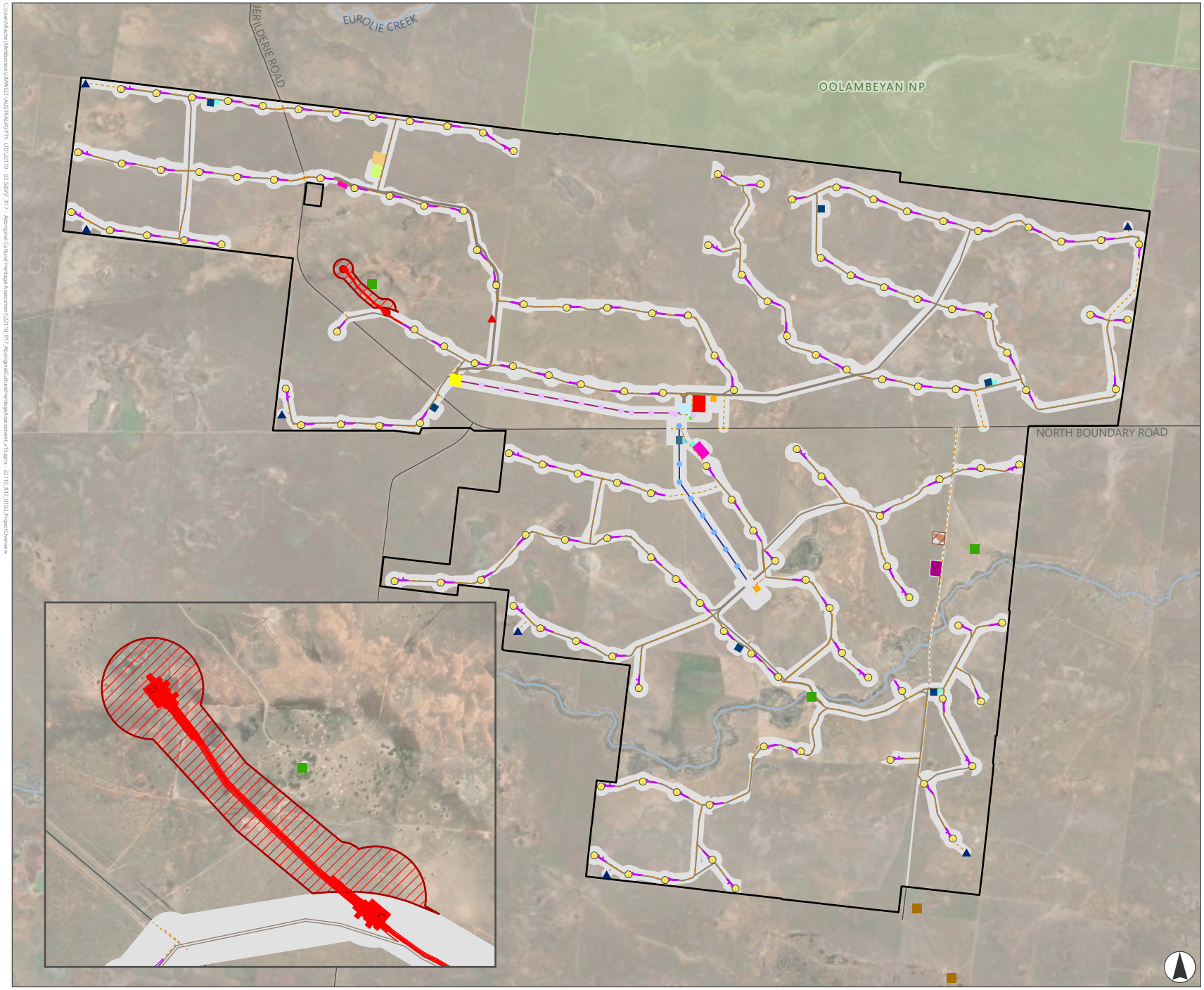
Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 1.2

Project Overview



Legend

- Project Boundary
- Development Corridor
- Wind Turbine Generators
- Host Residence
- Associated Residence
- 220kV Transmission Poles
- 330kV Transmission Poles
- Permanent Meteorological Masts
- Temporary Met Mast (As Built)
- Tracks Connecting Hardstands
- Hardstand Area
- Cable Corridor
- 330kV Internal Transmission Line (North to Central)
- 220kV Internal Transmission Line (Central to South)
- Main Temporary Laydown
- Temporary Satelitte Laydown
- Main Temporary Construction Compound
- Temporary Construction Compound
- Temporary Accommodation Compound
- Operation and Maintenance Buildings
- Collector Substation
- Switchyard
- Switchyard Laydown Area
- Main Substation
- Main Substation Temporary Laydown
- BESS Facility
- Quarry South (Current)
- Quarry South (Proposed)
- Quarry North
- NPWS Reserves
- Road

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 1 2

Kilometres

Scale 1:110,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

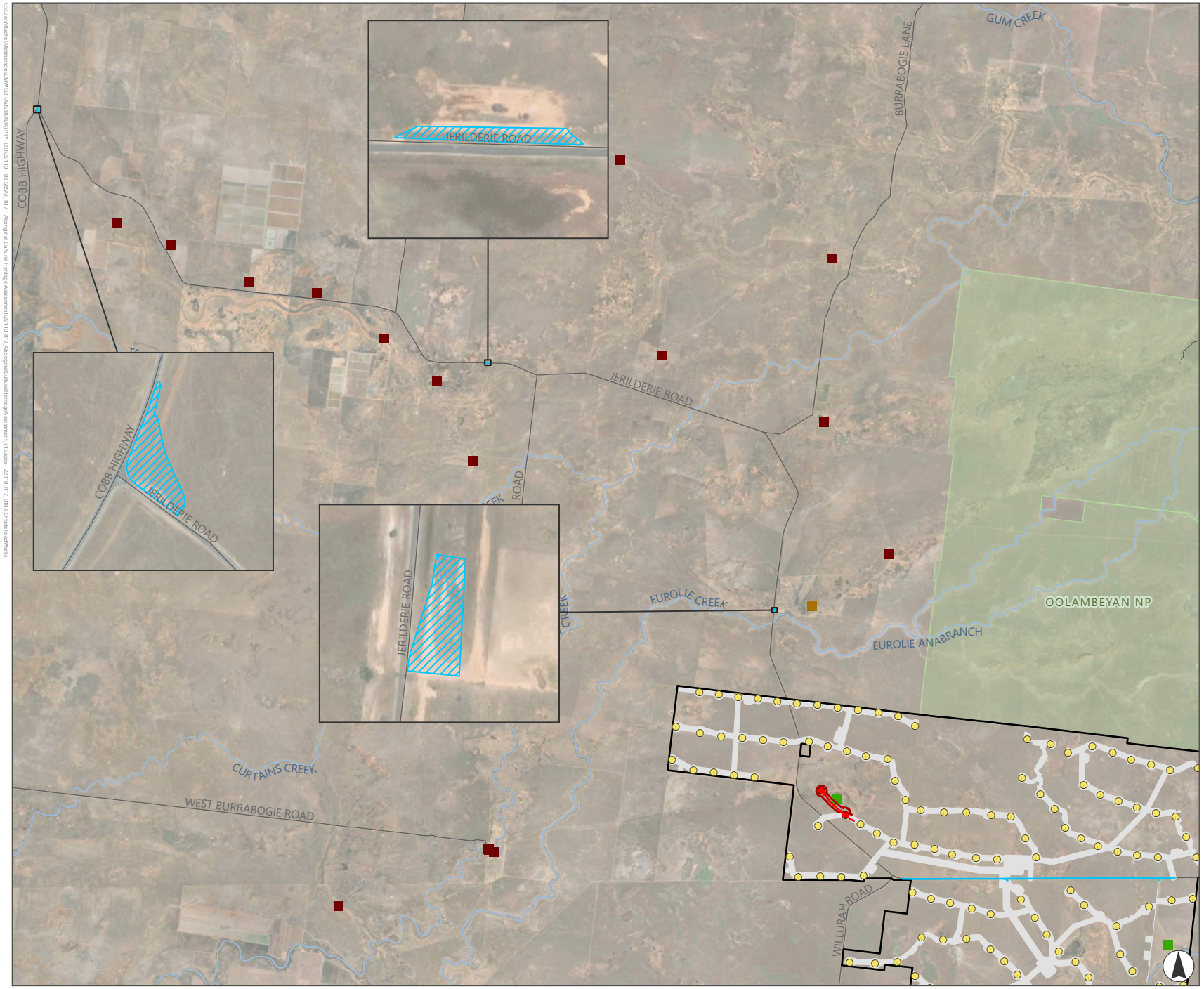


FIGURE 1.3

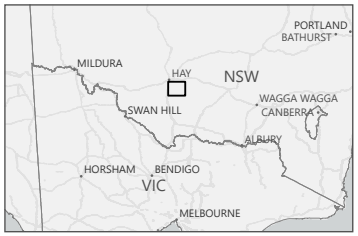
Off-Site Road Works

Legend

- Project Boundary
- Development Corridor
- Stage 1 (South) Offsite Disturbance Footprint
- Wind Turbine Generators
- Host Residence
- Associated Residence
- Non-associated Dwelling
- NPWS Reserves
- Road

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint



0 2.5 5

Kilometres

Scale 1:200,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

2.0 Statutory Controls

2.1 State

2.1.1 Environmental Planning and Assessment Act 1979

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that consideration be given to environmental impacts as part of the land use planning process in NSW. In NSW, environmental impacts are interpreted as including impacts to Aboriginal and non-Aboriginal (i.e., historic) cultural heritage.

BWF is seeking development consent under Part 4 of the EP&A Act. Pursuant to Division 5.2, Subdivision 4, section 5.23(1)(d) of the EP&A Act, approval under Part 4 of the NPW Act, or an Aboriginal Heritage Impact Permit (AHIP) is not required for SSD projects. Impacts to Aboriginal heritage values associated with approved SSD projects are typically managed under Aboriginal Cultural Heritage Management Plans (ACHMPs). ACHMPs are statutorily binding once approved by the NSW Department of Planning, Housing and Infrastructure (DPHI). The requirement to undertake Aboriginal heritage assessments is determined in the preparation of the SEARs as specified under Division 5.2, Subdivision 2, section 5.16 of the EP&A Act.

2.1.2 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) is the primary legislation for the protection of Aboriginal cultural heritage in NSW. Heritage NSW is primarily responsible for regulating the management of Aboriginal cultural heritage in New South Wales under the NPW Act. The NPW Act is accompanied by the Regulation and supported by the Code of Practice (DECCW, 2010b), and other codes of practice relating to demonstration of due diligence.

The NPW Act gives Heritage NSW the responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', defined under the Act as:

- An **Aboriginal object** is any deposit, object or material evidence (that is not a handicraft made for sale) relating to the Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains).
- An **Aboriginal place** is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects.

Under Section 84 of the NPW Act, an Aboriginal Place must be declared by the Minister as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture. Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them and includes a 'strict liability offence' for such harm. A 'strict liability offence' does not require someone to know that it is an Aboriginal object or place they are causing harm to in order to be prosecuted. Defences against the 'strict liability offence' in the NPW Act include the carrying out of certain 'Low Impact Activities', prescribed in Clause 80B of the NPW Regulation, and the demonstration of due diligence.

In accordance with Section 86(1) of the NPW Act, it is an offence to harm or desecrate a known Aboriginal object, whilst it is also an offence to harm an Aboriginal object under Section 86(2). Similarly, Section 86(4) states that a person must not harm or desecrate an Aboriginal place.

Harm to an Aboriginal object or place is defined as any act or omission that:

a) destroys, defaces or damages an object or place, or

b) in relation to an object – moves the object from the land on which it had been situated, or

c) is specified by the regulations, or

d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c), but does not include any act or omission that:

e) desecrates the object or place, (noting that desecration constitutes a separate offence to harm), or

f) is trivial or negligible, oris excluded from this definition by the regulations.

Section 87(1) of the NPW Act specifies that it is a defence to prosecution under Section 86(1) and Section 86(2) if the harm or desecration of an Aboriginal object was authorised by an AHIP and the activities were carried out in accordance with that AHIP.

Pursuant to Section 4.41 of the EP&A Act however, AHIPs are not required for SSD approved under Division 4.7 of Part 4 of the EP&A Act. Impacts to Aboriginal heritage values associated with approved SSD projects are typically managed under ACHMPs.

Section 89A of the NPW Act requires notification of the location of Aboriginal sites within a reasonable time, with penalties for non-notification. Section 89A is binding in all instances.

2.2 Local

2.2.1 Local Environmental Plans

The Hay LEP 2011, the Murrumbidgee LEP 2013 and Conargo LEP 2013 were established under the provisions of the EP&A Act. The respective LEPs provide guidance for development activities within each of the Hay Shire, Murrumbidgee and Edward River LGAs. Part 5.10 of the LEPs establish the requirements for development consent in relation to heritage conservation.

The objectives of Part 5.10 include conservation of Aboriginal objects or Aboriginal places of heritage significance. In accordance with these provisions, development consent is required for any activity that will involve:

- Demolishing or moving an Aboriginal object.
- Disturbing or excavating an Aboriginal place of heritage significance.
- Erecting a building on land on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.
- Subdividing land containing an Aboriginal object or Aboriginal place of heritage significance.

A search of Schedule 5 of the relevant LEPs was undertaken for previously listed Aboriginal heritage items. No listings for any Aboriginal place of heritage significance, object or site are currently listed under the Hay Shire, Murrumbidgee or Conargo LEPs.

3.0 Aboriginal Party Consultation

Aboriginal community consultation acknowledges the right of Aboriginal peoples to be involved, through direct participation, on matters that directly affect their cultural heritage.

Involving Aboriginal people in all facets of the assessment process ensures that they are given adequate opportunity to share information about cultural values, and to actively participate in the development of appropriate management and/or mitigations measures.

Aboriginal community consultation for this assessment was undertaken with reference to the Consultation Requirements (DECCW, 2010a). The results of the consultation process undertaken are detailed below. A consultation log and other information pertinent to the consultation program is provided in **Appendix C**.

In response to H-NSW advice received under RFI 2, Umwelt has provided additional evidence of RAP consultation in the format requested i.e., email records with all relevant email addresses shown and/or delivery/read receipts of the correspondence. This evidence of consultation has been supplied to H-NSW separately (as it may contain sensitive information), as a standalone package of information, for its review and records.

3.1 Stage 1 – Notification and Registration

The aim of Stage 1 of the Consultation Requirements (DECCW, 2010a) is to identify, notify and register Aboriginal stakeholders who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the Study Area.

3.1.1 Consultation with Regulatory Agencies

Section 4.1.2 of the Consultation Requirements (DECCW, 2010a) stipulates that proponents are responsible for determining the names of Aboriginal stakeholders who may hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places. Proponents are required to compile a list of Aboriginal stakeholders who may have an interest in being consulted for a project by writing to:

- Heritage NSW
- the relevant Local Aboriginal Land Council(s)
- the Registrar, *Aboriginal Land Rights Act 1983* (NSW) for a list of Aboriginal owners
- the National Native Title Tribunal for a list of registered native title claimants, native title holders and
- Native Title Services Corporation Limited (NTSCORP Limited)
- the relevant local council(s)
- the relevant catchment management authority (i.e. Local Land Services) for contact details of any established Aboriginal reference group.

In accordance with this requirement, the following agencies were contacted via telephone and/or email on 13 October 2022, requesting information on relevant Aboriginal persons and organisations:

- Heritage NSW (formally Office of Environment and Heritage; OEH).
- Griffith Local Aboriginal Land Council (LALC).
- Hay LALC.
- The Office of Registrar Aboriginal Land Rights Act NSW.
- the National Native Title Tribunal (NNTT).
- Native Title Services Corporation Limited (NTSCORP Limited).
- Edward River, Hay Shire and Murrumbidgee Councils.
- Riverina Local Land Services (LLS).

A single (1) response was received by Heritage NSW, which provide a list identifying 35 Aboriginal stakeholders with potential interest in the Project.

3.1.2 Public Notification

Section 4.1.3 of the Consultation Requirements (DECCW, 2010a) requires that, in addition to writing to the Aboriginal stakeholders identified by the agencies listed in **Section 3.1.1**, the proponent must also place a notice in the local newspaper circulating in the general location of the proposed project. A public notice was placed in the Riverine Grazier on 16 November 2022. No responses to the notice were received prior to, or after the closure date. A copy of the advertisement has been provided in the consultation package provided to H-NSW.

3.2 Invitations for Expressions of Interest

Section 4.1.3 of the Consultation Requirements (DECCW, 2010a) requires that proponents must write to the Aboriginal people whose names were obtained through the regulatory agencies and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project and invite them to register an interest in participating in a process of community consultation.

A letter inviting expressions of interest and containing project summary information was sent to all Aboriginal individuals and/or organisations on 15 November 2022. A total of 35 stakeholders were initially contacted to determine their interest in being consulted for the Project. The Aboriginal parties were provided a 14-day period (to 30 November 2022) to respond. By the closing date for expressions of interest, three (3) responses were received Summary information for those initially registered Aboriginal parties (RAPs), including registration dates, is provided in **Table 3.1**.

Table 3.1 Initial Registered Aboriginal Parties

Organisation	Date of registration	Contact Person
Pappin Family Aboriginal Corporation	30/11/2022	Jason / Mary Pappin
Yarkuwa Indigenous Knowledge Centre	21/11/2022	Jeanette Crew
Miyagan Culture & Heritage	25/11/2022	Robert Carroll

Subsequent attempts to contact listed stakeholders identified a further eleven (11) stakeholders who registered their interest in being consulted for the Project as shown in **Table 3.2**. This created a total of 14 RAPs, as previously presented in **Table 1.4**.

Table 3.2 Additional Registered Aboriginal Parties

Organisation/Individual	Primary contact person	Associated / interested contact(s)
Bangerang Aboriginal Corporation	Kevin Atkinson	
Griffith LALC	Stephen Young	
Hay LALC	Ian Woods	
Konanggo Aboriginal Cultural Heritage Services	Robert Young	
Mutthi Mutthi Group	Patricia Winch	
Nari Nari Tribal Council	Jamie Woods	
Marie Pettit	-	Galen Pettit, Daryl Singh, Marie Murray
Alice Pettit	-	Terrance Singh
Alvira Wighton	-	Dallas Togo-Singh
Geraldine (Sherry) Johnson	-	Leon Johnson
Owen Johnson		John Jackson

3.2.1 Notification of Registered Aboriginal Parties (RAPs)

Section 4.1.6 of the Consultation Requirements (DECCW, 2010a) requires that the proponent make a record of the names of each Aboriginal person who registered an interest and provide evidence of that record to Heritage NSW and the relevant LALC(s). Section 4.1.5 of the Consultation Requirements (DECCW, 2010a) provides the opportunity for Aboriginal persons to withhold their details from being forwarded to these parties.

BWF commenced discussions with both Hay and Griffith LALC prior to the commencement of the ACHAR and verbally confirmed their interest in the Project during those discussions. Subsequently, the Nari Nari Tribal Council was identified by the CEO of Hay LALC as an interested party and were added as a late registration. These organisations are represented as additional RAPs in **Table 3.2** above.

3.2.2 Stage 2 – Presentation of Information About Project

The aim of Stage 2 of the Consultation Requirements (DECCW, 2010a) is to provide RAPs with information about the scope of the project and the proposed cultural heritage assessment process.

For the current assessment, presentation of information about the Study Area and proposed development was provided to RAPs as part of the registration of interest process. Basic information on the Project was included in the Expression of Interest (EOI) letter sent on 15 November 2022. RAPs were given a 14-day period to register their interest in the project (to 30 November 2022). Additionally, Umwelt emailed and/or phoned RAPs on 25 November 2022 to remind them of the consultation deadline.

An interim briefing memo was subsequently issued by BWF on 17 July 2023.

3.2.3 Stage 3 – Gathering Information about Cultural Significance

The aim of Stage 3 of the Consultation Requirements (DECCW, 2010a) is to facilitate a process allowing RAPs to contribute to culturally appropriate information gathering and the assessment methodology, provide information that will enable the cultural significance of Aboriginal objects and/or places to be determined and have input into the development of any cultural heritage management measures. For the current assessment, consultation with RAPs regarding the cultural heritage values of the Study Area included:

- A request with the draft assessment methodology for any initial comments regarding the Aboriginal cultural heritage values of the Study Area.
- Discussion of cultural heritage values during fieldwork activities.
- The provision of a draft report to all RAPs for comment prior to finalisation.

3.3 Draft Methodology

Sections 4.3.1 and Section 4.3.2 of the Consultation Requirements (DECCW, 2010a) require that the proponent present the proposed methodology for the cultural heritage assessment to all RAPs with the invitation for RAPs to review and provide feedback on this methodology. In accordance with these requirements, on 22 June 2023, all RAPs were sent a draft of Umwelt's proposed methodology. RAPs were given 28 days (to 20 July 2023) to respond to the proposed assessment method but were informed that cultural information could be provided throughout the duration of the assessment.

Robert Young (Konanggo Aboriginal Cultural Heritage Services) provided a positive response, agreeing with the proposed methodology. Additional correspondence with Robert was undertaken addressing cultural protocols and knowledge sharing prior to undertaking the survey program.

3.3.1 Archaeological Survey Program

All RAPs were provided with the opportunity to be involved in the pedestrian survey of the Study Area. Notifications for the proposed field assessment were issued by BWF in writing on 22 June 2023. BWF emailed and/or phoned RAPs periodically throughout the consultation period in order to determine field representative availability and confirmation of attendance. Additionally, Umwelt emailed and/or phoned RAPs on 3 August 2023 to confirm fieldwork attendance and registration. RAP field representatives are listed by organisation in **Table 3.3**.

Table 3.3 RAP Field Representatives

Date	Field Representative	Registered Aboriginal Party
7–11 August 2023	Lindsay (LJ) Reay	Griffith LALC
	Natasha Simpson	Griffith LALC
	Uncle Allan McKenzie	Griffith LALC
	Roslyn Simpson	Griffith LALC
14–17 August 2023	Robert Young	Konanggo Aboriginal Cultural Heritage Services
18 August 2023		
	Tracy Hamilton	Yarkuwa Indigenous Knowledge (Deniliquin)
	Mary Pappin	Pappin Family Aboriginal Corporation
	Leon Johnson	Geraldine Johnson
4–8 September 2023	Ian Woods	Hay LALC
	Tara Dixon	Hay LALC
	Kerrie Parker	Hay LALC
	Tiem Wilson	Hay LALC
	Brian (BJ) Gash	Hay LALC
	Cherokee Dixon	Hay LALC
	Richard Dixon	Hay LALC
11–14 September 2023	Kevin Atkinson	Bangarang Aboriginal Corporation
	Owen Johnson	N/A
	Tyronn Ross	Yarkuwa Indigenous Knowledge (Deniliquin)
	Patricia Winch	Mutthi Mutthi Group

3.3.2 Consultation During and After Fieldwork

Umwelt discussed various assessment and management options with RAPs during the fieldwork program to gauge the suitability of certain measures. In addition, cultural information pertaining to the Study Area was discussed where appropriate throughout the fieldwork program. For context, a summary of the discussed topics is provided below. Topics of discussion which were deemed as culturally sensitive and not appropriate for public knowledge have been omitted.

- A culturally modified tree identified during the survey program (refer **Section 7.2**) was noted as retaining significant cultural value as a 'women's business' site. Sensitive cultural information associated with the site has been redacted from this assessment.

- Hearths and hearth retainers are typically considered to retain high cultural value due to these sites being intact and in situ evidence of ancestral activity. RAP field representatives indicated hearth sites should be protected, where possible, to maintain an ongoing connection to Country.

3.3.3 Project Update – Interim Briefing Memorandum

Umwelt distributed an interim briefing memorandum on 12 January 2024 in order to provide RAPs and other project stakeholders with a summary of the assessment to date, as well as providing an understanding of future steps in the assessment process. This included the proposed test excavation sampling strategy and methodology.

Patricia Winch (Mutthi Mutthi) provided feedback regarding this letter, raising concerns about the long-standing impacts of the Project to the cultural landscape of the Study Area and environs. She advised that in order to further engage with and support the local Aboriginal community, that they be directly involved in the construction process and ongoing operations. Additionally, concerns were raised regarding the proposed test excavation methodology and unexpected finds protocol, specifically ancestral remains.

Umwelt responded to this feedback on 31 January 2024, following consultation with BWF. The primary points which were addressed have been outlined below, with a full copy of the correspondence included in the consultation package provided to H-NSW.

- Future opportunities for Aboriginal people will be determined by BWF via its community and stakeholder engagement process and will be independent from the current cultural heritage assessment program. The current assessment (this report) will seek to engage with, and support learning opportunities with local Aboriginal stakeholders that have cultural connections to the Study Area during the program.
- Umwelt acknowledges some ambiguity regarding the proposed approach presented in the draft methodology but notes it has been prepared in accordance with Section 3.1 of the Code of Practice (DECCW, 2010b). The test excavation program was designed following both the initial preparation of a desktop-based predictive model for archaeological site patterning and investigated through systematic survey of the Study Area completed in 2023.
- Umwelt acknowledged that a draft test pit plan would have been a beneficial addition to the letter and provided this plan as part of the revised methodology letter.
- Umwelt noted that the proposed sampling design presented in the draft methodology may be subject to variation. The aim of the program would remain, in part, to determine the extent to which predicted archaeologically sensitive landforms retain subsurface archaeological potential.
- Umwelt committed to provide a rigorous and culturally appropriate procedure for managing ancestral remains during the test excavation program. A complete procedure was provided in the revised methodology document.
- John Winch, on behalf of Patricia (Mutthi Mutthi) accepted Umwelt's response on 5 February 2024 and advised they had no further comment at that time.

3.3.4 Archaeological Test Excavation Program

RAP groups who participated in the archaeological survey program were invited to be involved with the archaeological test excavation program for the Project. Notifications for the proposed test excavation program were distributed to the identified RAPs by Umwelt on 14 February 2024. Attached to this letter was a copy of the draft archaeological survey design and methodology, interim briefing memorandum, and the proposed test program methodology. This provided the opportunity for a thorough review of the Project to date.

Table 3.4 RAP Test Excavation Representatives

Date	Representative	Organisation
26 February–1 March 2024	Aunty Pamela Young	Konanggo Aboriginal Cultural Heritage Services
	Robert Young	Konanggo Aboriginal Cultural Heritage Services
	Uncle Allan McKenzie	Griffith LALC
	Lindsay (LJ) Reay	Griffith LALC
4–8 March 2024	Patricia Winch	Mutthi Mutthi Group
	John Winch	Mutthi Mutthi Group
	Tracy Hamilton	Yarkuwa Indigenous Knowledge (Deniliquin)
	Tyronn Ross	Yarkuwa Indigenous Knowledge (Deniliquin)
11–15 March 2024	Jason Pappin	Pappin Family Aboriginal Corporation
	Mary Pappin	Pappin Family Aboriginal Corporation
	Kevin Atkinson	Bangarang Aboriginal Corporation

3.3.4.1 Outcomes of H-NSW Advice (RFI 2)

Umwelt notes the H-NSW advice received in relation to the existing test excavation program (under RFI 2), the direct consultation that occurred as a result, and then the H-NSW confirmation that the responses provided adequately addressed relevant test excavation matters (Item 3 and Item 4 of its advice) i.e. no further test excavations are warranted.

On the basis of the justifications reproduced below, and with H-NSW confirmation of the matter (ref: DOC25/431224), no further test excavations have been undertaken for the Project during the preparation of this Revised ACHA (Version 3), inclusive of any further testing at PEC-E PAD25 and (and PEC-E PAD24).

Accordingly, no additional notifications for the proposed test excavation program were distributed to the identified RAPs beyond those previously supplied by Umwelt on 14 February 2024.

Justifications for the existing program of test excavations, as accepted by H-NSW (ref: DOC25/431224), are summarised as follows:

- The collective dataset of the Umwelt (2023-24) and Navin Officer (2022) fieldwork programs have adequately characterised the archaeological landscape, having systematically and comprehensively tested the subsurface potential of all representative landforms within the Project Area, including those represented by PEC-E PAD 25 (and PEC-E PAD24).
    - Umwelt completed a comprehensive, standalone test excavation program across the Development Corridor to characterise the subsurface potential of all landform elements represented (generally “flats” and “dunes”). Comprising 120 test pits, the test excavation program was designed to test representative landforms present. This methodology was approved in full consultation with RAPs, with all feedback presented in the Revised ACHAR (Umwelt 2025).
    - Umwelt acknowledges Navin Officer’s conclusions of the subsurface archaeological potential for the remainder of PEC-E PAD 25 (and PEC-E PAD24). However, the collective dataset (i.e. Umwelt 2024, Navin Officer 2022) concludes that the broader subsurface potential of the environs comprises low artefact concentrations in generally disturbed contexts, across all representative landforms.

Navin Officer concluded that the boundaries of PEC-E-PAD25 displayed “evidence of continuous ground disturbance”, which consistent with Umwelt’s findings, suggests the majority of the artefacts contained within the boundaries were the result of deflated topsoils.

- Umwelt does not believe that further testing within these areas would contribute meaningful data that would otherwise alter our assessment and/or management/mitigation measures presented within the Revised ACHAR. Noting however that our response to Item 6 provides commitments for additional management/mitigation measures as discussed with H-NSW on 3 June 2025.
- Following Section 3.1 of the Code of Practise, Umwelt notes that the existing archaeological dataset suggests the majority of recorded objects in subsurface contexts comprise flaked objects and/or flake debris, which in Umwelt’s interpretation, does not align to the definition of ‘potential conservation value’ are present within the boundaries of PEC-E PAD 25 (and PEC-E PAD24), which follows that that ‘unnecessary excavations’ would not comply with the Code of Practice.

3.4 Draft ACHAR Consultation (EIS, Version 1)

The aim of Stage 4 of the Consultation Requirements (DECCW, 2010a) is to prepare and finalise an ACHAR while providing an opportunity for RAPs to provide input and/or feedback. All written responses from RAPs are attached as **Appendix E**.

In accordance with Section 4.4.2 of the Consultation Requirements (DECCW, 2010a), on 29 May 2024, all RAPs were sent a copy of the draft ACHA for review and comment. The closing date for comments was 26 June 2024, which provided the minimum 28-day review period.

Responses to the draft ACHAR were received from three (3) RAPs which are summarised in **Table 3.5**.

Table 3.5 RAP Responses to Draft ACHAR (Version 1)

Registered Aboriginal Party	Date of response	Method of response	Summary of response	Response to Comment
Miyagan Culture & Heritage	25/06/2024	Phone	Mr Robert Carroll said he had had a good read of the report and was happy with it. Mr Carroll stated he was satisfied with the findings and recommendations.	Umwelt thanked Mr Carroll for his time, comments and participation with the Project to date.
Yarkuwa Indigenous Knowledge Centre	26/06/2024	Phone	Ms Tracy Hamilton had a read of the ACHA and was happy with the findings and recommendations.	Umwelt thanked Ms Hamilton for her time, comments and participation with the Project to date.
Konanggo Aboriginal Cultural Heritage Services	26/06/2024	Email/Phone	Aunty Pamela Young and Mr Robert Young read Umwelt's report and indicated support for the report and draft recommendations.	Umwelt thanked Mr Young and Aunty Pamela Young for their time, comments and participation with the Project to date.

3.5 Revised ACHA following Response to Submissions (Version 2)

The Project EIS, including the original ACHA (Version 1), was placed on public exhibition between 27 August 2024 and 23 September 2024.

BayWa r.e. received feedback from the community and Government agencies, including H-NSW, who provided comments advice specifically in relation to the ACHA. Umwelt subsequently updated the ACHA, and a draft revised version was issued to RAPs on 13 December 2024 for review.

No responses to the Revised ACHA (Version 2) were received by the closing date (7 January 2025).

3.6 Revised ACHA following H-NSW advice on the Amended Project (Version 3, this version)

As outlined in **Section 1.14**, BWF has since received feedback from DPHI and relevant Government agencies on the Amended Project, including H-NSW. Advice was received from H-NSW as part of RFI 2, raised by DPHI on 27 May 2025.

This updated Revised ACHA (Version 3) was prepared to provide targeted responses to H-NSW's advice received during their assessment of the Amended Project, as outlined in **Table 1.7**. A draft revised version of this ACHA (Version 3) was issued to Project RAPs on 11 July 2025 for review.

A single (1) response to the Revised ACHA (Version 3) was received by Konanggo Aboriginal Cultural Heritage Services on 29 July 2025. Mr Robert Young indicated he had read Umwelt's report and noted the *"comprehensive coverage of cultural pathways, surveys, and test excavations*", and extended their gratitude to the Umwelt team for their "*dedicated work in making this project a culturally safe space and for their supportive engagement.".* This response is included in **Appendix E.**

4.0 Environmental Context

4.1 Physical Setting and Topography

The Study Area is located within the Murrumbidgee Subregion of the Riverina Bioregion (IBRA) (refer to **Figure 1.1**), comprising a plain of ancient riverine alluvial fans of unconsolidated sediments and displaying characteristics of paleochannels and ephemeral watercourses. Three (3) overlapping alluvial fans from the Lachlan, Murrumbidgee and the Murray Rivers cover the Riverina Bioregion (NPWS 2003). The Riverina Bioregion is characterised by landscapes classified by Mitchell (2002), with the landscapes within the Study Area including the Murrumbidgee Channels and floodplains and the Murrumbidgee Depression Plains.

Locally, the topography of the Study Area itself exhibits little topographic variability, with elevations generally ranging from between 94 and 105 m above sea level (ASL). Individual landform elements within the Study Area are correspondingly sparse, broadly characterised by wide, alluvial plains and deflated aeolian sand dunes that manifest today as barely perceivable residual rises. A diverse system of interconnected, shallow creek beds and dry lakes intersperse across the plains, which become extensive wetlands during times of peak rainfall. Following Speight (2009), a breakdown of the relative representation of morphological landform units within the Study Area is provided in **Table 4.1** and mapped landform units[3] and topography, are shown on **Figure 4.1.** Note: watercourse channels and roads have been omitted from the area calculations.

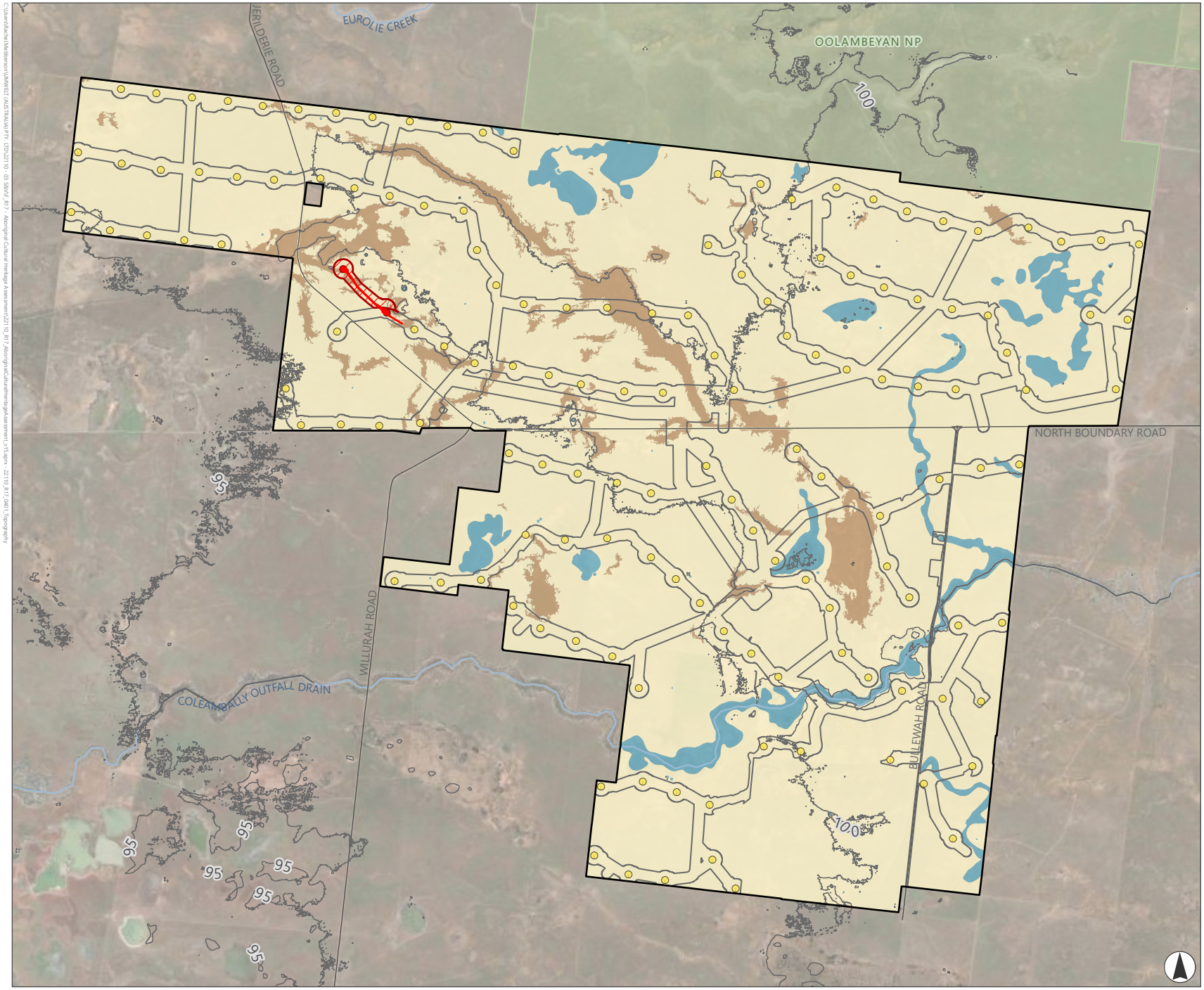
Table 4.1 Morphological Landform Units within the Study Area

Landform Unit	Total (m^2)	Area (ha)	Percentage Area (%)
Dunes	13,247,813	1,324	6.7%
Flats	182,659,896	18,266	93%

[3] Mapped landforms indicated in Figure 4.1 were generated using the *Geomporphon Landforms* plugin for ArcGIS. A 5 m DEM was utilised for the baseline modelling and elevation data extrapolated for each pixel. It is noted that the resulting landform mapping is constrained by both the starting dataset and modelling process, and may not capture all features. In some instances, elevated landform elements may not be captured on this map and consequently, the total area of landforms considered by this assessment to be 'dunes' may not be fully represented in the calculations presented in **Table 4.1**.

FIGURE 4.1

Topography



Legend

- Project Boundary
- Development Corridor
- Wind Turbine Generators
- Road
- Hydroline
- NPWS Reserves
- Contour

Landforms

- Dunes
- Flats
- Hydro Areas

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 1 2

Kilometres

Scale 1:110,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

4.2 Hydrology

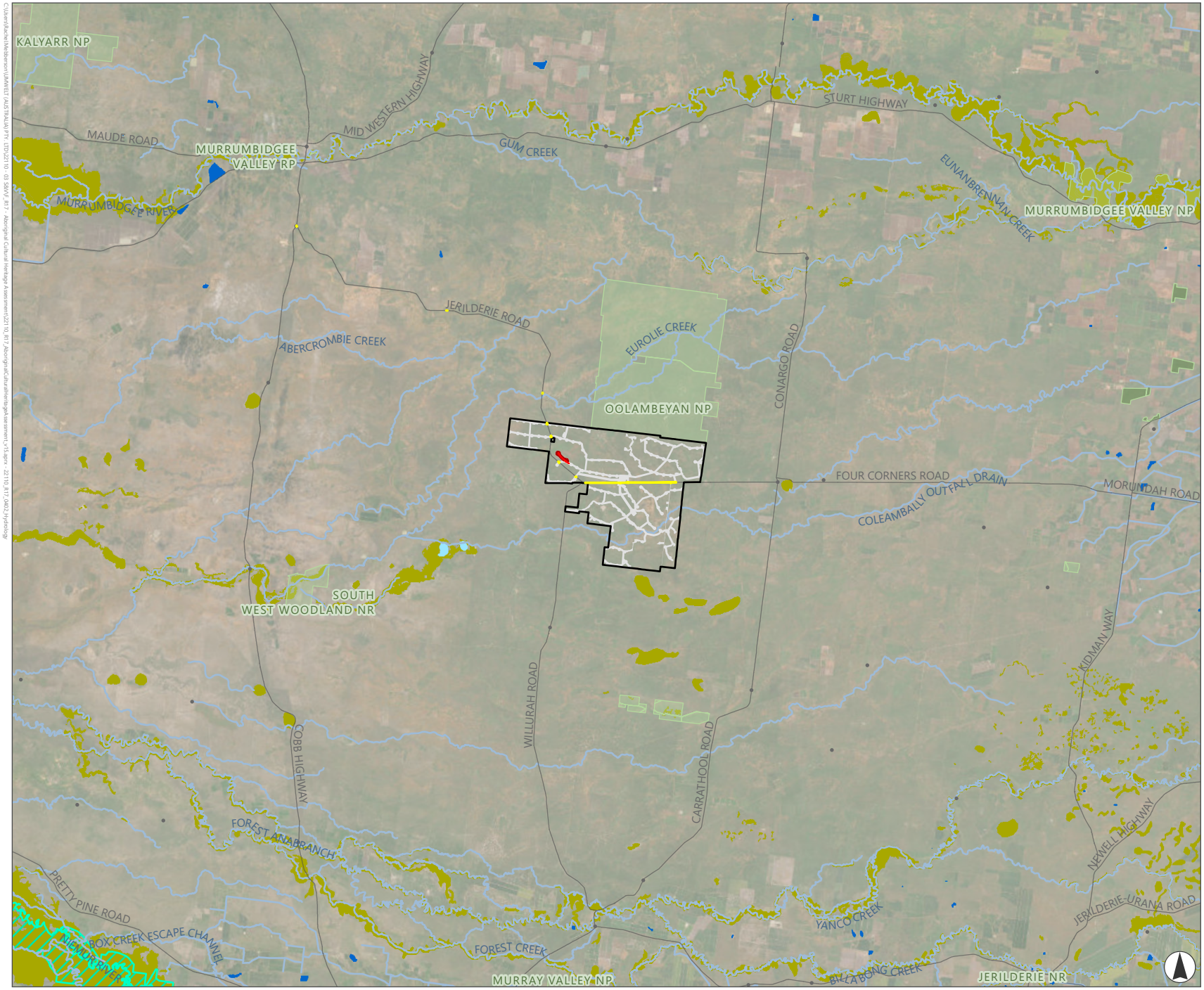
Water availability is a major influence on the range of resources available and the suitability of an area for Aboriginal occupation. Water resources are key for the identification and interpretation of areas of occupation, environment, archaeological potential and depositional formation.

The Study Area lies within the Riverina Bioregion which includes the Murray and Murrumbidgee Rivers and their major tributaries. The Study Area is approximately 40 km south of the Murrumbidgee River. Coleambally Creek (also referred to as the Coleambally Outfall Drain) traverses the southern portion of the Study Area. Eurolie Creek is located approximately two (2) km to the north and north west of the Study Area (refer to **Figure 4.2**).

Review of contemporary aerial photography of the Study Area environs suggests that ephemeral fresh water sources may have been available during peak rainfall periods, resulting in temporary water flows and/or localised waterholes suitable for intermittent faunal migration.

FIGURE 4.2

Hydrology



Legend

- Project Boundary
- Development Corridor
- Off-Site Disturbance Areas
- NPWS Reserves
- State Forest
- Ramsar Wetlands
- Floodplain Wetland
- Freshwater Lake
- Reservoir
- Hydroline
- Road

To be Removed

- Development Corridor
- Disturbance Footprint

0 5 10

Kilometres

Scale 1:600,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

4.3 Geomorphology and Soils

The Study Area falls within the Murrumbidgee Province of the Riverina Bioregion, described by Pardoe and Martin (2001) as comprising coarse sandy deposits, low source-bordering dunes and relict sand dunes of ancient rivers and lakes. At a broad level, soils within the Murrumbidgee Province are characterised by red brown earths, grey and brown clays, as well as siliceous sands on dunes and elevated features (Sahukar *et al* 2003, p.97). The Murrumbidgee Province is shown in **Figure 4.3**.

The complex geomorphology of the Riverina Bioregion is dominated by river channels, floodplains, swamps, lakes, and lunettes from the Quaternary period (NSW NPW 2003). The Tertiary-aged geological complex formed approximately 60 million years before present (BP), of which the dominant geological units comprise the Woorinen, Coonambidgal and Shepparton Formations. Following a period of subsidence, sediments formed across the alluvial plains through paleochannels, forming poorly consolidated mottled clays, silty clays and coarse to fine sand and gravels and well as intercalated reddish brown paleosols (i.e. the 'Shepparton Formation'). The Shepparton Formation forms much of the contemporary surface geomorphology of the open plains of the Riverina Bioregion, underlain by the Coonambidgal Formation. Chronological analysis of the Shepparton Formation indicates that the upper and most recent deposits of the formation date to between 20,000–30,000 years BP (Australian Stratigraphic Units Database, 2024). Mitchell (2002) describes the soil materials of the Shepparton Formation as generally comprising grey, red and brown cracking clays formed on lakes and plains, with red, yellow and brown texture contrast soils on levees. Pisolitic ferruginous (ironstone) soils are often identified within the older parts of the Shepparton Formation are equivalent to the Karoonda Surface (Kotsonis and Joyce, 2003).

Following the deposition associated with the Shepparton Formation, a period of stream incision occurred. These incised areas were filled with coarser sediments which form the late quaternary Coonambidgal Formation. During the Miocene, the sea level extended as far as Balranald (approximately 160 km west of the Study Area), which deposited marine sediments in the area. Subsequent sea level regression left prominent sand ridges. Significant sedimentation episodes during the later Tertiary provided much of the material which would be later reworked during the Quaternary, forming the landscape and soils evident within the Study Area today, consisting of sand mud, silt, evaporites, and limestone deposits. Specifically, during the Pleistocene, these deposits were reworked by aeolian activity, constructing the dune fields and sand plains of the Woorinen Formation. Soils and sediments are closely related to landforms, which in turn are closely related to formation processes and depositional regimes. Soil characteristics of the Murrumbidgee Province correlates with distance from palaeochannels. Soils and sediments trend from coarse sands and gravels within palaeochannels and become finer with increasing distance away from palaeochannel landform (**Figure 4.4**).

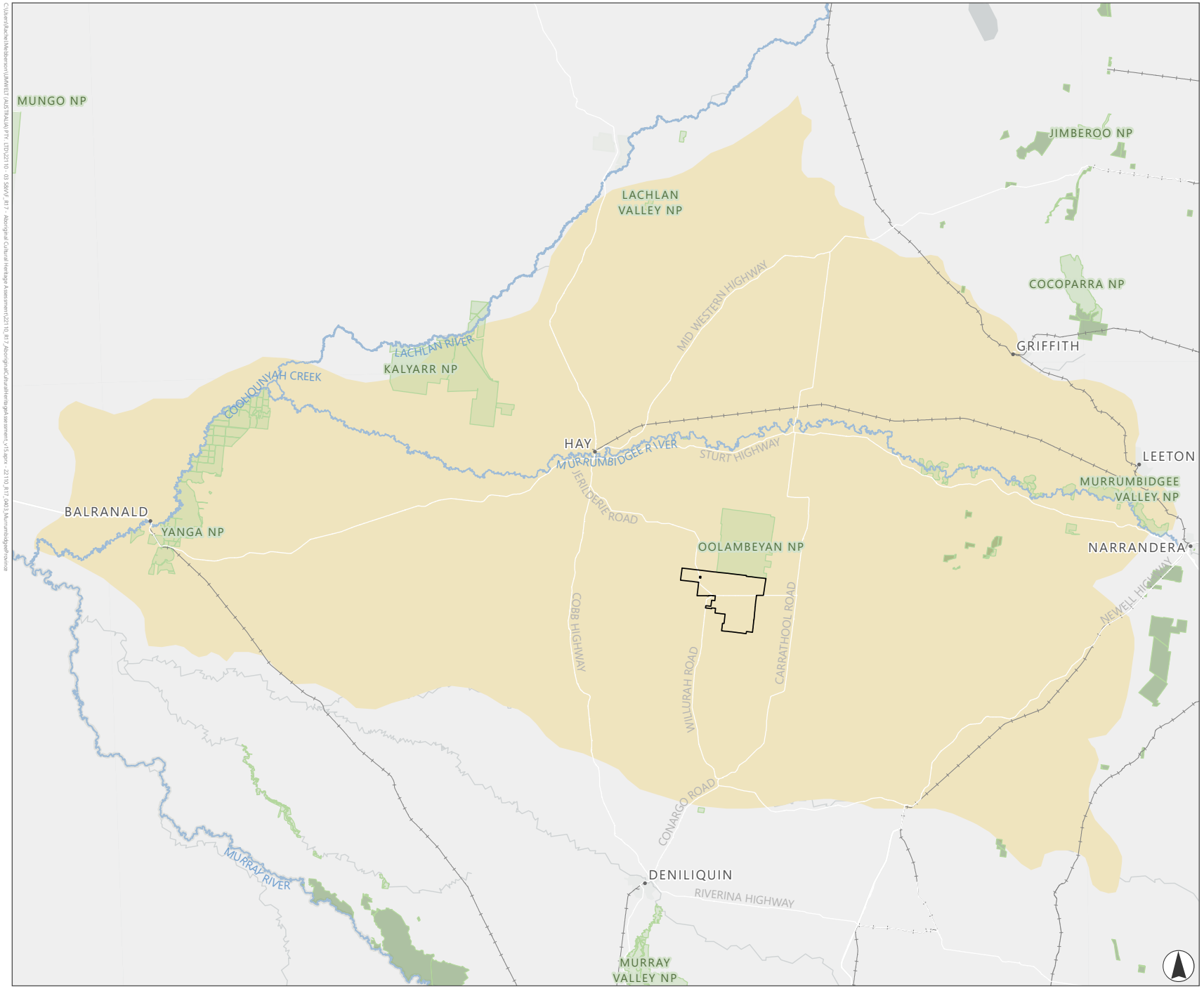
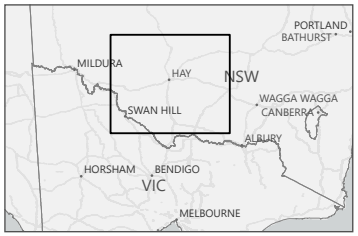


FIGURE 4.3

Murrumbidgee Province (Pardoe and Martin, 2001)

Legend

- Project Boundary
- Murrumbidgee Province
- National Parks
- State Forest
- Road
- Railway Line
- Hydroline



0 10 20

Kilometres

Scale 1:1,400,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

Within the Study Area and local environs, three (3) principal soil landscapes are identified (*sensu* CSIRO 2024):

- Plain Zone C (*pzc*) – Landforms are comprised of level shrubland plains of Cainozoic/Quaternary alluvium of the Riverine Plains, with dominant soil materials related to the region's alluvial depositional history. Generally, areas of elevated topography are comprised of red and brown earths, with soils encountered at lower levels comprised of red brown earths and brown podzolic soils. Soils developed from parent material of clays, silts, and sands from past flow regimes. Moderate to severe scalding occurs on Red Sodic soils, which usually occur near the levees of prior streams. Topsoil layers are relatively thin and typically reduced in depth as a result of post-European agricultural activities, alteration of natural vegetation regimes and destabilisation of surface soils. Sub-soils have higher proportions of soluble minerals – typically gypsum – and increased carbonates precipitated through leaching. Topsoil is generally dependent on surface lichens and cryptogams to remain consolidated. Topsoil materials, where present, are often fragile and overgrazing damages the surface crust.

- Prior Stream Variant B (*psb*) – Landscape is characterised by siliceous sands (rudosols) at higher elevations to red and brown earths (kandosols) to earths (sodosols) at lower topographies. Alluvial in origin, dating from between 100,000–30,000 years BP as paleochannels of the Murrumbidgee River system. Soils are typically dominated by non-consolidated sands with a clay component. This leads to a tendency towards wind erosion and the preferential removal of finer sediment fractions.

- Western Edge Complex (*wx*) – Plains in the western extent of the Riverine Plains. Soils are characterised by red earths (kandosols) grading to red and brown earths (chromosols/sodosols) featuring calcareous subsoils on frequently scalded mid- to lower-slopes. Lowest elevations of this soil landscape are characterised by greyish brown crusty cracking clays (vertosols) with a notable gypsum component. Parent material is likely a combination of Riverine Plains alluvium and aeolian sands and clays. Wind erosion is a notable concern. Topsoil is typically thin and fragile, easily disturbed through wind or stock activity. Large bare scalds are common.

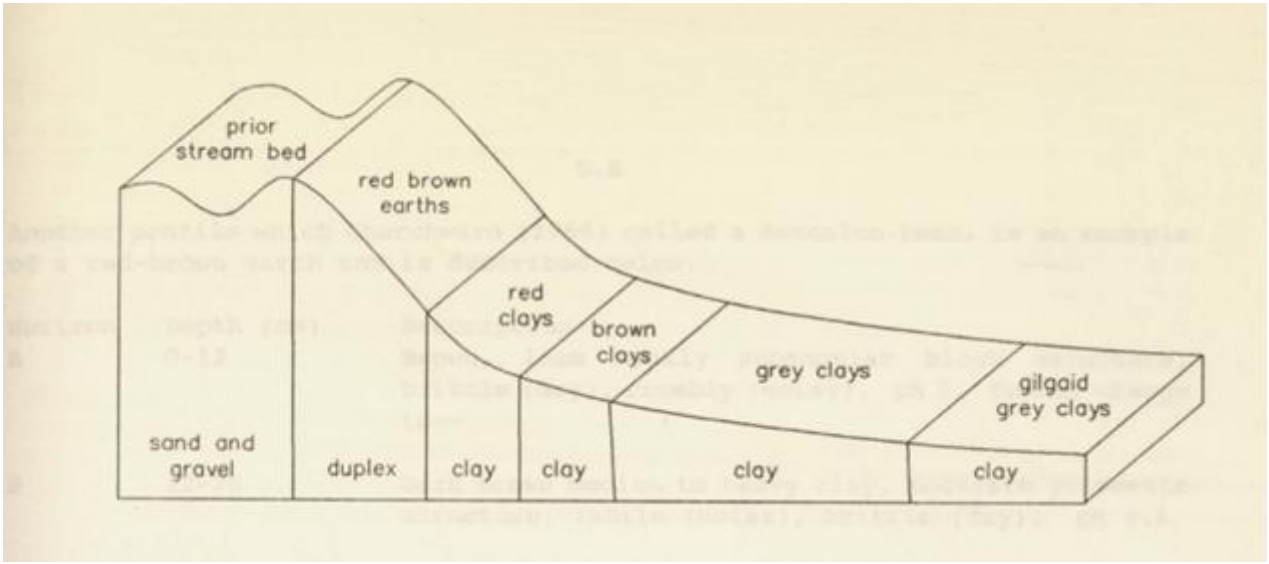


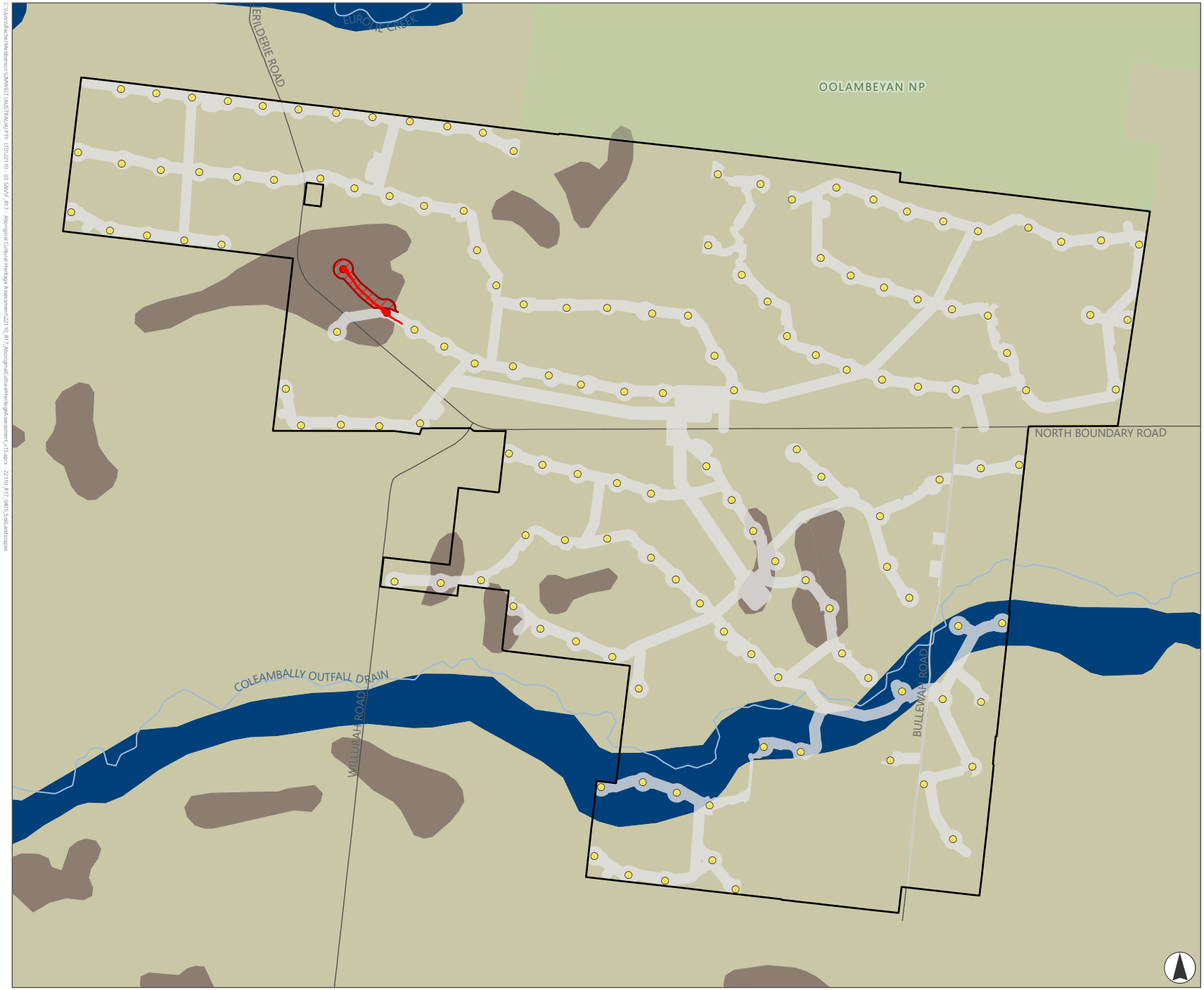
Figure 4.4 Illustration of Soil Development with Increasing Distance from Palaeochannel Landforms

Image source: Soil Conservation Services of NSW (1990. p.64).

The review of local stratigraphic mapping outlined above broadly suggests that raw materials for manufacture of flaked and/or ground lithic objects were generally absent from the immediate environs of the Study Area. At a broader regional level, the Murray Basin, a geological structural complex extending over 300,000 km of inland south eastern Australia (Brown and Stephenson 1991) and inclusive of the current Study Area, comprises strata of sedimentary rocks of Palaeozoic and Mesozoic eras and volcanics of Proterozoic, Palaeozoic and Mesozoic-age (Kingham, 1998). Since almost no geological outcrops of exist in the Riverina Bioregion (and entirely absent from the Study Area) raw material used for stone tool manufacturing would likely have been sourced from outside of the Study Area through trade and/or travel (discussed further in **Section 4.3**).

FIGURE 4.5

Soil Landscapes



Legend

- Project Boundary
- Development Corridor
- Wind Turbine Generators
- NPWS Reserves

Soil Landscapes

- Coonambidgal Formation
- Shepparton Formation
- No Formation Listed

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 1 2

Kilometres

Scale 1:110,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

4.4 Flora and Fauna

Vegetation in the Riverina Bioregion typically ranges from river red gums along watercourses, to saltbush on the plains. Natural vegetation communities within the Study Area have been extensively cleared to accommodate activities associated with agricultural processes. Much of the vegetation in the vicinity of the Study Area is grazed grassland with patches of remnant vegetation (particularly cotton bush and Callitris mixed woodland) along nearby watercourses and dams. Prior to land clearance the species reported included myall (Acacia pendula), old man saltbush (*Atriplex nummularia*) and bladder saltbush (Atriplex vesicaria). Sandy ridges of prior streams support patches of white cypress pine (*Callitris glaucophylla*), with needlewood (*Hakea leucoptera*), western pittosporum (*Pittosporum phylliraeoides*) and spear grasses (*Austrostipa* sp.) (Mitchell, 2002). Open forest areas include river red gum (*Eucalyptus camaldulensis*), river cooba (*Acacia stenophylla*), cooba (*Acacia salicina*), lignum (*Muehlenbeckia cunninghamii*), nitre goosefoot (*Chenopodium nitrariaceum*). Cumbungi (*Typha orientalis*), common reed (*Phragmites australis*) and nardoo (*Marsilea drummondii*) occur in flooded depressions. Post grazing the vegetation is now extensive grasslands of white-top, windmill grass, sand broom, and spear grasses, and have since been invaded by exotic species (Mitchell 2002).

As with vegetation, determining the pre-European occupation faunal landscape of the Study Area and environs is difficult to determine with any certainty due to past land use practices. Clearing of vegetation for grazing as well as the introduction of ungulates species and pests such as rabbits and foxes, would have vastly changed the faunal landscape. However, consideration of pre-European vegetation regimes suggests that a range of terrestrial faunal resources would have been present in the area. Locally occurring resources from freshwater environs, for example, are likely to have consisted of localised fish such as the trout cod (*Maccullochella macquariensis*), Macquarie perch (*Macquaria australasica*) among others. The freshwater rivers and wetlands also would have supported a diverse array of terrestrial mammals. A range of species of birds, reptiles, and amphibians would have also been available in open woodland areas as well as shrub and grasslands.

An assessment of potential impacts to flora and fauna has also been undertaken in the form of a 'Biodiversity Development Assessment Report' (BDAR). The BDAR provides an assessment of the biodiversity values within the Project Area, documents the application of an avoid, minimise and offset framework and assesses the likely biodiversity impacts of the Project. This BDAR has been prepared as part of the EIS documentation and in accordance with the NSW *Biodiversity Conservation Act 2016* and *Biodiversity Assessment Method* (BAM) (NSW DPIE 2020a) under the NSW Biodiversity Offset Scheme (BOS).

4.5 Land-use History

The Murrumbidgee Province was subject to Early European exploration from the 1820s with descriptions of treeless plains and good water sources bringing graziers to the region. The 1820s therefore saw the establishment of pastoral stations focused largely on cattle grazing. By the 1840s pastoral stations in the area comprised on average eighty thousand hectares (Eardley, 1999). The Bullawah property was previously part of the Willurah Pastoral Holding and sold as its own entity in 1935 (Australasian, 1935). Bullawah was a 13,816-acre freehold land which was owned by different members of the Lamb family up until 1946 (Independent Deniliquin, 1946).

The Bullawah property is mostly within the Parish of Powheep shown in (**Figure 4.6**). The property is mentioned as selling wool and sheep through various historical sources (Pastoral Times, 1942; Daily Advertiser, 1941; Riverina Grazier, 1938). Station residences and buildings for workers would have been constructed sometime after they were proposed in 1937, located south of the watercourse now identified as Coleambally Outfall Drain adjacent to Bullewah Road (**Figure 4.7**). The introduction of thousands of sheep and other grazing animals such as cattle and horses to the Hay Plains environment would have changed the landscape markedly, particularly in regard to soil formation and erosion on the plains. Although clearing of trees may not have been a significant change to the landscape the effects on native plants and grasses would have been adversely affected by grazing animals and as new species were introduced for grazing.

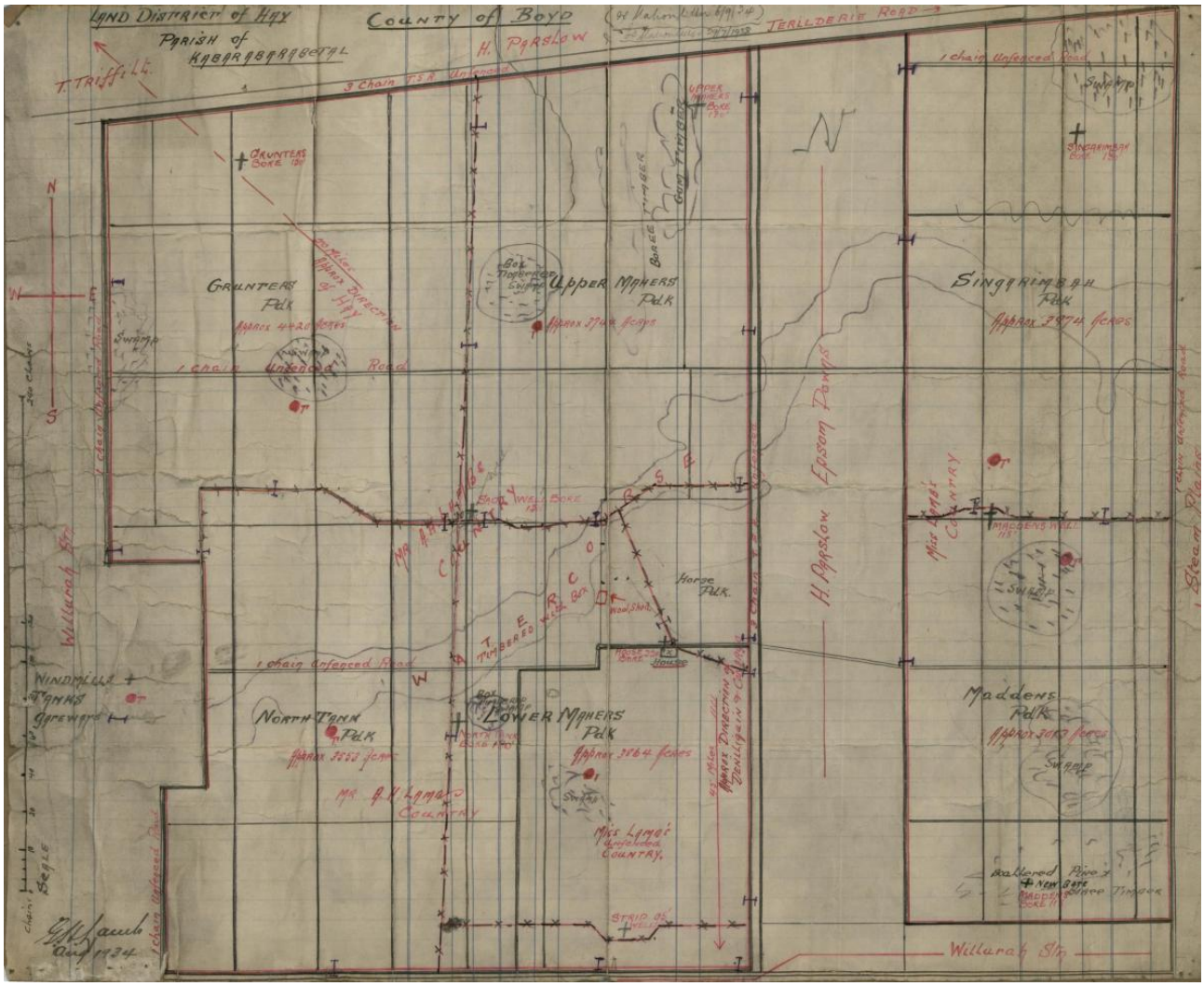


Figure 4.6 Property Drawing of Bullawah Station by Goldsbrough Mort and Co in 1937, showing locations of paddocks, watercourse identifiable as Coleambally Outfall Drain and houses and buildings

Image source: Australian National University, accessed February 2024.

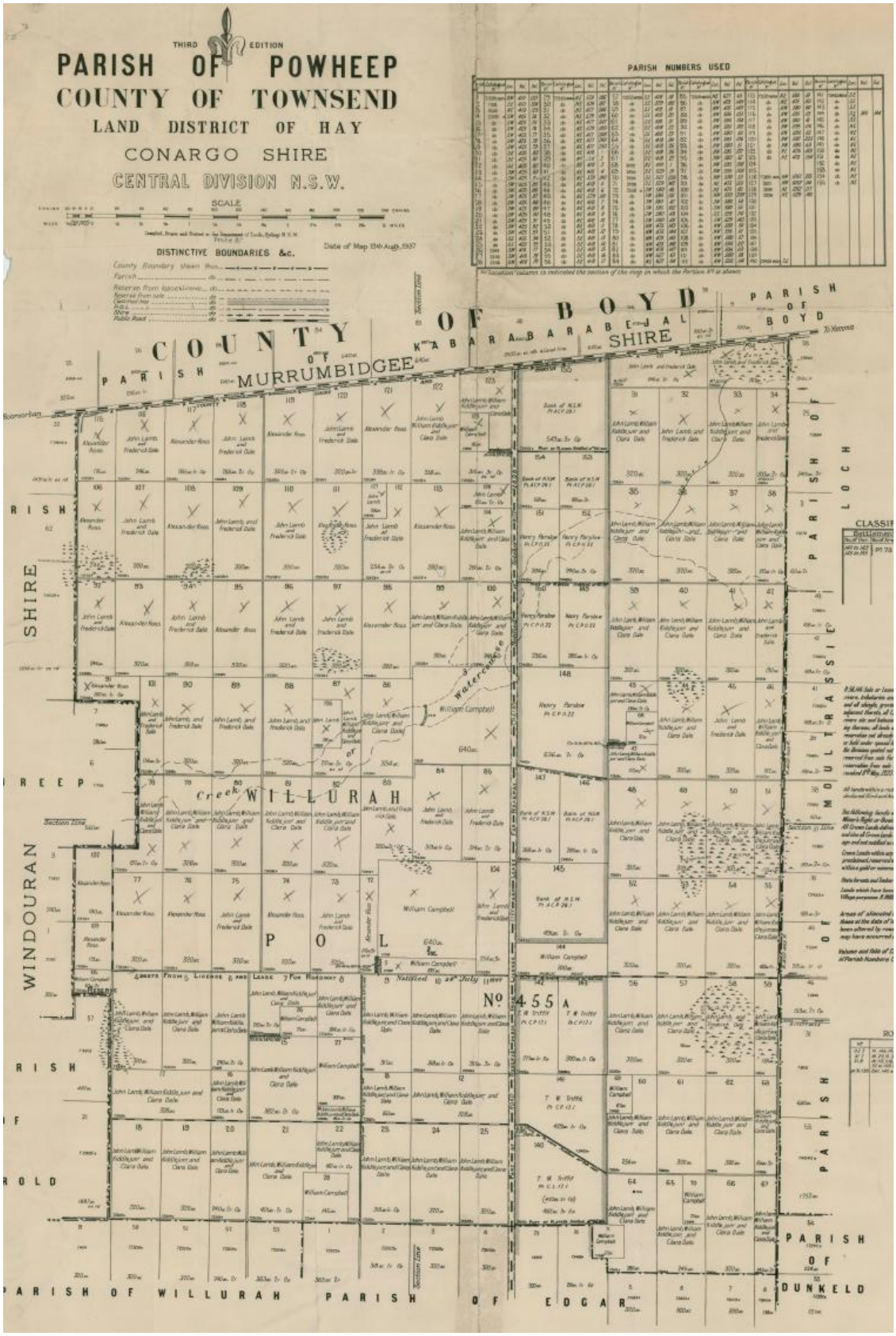


Figure 4.7 Parish Map of Powheep showing location of Bullawah, crosses indicated land purchased as part of Bullawah property from 1935 to current

Image source: Australian National University, accessed February 2024.

4.6 Key Observations

Key observations to be drawn from a review of both the environmental and Aboriginal archaeological context of the Study Area and environs are as follows:

- The topography and geology of the Study Area environs is generally homogenous which is suggestive of occupation across landscape elements such as ephemeral watercourses and localised sandy rises.
- The overall landscape of the Study Area provides access to ephemeral waterways, wetlands and waterholes which would have provided access to freshwater during periods of rainfall. Access to freshwater is integral to occupation and subsistence strategies.
- Within the Study Area, soils associated with the Shepperton Formation sandy soils have potential to retain archaeological evidence within biomantle strata (i.e., topsoil), including evidence of hearths and surface and subsurface open artefact sites.
- The flora and faunal landscapes of the Riverina Bioregion would have supported the subsistence strategies, long term occupation and movements of Aboriginal people within the Study Area.
- Factors such as erosion from the introduction of introduced species such as grazing animals is likely to have impacted on the archaeological record.
- Proposed ground disturbance associated with off-site road works is confined to visually disturbed road-side verges.

5.0 Cultural Context

5.1 Ethnohistoric Background

Mapping undertaken by Tindale (1974) indicates the Study Area generally intersects with the traditional lands of the Nari Nari, Baraparapa and Wiradjuri peoples. Previous ethnographic investigations have posited that these languages form one larger language group: the Kulin language (Schmidt, 1919) of which at least the Nari Nari and Baraparapa language groups were considered a sub-group (Hercus, 1989). There exists substantial debate on the origins, inter-relatedness, and connectivity of the languages of the region (Hercus, 1989; Blake *et al.*, 2011), however local archaeological investigations have continued to refer to the Nari Nari language group as being a part of the Kulin language group (e.g. Pardoe and Martin, 2001).

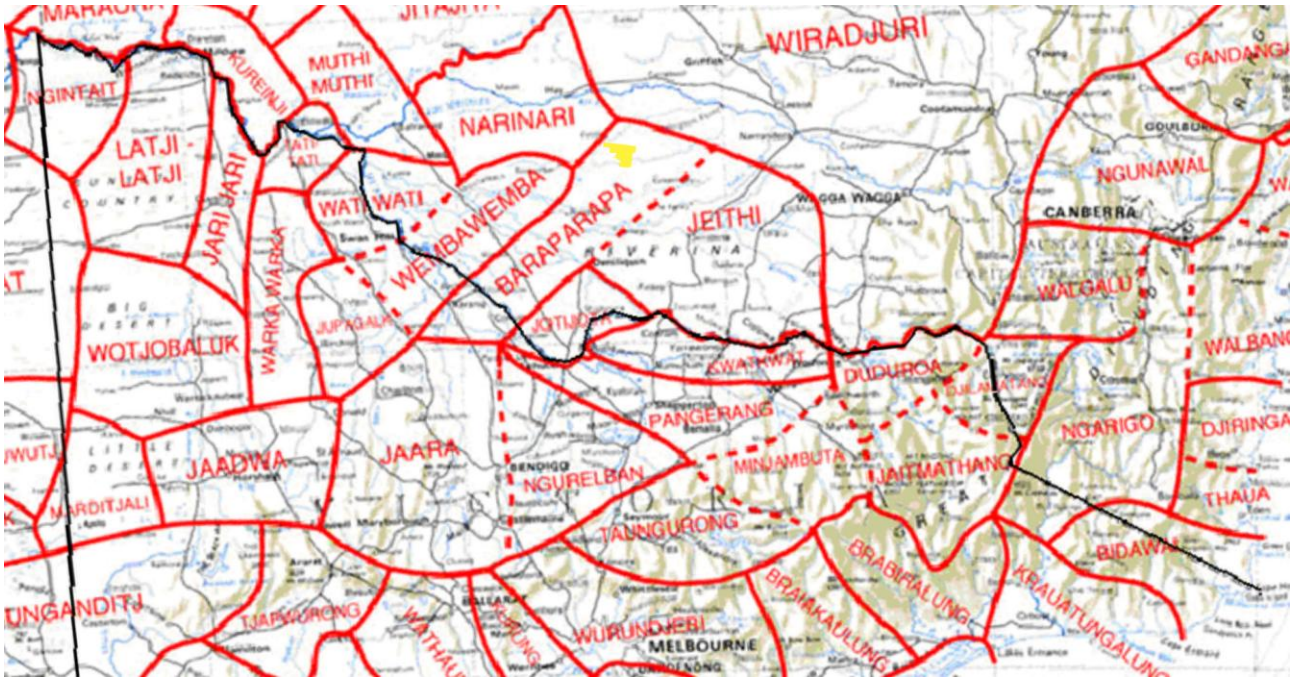


Figure 5.1 Map indicating the distribution of the Aboriginal language groups of Australia, after Tindale (1974). Approximate location of Project Area indicated in yellow

The chronology of Aboriginal occupation of the Murrumbidgee Province is analogous to the Willandra Lakes and Lake Mungo approximately 180 km to the north west, with ages of Aboriginal sites reaching over 45,000 years BP (Bowler, *et al.*, 2003). Despite this, the antiquity of the Study Area is characterised by Holocene patterns of occupation, with Aboriginal ancestral remains along the Murray River (shown black in **Figure 5.1**) dated to approximately 10,000 years BP (Pardoe, 1988; 1995). From the terminal-Pleistocene, the Murray and Murrumbidgee Rivers transitioned from wide, shallow rivers, to a narrower and more sinuous pattern, resulting in the development of small lagoons, billabongs, and swamps (Mulvaney and Kamminga, 1999: 302–3). The wetlands that developed through the early- to mid-Holocene were resource-rich, with plentiful fauna and flora for local populations developing a semi-sedentary pattern of occupation that extended through the Holocene. The variable and volatile climate of the mid- to late-Holocene would have compromised the abundance of resources of the early- to mid-Holocene favorable climatic conditions (e.g. Williams *et* al., 2010; Gliganic *et al.*, 2014). Droughts increased in intensity and frequency, drying water bodies and leaving fauna relied upon as food resources to leave the area, becoming dormant until wetter conditions returned, or perished. Despite the periodic paucity of food resources, the Murray, Lachlan and Murrumbidgee Rivers would have remained as the focal point for Aboriginal occupation though to the early 19th century as European colonists first encroached into the region (Beveridge, 1883; Mulvaney and Kamminga, 1999; Pardoe and Martin, 2001).

Following the Lachlan River from the north east, John Oxley accompanied by botanist Charles Cunningham, surveyed the Riverina Region towards Booligal in 1817, where their progress was halted by dense swamps (Eardley, 1999). In 1828 and 1831, Charles Sturt ventured to the lower Murray River in an expedition to map the Murrumbidgee River system. Sturt documented an encounter with a large gathering of 120 Aboriginal people near the junction of the Murrumbidgee and Lachlan Rivers (Sturt, 1833, in Pardoe & Martin, 2001). The expeditions to the Lower Murrumbidgee of Sir Thomas Mitchell in 1836 was one of the first notable records of Aboriginal peoples and their traditions at the time of European contact. Mitchell's observations documented the collection and the processing of bullrush root (*Typha* spp.), including roasting, on earth mounds. Mitchell (1839, pp. 80–81) stated:

- One artificial feature, not observed by me in other places, distinguishes the localities principally frequented by the natives, and consists in the lofty mounds of burnt clay, or ashes used by them in cooking. The common process of natives in dressing their provisions, is to lay the food between layers of heated stones; but here, where there are no stones, the calcined clay seems to answer the same purpose, and becomes better or harder, the more it is used. Hence the accumulation of heaps resembling small hills.

Mitchell's observations inadvertently highlighted a key tradition of peoples in the region. The significance of mounds in the cultures of Aboriginal peoples of the Riverina goes beyond a mere location for the processing of staple foods (e.g. Bonhomme 1990). Mounds were reported as being territorial markers on a flat and somewhat featureless landscape, as well as being the focal point of communal living (Beveridge 1884; Pardoe & Martin 2001). Further extra-economic importance of mounds was demonstrated in their association with ancestral burials, cemetery complexes, and funerary rites (Pardoe and Martin, 2001). Ethnographic accounts highlighted the association of mounds with the interment of ancestral remains relating to the practicality of the burying process:

- Aboriginal skeletons are frequently found in the cooking mounds…the reason for the position of these skeletons, however, can easily be explained…as grave-digging is very arduous when hands are few and the implements merely yam sticks, the easiest method…is simply enough done by scraping a hole in the friable soil of the mound (Beveridge, 1884: 21–22).

In contrast, Mitchell (1839, pp.87-88) recorded that mounds were a foci of ritual burial practices:

- Several graves, all inclosed [sic] in separate parterres of exactly the same remarkable double or triple ridges, as those formerly seen on the lower part of the Lachlan. There were three of these parterres all lying due east and west. On one … the ashes of a hut appeared over the grave. On another, which contained two graves, (one of a small child) logs of wood, mixed with long grass, were neatly piled, transversely: and in the third, which was so ancient that the enclosing ridges were barely visible, the grave had sunk into a grassy hollow. I understood from the widow that such tombs were made for men and boys only, and that the ashes over the most recent one were the remains of the hut, which had been burnt and abandoned, after the murder of the person … had been avenged.

Regionally, the Murray, Lachlan and Murrumbidgee Rivers and their associated tributaries were deeply connected to the cultural and spiritual lifeways of Aboriginal peoples of the Riverina Bioregion, providing valuable food and water resources, but also traveling routes and songlines. The Study Area and its surrounds feature a suite of microenvironments, ecologies, and topographies, affording ample accessibility to a broad range of resources (Pardoe, 2003). Resource-rich watercourses provided staple foodstuffs, including bulrush roots (*balyan)*, which were collected from within the reeds roasted over a fire, or the rhizomes extracted for consumption (Mitchell 1839). Fish and other freshwater aquatic life was an essential protein sources, including as perch, Murray cod, shellfish, frogs, and yabbies. Such foods would have been abundant in interior lake systems until around 26,000 years ago when lakes throughout the country began to dry out as a result of increased temperature.

Vegetable foods such as edible grass seeds that were cut, dried, threshed, and ground with heavy grindstones, were also consumed. Bracken Fern is abundant in the surrounds of the Project Area and would likely have featured in the traditional diet (NTSCORP, 2012: 11). William Hovell noted in 1842 that *"[i]n all the creaks [sic] there are Mussels, which the Natives get, by diving for, we always find the Shells, where they have had their fires".* Andrews (1920: 22), noted *"…the usual meeting place of the various tribes when on their annual visits to the mountains in search of the bogong or bugong moths".* Oxley's accounts demonstrated how terrestrial fauna (e.g. macropods, snakes, and possum) were also hunted (Cunningham 1817) along with waterfowl which were harvested using hunting boomerangs (Taylor and Undy, 1994). Bark canoes facilitated fishing using nets on waterbodies, however fish-traps were also used where conditions suited (Norton 1907). Sturt (1833, pp.53-56) described how "*old men alone have the privilege of eating emu… Married people alone here are permitted to eat ducks*". Freshwater mussels were collected and eaten, with small shell middens being found along the margins of waterbodies (Cunningham 1817).

Flora and fauna, and by extension food resources, were closely tied with the seasonally variable riverine landscape. Typically, during the winter months, Aboriginal peoples would occasionally venture away from the permanent water bodies towards the plains when precipitation was at its highest, and standing water could accumulate. The flat topography away from extant creek and river channels did not facilitate ready drainage, and as a result large seasonal wetland environs developed. During the warmer seasons when rains diminished, and the availability of water and food becomes scarcer on the plains. Aboriginal peoples would then return to the rivers, swamps and lakes that would become smaller, but would allow ongoing resource procurement (Beveridge, 1884).

This patterning contributed to the semi-sedentary description of Aboriginal peoples occupying the Riverina Bioregion, to the point of substantial genetic isolationism when compared to communities elsewhere in the continent (Mulvaney and Kamminga 1999, pp.306-307). Certainly, Wiradjuri peoples were recorded as being semi-nomadic and moved their camps throughout their range of about 40 km in radius according to the availability of food resources throughout the seasons (McDonald, 1993). Andrews (1920, p.35) explained that Wiradjuri peoples "*usually chose a cleared space for their camps, in the neighborhood of water, as fish and birds were their principal articles of food*" and "*although these camps must have been continuously used for long periods by large numbers, but little trace is left*" (Andrews, 1920, p.35). In 1844, George Augustus Robinson counted 50 huts with about 250 inhabitants while travelling through Wiradjuri Country (Robinson, n.d.). The extent to which these shelter types were used is uncertain; however, it would be dependent upon the availability of both the materials for building huts and access to rock shelters (which are more commonly found at the eastern extent of Wiradjuri country along the Great Dividing Range). Camp sites would often be some distance back from rivers or creeks, under trees and close to firewood (A. McDonald, 1993).

Within Nari Nari, Baraparaapa and Wiradjuri (western) Country, trade and communication networks remained robust, despite harsher seasonal hardships. Necessity, however, did require a broader network. The paucity of raw materials amenable to stone tool making in the immediate environs of the Study Area, for instance, necessitated the trading of quality stone and importation into the region. Greenstone, for example, was traded from Central Victoria for the manufacture of edge-ground axes (Brumm, 2010) while fine grained-silcrete was often traded from the Willandra Lakes Region (Schmidt and Hiscock, 2020). In such cases, specific members of the community who could speak other languages (*Ngalla Wattow)* would travel to facilitate trade and between groups (Beveridge, 1884) and were afforded special protections from neighboring communities in the undertaking of their roles. Such a robust network of inter- and intra-connectedness also facilitated the spreading of disease resulting from European colonialism. In a pattern observed across the continent, diseases such as smallpox ravaged Aboriginal communities. In some instances, smallpox reached Aboriginal communities before they had come into direct contact with Europeans (Campbell, 1985).

In regard to spiritual institution, as Attenbrow (2010) notes, commonly held beliefs in South eastern Australia include the existence of a supreme creative being. For Wiradjuri people for example, the ancestral spiritual being Baiame (also spelt Baiami), is the great creator. Baiame plays an important role in the life of young men and women and is responsible for the initiation of spiritual leaders. Baiame is believed to be present at burbungs, where he is honoured and celebrated through the telling of creation stories. Connections between the paired shape of burbung ceremonial circles and astrological features have been recorded. The larger and smaller circles are thought to mimic the Celestial Emu star constellation (Leaman and Hamacher, 2019, p.228).

6.0 Archaeological Context

6.1 Regional Context – Riverina Bioregion

6.1.1 Chronology

Archaeological research regarding the chronology of occupation within the Riverina Bioregion draws much from Lake Mungo and Willandra Lakes, located approximately 180 km to the north west of the Project Area. Sites around Lake Mungo have revealed human occupation within the region from approximately 50,000 years BP, and the oldest formal burials of Aboriginal ancestral remains from 40,000 years ago (Bowler *et al.*, 2003). In contrast, the archaeology of the Study Area and its immediate surrounds follows a typically Holocene pattern of occupation, with the oldest dated sites being Kow Swamp B (Thorne, 1975) and Coobool Creek (Brown, 1989) both returning ages of approximately 13,000 to 9,000 years BP. Mound formation that characterises the Riverina Bioregion cultural landscape is thought to have initiated in the mid-Holocene from approximately 5,000 years BP, increasing in abundance from approximately 2,000 years BP (Martin, 2011; Roberts, *et al*., 2022). Aboriginal ancestral remains dating to the mid-Holocene have also been recorded (e.g. Pardoe, 1995).

Pardoe and Martin (2001, pp.103-119), in a comprehensive review of the cultural landscape of the Murrumbidgee Province[4] of the Riverine Plain, proposed a regional predictive model for the location and character of Aboriginal sites. Water sources were noted as a key nexus point for past Aboriginal activities, with occupational frequency dropping substantially with distance away from water sources.
Major concentrations of Aboriginal sites were, in general, located where palaeochannels and modern-day major river systems intersect. In these instances, mounds and an increase in Aboriginal ancestral remains were often observed, potentially some have been interpreted as cemeteries rather than a cluster of unrelated burying of ancestral remains (e.g. Littleton, 2002). Observations by Martin (2007) expand on the predictive model set by Pardoe and Martin (2001), and include:

- Archaeological site types are considered more likely to occur on sandy paleochannel features of relatively elevated topographies.
- Open sites are more commonly encountered away from riverine grey cracking clays.
- Artefact scatters and camp ovens (i.e. hearths) are widely spread across the Murrumbidgee Province
- Sites containing Aboriginal ancestral remains appear to cluster in the western extent of the Murrumbidgee Province.

[4] Comprising 3,043,775 ha of land located in NSW between approximately 30 km west of Balranald (west) and Narrandera (east), inclusive of the current Project Area (*sensu* Pardoe and Martin 2001).

6.1.2 Burial Practices

Practices in the burial of Aboriginal ancestral remains, on a regional scale, exhibit greater than expected variability (Littleton, 2002), and has been the focus of much debate and discussion. Sites containing buried Aboriginal ancestral remains can feature the ancestral remains of a single person, or groupings of multiples (e.g. Pardoe, 2003). Within the Hay Plain, there does appear to be a trend of Aboriginal ancestral remains of a single person being found further away from water sources, whereas clusters of ancestral remains being found in closer proximity to water bodies (Pardoe, 2003, p.46). Furthermore, the distribution of mounds found in association with buried ancestral remains appears more prevalent on the western extent of the Murrumbidgee Province (i.e., west of the Study Area), argued to be the result of the function of hydrological regimes in the region and greater biological diversity (Martin 2006, p.225). Ancestral remains have been recorded across multiple landforms, including ridges and crests associated with the sands of palaeochannels, however ethnographic accounts describe a preference of local Aboriginal groups local to the Lachlan and Murrumbidgee Rivers to bury ancestral remains on the plains away from higher ground and water bodies (Mitchell, 1839).

Discussions centred on the presence or absence of cemeteries within the context of the Murrumbidgee Province have also been presented (Pardoe and Martin, 2001, p.42-47). There remains debate over what constitutes an Aboriginal ancestral cemetery, as compared to a burial cluster of ancestral remains (e.g. Pardoe, 1988; Bonhomme, 1990), with linkages between proposed cemetery complexes and landforms appearing more prevalent in the west of the Murrumbidgee Province (Bonhomme 1990, p.147–149; Martin 2006, p.225). Other arguments relating to clusters of ancestral remains rather than cemetery complexes comes from Littleton (1999), who posited that instead of the large cemeteries in the west, the eastern Murrumbidgee Province features a higher frequency of the ancestral remains of single individuals buried in association with mounds (Littleton, 1999; 2002).

The association of Aboriginal ancestral remains and mounds also warrants attention. Mounds that are visible in the region of the Study Area are commonly recorded as featuring Aboriginal ancestral remains (e.g. Berryman and Frankel, 1984; Klaver, 1998; Pardoe and Martin, 2001; Martin, 2006). Explanations for this association range from purely practical reasons of the mound soils being easier to dig (e.g. Beveridge, 1884, p.21–22), to the mounds forming a key focus in the process of the funerary process (e.g. Mitchell, 1839: 87–88).

6.1.3 Mounds

Mounds are one of the most visible archaeological site types within the Murrumbidgee Province, where the slightest increase in elevation is obvious. The chronology of mound formation within the Murrumbidgee Province is thought to range from the mid-Holocene, with dated sites from approximately 5,000 years BP, with mound formation increasing from 2,000 years BP (Martin, 2011; Roberts, *et al*., 2022). Mounds are considered to form through the repeated camp oven activities, where the ground is dug, clay heat retainers deposited and buried with food (Martin, 2007). The repeated baking of the sediments and soils, coupled with the increasing incorporation of relatively erosion-resistant clays results in the formation of mounds, leading to the interpretation of this site type as part of a constructed landscape (Martin, 2007). This site type is associated with the processing of carbohydrate-rich plants such as *Typha* spp., *Bolboschoenus* spp., and *Triglochin* spp. rhizomes, wetland plant species not easily digested without such processing strategies. Numerous ethnographic accounts of the use and likely processes that result in mound formation through human activity have been recorded (e.g. Mitchell, 1839; Beveridge, 1883; Kirby, 1895; Richards, 1902; Stone, 1911).

Mounds are most commonly found adjacent to modern water courses/bodies, as well as palaeochannels, and often in association with charcoal, ash, faunal remains, stone tools and Aboriginal ancestral remains (e.g. Berryman and Frankel, 1984; Klaver, 1998; Pardoe and Martin, 2001).

6.1.4 Cooking Features

Numerous ethnographic accounts of the use of hearths, and especially ovens, have been recorded throughout western NSW (e.g. Mitchell 1839; Beveridge 1883). Following a distinction by Pardoe and Martin (2001, p.71), hearths within the context of the Murrumbidgee Province are a surface feature resulting from the starting and burning out of a campfire. In contrast, ovens are larger features which are dug into the ground. Ovens are larger than hearths, and the use of clay heat retainers more obvious than heat-baked soil that may result from a hearth. Hearths are generally found in open country adjacent to ephemeral watercourses. While also found adjacent to water bodies, ovens are typically located near larger standing bodies of water such as lakes, lagoons, or swamps, but also raised palaeochannel boundaries. Inferences could be made about the intensity of food processing activities being conducted at each, and this then resulting in the choice of constructing either a hearth or oven.

Pardoe and Martin (2001: 54, 83) posit that repeated oven-building activity, and the agglomeration of oven structures could result in mound formation, as repeated baking of clays and surrounding soils likely harden and consolidate sediments, promoting erosion resistance.

6.1.5 Culturally Modified Trees

While carved and/or engraved trees (e.g. Spry *et al*., 2023) are not known in the region, other forms of culturally modified trees, typically scarred trees but also ring trees (Martin, 2006, p. 255), are common where old-growth trees have avoided historic land clearing (Pardoe and Martin, 2001; Humphries, 2007). The most common scar-bearing trees are large River Red Gum (*Eucalyptus camaldulensis*), however various species of Box (*Eucalyptus* spp.) trees also bear scars (Lyons, 1988).

It is argued that most scarred trees throughout the Murrumbidgee Province are the result of raw material gathering, or a byproduct of subsistence strategies (Pardoe and Martin, 2001), with the bark removed from living trees resulting in large scars for the making of canoes, shields, or coolamon (e.g. Tucker, 1977 in Pardoe and Martin, 2001: 29-30). Instances of culturally scarred trees representing ritual or ceremonial purposes are recorded however, denoting boundary markers of ceremonial grounds (e.g. Curr, 1883) or marking the location of burials (e.g. Martin, 2006).

Scars can also be the result of the chopping of foot-holes to hunt possums inhabiting the upper canopy (e.g. Cunningham, 1817; Ernest Gribble, in Pardoe and Martin, 2001, p.30). The scars that are left from the bark removal is therefore highly variable, and dependent on the purpose intended for the removed bark. Scars could be metres in length in the case of bark canoes, or small notches in the case of foot holes.

6.1.6 Open Artefact Sites

Isolated lithic artefacts and lithic artefact scatters are likely the most abundant archaeological site type across the Murrumbidgee Province. Lithic technologies in the region are characterised by microblade industries seemingly intending to maximise available resources (Pardoe and Martin, 2001). Small split cores <20 mm in size formed via semi- and bipolar techniques are relatively common, however complete cores are exceedingly rare (Pardoe and Martin, 2001, p. 88). Backed blades reminiscent of Bondaian forms are recorded.

Generally, raw material availability and poor-quality compromises the production of 'classic blades' (Pardoe and Martin 2001, p.89). Blades and scrapers are generally <20 mm in size. Ground stone implements including grinding stones, mortars and pestles are found across the Murrumbidgee Province, though are most likely found in closer to proximity to the river floodplain (Pardoe and Martin 2001, p.98).

Edge ground axes, including fragments, are occasionally found, and most commonly in association with mounds. It should be noted that no sources of greenstone are known in any close proximity to the Study Area, though sources at Mt. William are known, potentially indicating the extent of mobility and trade networks of the region (e.g. Brumm 2010).

6.1.7 Lithic Raw Material Sources

Raw materials of Murrumbidgee Province lithic artefacts are dominated by silcrete and quartz, with some less abundant materials including chert, quartzite, hornfels and meta-volcanics recorded in less abundant quantities (e.g. Pardoe and Martin 2001; Niche 2015; Biosis 2017). Chalcedony has been recorded at one (1) single site (Klaver 1998). General trends indicate that quartz is most prominent in the southern extent of the Murrumbidgee Province, with higher proportions of quartzite and hornfels in the northeast (Pardoe and Martin 2001, p.97). Sources of silcrete are not readily available within the region, with silcrete nodules as well as coarse-grained quartzite known to occur at Rankin Springs (Martin 1996a, in Pardoe and Martin, 2001) approximately 150 km to the north east of the Study Area.

Further silcrete sources are recorded at Swan Hill approximately 160 km to the south west of the Study Area (Witter in Pardoe and Martin 2001: 90). Further away, flakeable-sized silcrete fragments being exposed have been recorded on the shores of Lake Leaghur and Lake Mungo of the Willandra Lakes approximately 190 km to the north west (Allen, 1998 Bowler, 1998; Hiscock and Allen, 2000. Quartz artefacts consistently feature cortex, potentially indicating local sources, though comparatively quartz is rare in the northeast of the Murrumbidgee Province compared to the south west (Pardoe and Martin, 2001, p.98).

Stone suitable for ground-edge manufacture, may have been sourced from the Mt William greenstone quarry in Central Victoria. McBryde and Watchman's petrological and ethnohistorical analysis of greenstone axe distribution patterns demonstrated that raw greenstone and axes preforms were traded into the Riverina and south western NSW (McBryde and Watchman, 1976, p.170), thereby providing evidence of how social factors may have outweighed technological concerns in the production and exchange of lithic materials and/or objects. Brumm (2010) explored the symbolic value of the greenstone beyond basic economic needs, demonstrating how raw materials and lithic technology could be embedded in cultural perceptions of landscape and the Aboriginal belief systems.

6.2 Local Archaeological Context

The Aboriginal Heritage Information System (AHIMS) database, administered by Heritage NSW, contains records of all Aboriginal objects reported to Heritage NSW in accordance with Section 89A of the NPW Act. It also contains information about Aboriginal places, which have been declared to have Aboriginal cultural significance. Recorded Aboriginal objects and declared Aboriginal places are defined under the NPW Act as 'Aboriginal sites'.

A search of the AHIMS register was undertaken on 8 July 2025 covering an approximate 20 km buffer centred on the Study Area (i.e., the 'AHIMS search area'; AHIMS searches #1021745, #1021744 and #1021743) identified 177 Aboriginal sites, as shown in **Table 6.1**. Records of these searches are provided in **Appendix B** of this report. Of those, 32 were recorded by Umwelt during the 2022 survey program and are omitted from this discussion (refer **Section 7.2** and **Appendix A**), resulting in 145 recorded Aboriginal sites (**Figure 6.1)**. Of those, approximately 21 Aboriginal sites were registered by others following Umwelt's fieldwork program but fall outside the Study Area. Those Aboriginal sites registered following Umwelt's field program are differentiated in **Figure 6.1.**

As is typical for south eastern Australia, open artefact sites (comprising one (1) or more stone artefacts, with or without associated areas of potential archaeological deposit (PAD) and/or secondary features) were the most common site type represented within the AHIMS search area, accounting for 40% (n=58) of known sites. As is common in the Riverina Bioregion, hearths[5] were also well-represented, accounting for 26.2% (n=38) of known sites.

For the purposes of this report, 'site complexes' are defined as open artefact sites consisting of one (1) or more lithic objects and hearth/s in proximity. Following, site complexes accounted for 16.6% (n=24) of known site types. Collectively with the forementioned, sites containing lithic objects (artefacts) and hearths are the dominant sites represented within the AHIMS search area. Cultural modified trees (comprising trees exhibiting cultural modification, scarring or carving) were comparatively less common, accounting for 10.3% (n=15) of the total reported site types in the AHIMS search area.

The presence of recorded areas of PAD attest largely due to the archaeological investigations undertaken within the AHIMS search area and accounted for 4.1% (n=6) of the AHIMS search results. Earth mounds were, by comparison, relatively infrequent with only two (2) sites identified. A single water hole and a single grinding groove site were identified within the AHIMS search area.

Table 6.1 AHIMS Search Results

Site Type	Count (n)	Percentage
Open Artefact Site	58	40
Hearth	38	26.2
Site Complex	24	16.6
Modified Tree (Carved or Scarred)	15	10.3
Potential Archaeological Deposit (PAD)	6	4.1
Earth Mound	2	1.4
Water Hole	1	0.7
Grinding Groove	1	0.7
Total	**145**	**100.0%**

Of those Aboriginal sites reported in the AHIMS search results, four (4) Aboriginal sites and/or areas of PAD lie within the Study Area as shown in **Figure 6.1.** Of those, two (2) fall within the Development Corridor and off-site roads works area; being 'PEC-E-PAD25' (AHIMS # 48-6-0230) and 'PEC-E-PAD24' (AHIMS ID #48-6-0233). Two (2) open artefacts sites 'PEC-E-38' (AHIMS ID #48-6-0160), and 'PEC-E-39'

[5] Concentrations of heat-fractured rock or clay common in some areas of western New South Wales, and frequently identified as the eroded remains of 'heat-retainer hearths', a type of earth oven used in the past by Aboriginal people to cook food (Fanning et al., 2009, p.1).

(AHIMS ID #48-6-0161) have boundaries that fall outside the Development Corridor and/or off-site roads works area.

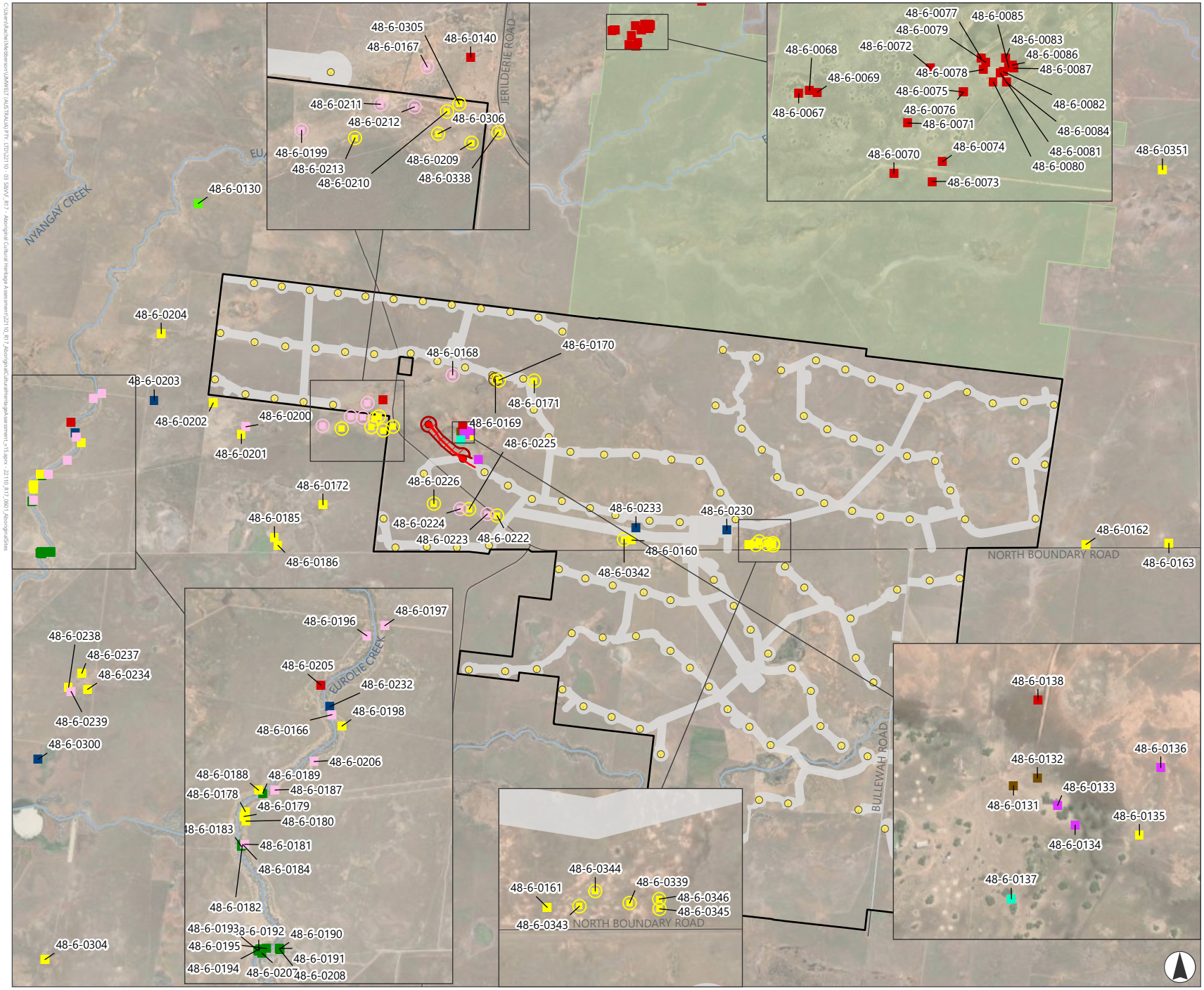
Details for all four (4) sites are provided in **Table 6.2** below.

Table 6.2 Aboriginal Sites within the Study Area

AHIMS ID	Site Name	Description
48-6-0233	**PEC-E-PAD24**	Comprising an area of PAD located approximately 70 m north of North Boundary Road described as displaying low levels of "deep underground disturbance…. associated to high levels of soil erosion and bioturbation of the area as well as trampling, water and vehicle movement" (Navin Officer 2022, p.133). A single (1) lithic object was recovered from targeted test excavation within the footprint of a proposed electrical transmission structure. Assessed as retaining low potential for intact subsurface archaeological deposits, though also noting that "the remaining area of PEC-E-PAD24 must still be regarded as having potential to contain Aboriginal cultural objects/deposits" (Navin Officer 2022, p.151).
48-6-0230	**PEC-E-PAD25**	Comprising an area of PAD spanning Northern Boundary Road, covering an area 1,070 m x 630 m (67 ha) and described as displaying "evidence of continuous ground disturbance" (Navin Officer 2022, p.134). Two (2) lithic objects recovered from the footprints of two (2) proposed electrical transmission structures. Assessed as retaining "low potential for undisturbed subsurface archaeological material to be present" (Navin Officer 2022, p.134), though also noting that "the remaining area of PEC-E-PAD25 must still be regarded as having potential to contain Aboriginal cultural objects/deposits" (Navin Officer 2022, p.151).
48-6-0160	**PEC-E-38**	Comprising a low-density surface artefact scatter located 270 m north of North Boundary Road. The site comprised approximately six (6) quartz, chalcedony and fine-grained siliceous flaked objects in a 20 m x 20 m footprint.
48-6-0161	**PEC-E-39**	Comprising a low-density surface artefact scatter located 120 m north of North Boundary Road. The site comprised approximately thirty (30) quartz, quartzite and silcrete flaked objects in a 200 m x 100 m footprint.

FIGURE 6.1

Aboriginal Sites



Legend

- Project Boundary
- Development Corridor
- Wind Turbine Generators
- NPWS Reserves

AHIMS Search Results

- Culturally Modified Tree
- Earth Mound
- Earth Mound - New Site
- Grinding Groove
- Hearth
- Open Artefact Site
- Open Artefact Site - New Site
- Open Artefact Site w/ Hearth
- Potential Archaeological Deposit (PAD)
- Site Complex
- Site Complex - New Site
- Water Hole

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 2 4

Kilometres

Scale 1:140,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

6.3 Previous Assessments

The Hay Shire, Murrumbidgee and Edward River LGAs and environs have been subject to a limited series of Aboriginal cultural heritage and archaeological investigations, with those primarily associated with renewable energy and transmission infrastructure projects. Many of these are ongoing and were not available for review. For contextual purposes, the results of a selection of these investigations, including those undertaken within and/or near the current Study Area, are summarised in **Table 6.3**.

Table 6.3 Previous Aboriginal Cultural Heritage and Archaeological Assessment

Author/Assessment	Summary
Gollan, K. 1982. Archaeological Survey of the Route of a proposed Electricity transmission Line from Hay to Darlington Point	Gollan undertook survey of 120 km of a 90 m wide easement. Notable hearths, artefact scatters and scarred trees were identified. In general, artefact scatters and hearths were identified in proximity to known water resources. Quartz was the dominant raw material used to manufacture stone tools, which also displayed chronological consistencies with eastern NSW stone tool technologies.
Gilding, J (nd) Assessment of Aboriginal mound sites, Newmarket Station, Hay, NSW	Gilding undertook desktop and survey of sites on behalf of Hay LALC. From the desktop assessment, Gilding confirmed that the area of the Murrumbidgee around Hay indicated a high frequency of Aboriginal sites and of varied site typologies. Previously recorded sites reviewed by Gilding suggested an overall pattern of association with the contemporary main channel of the Murrumbidgee River and extending south into its former floodplain and the rangelands of Toogimbie and Pevensey West. The seven (7) sites recorded by Gilding during the inspection was generally consistent with the local archaeological model.
Elphick, B and Elphick, D. 2004. An [sic] Historical & Biographical Record of the Warangesda Aboriginal Mission/Station, Darlington Point NSW	Elphick and Elphick documented the history of the Warangesda Aboriginal Mission/Station near Darlington Point, approximately 65 km east of the Study Area. Established approximately 5 km from the Darlington Point township by Reverend John Brown Gribble in 1880, Gribble aimed to provide local Aboriginal residents with a safe community away from the "den of inequity" that was Darlington Point at the time. The site was chosen in consultation with Wiradjuri peoples, suggesting that it was close to a ceremonial ground and may have contained other spiritual sites. A school and accommodation facilities were established on the site, which operated until 1924 when it was closed. A cemetery which was purportedly house the remains of approximately 200 individuals also occupies the site.
Biosis. 2017. Hay Sun Farm, NSW Aboriginal Cultural Heritage Assessment Report. Report for Plains SF No1. Pty Ltd.	Biosis undertook an Aboriginal cultural heritage assessment of the Hay Sun Farm (the 'subject site'), a large-scale solar generation facility located approximately 50 km north west of the current Study Area. A review of background resources and the AHIMS database identified 36 registered Aboriginal sites in the vicinity of the subject site. An archaeological field survey was completed in consultation with the local Aboriginal community and with participation from identified RAPs. This survey program resulted in the identification of a further 42 Aboriginal sites. Identified site types included artefact scatters, hearths, earth mounds, culturally modified trees, and complex sites. Two (2) of the Aboriginal sites also had historical objects indicating that they were post-contact sites. In response to the identification of additional Aboriginal sites, and the recognition of the potential significance of the site, the proposed development footprint was modified in order to mitigate and minimise harm to known Aboriginal sites. Aboriginal stakeholders considered the subject site to contain a high level of cultural significance and ongoing consultation with the community was recommended. No further archaeological investigations were recommended prior to works commencing.

Author/Assessment	Summary
ERM. 2022. Keri Keri Wind Farm, Aboriginal Cultural Heritage Assessment Report. Draft. Report for Acciona Energy Australia Global Pty Ltd.	ERM undertook an Aboriginal cultural heritage assessment for the proposed Keri Keri Renewable Energy Project (the 'subject site'), a combined wind farm, solar farm and battery storage facility located 31 km east of Balranald. The subject site is situated approximately 120 km west of the current Project Area. The assessment predicted that evidence of past Aboriginal occupation would likely be encountered in association with streams, rivers, or creek lines, and further identified that increased aridity to the wider Riverine Plains may have restricted the availability of fresh water. The pattern of site distribution identified strongly indicated that the vast majority of previously registered Aboriginal sites are located within three (3) km of a major watercourse or waterbody. Furthermore, it was predicted that a higher concentration of Aboriginal sites would be present within channelled, depressed, or scalded landforms, often associated with the active modern floodplain. Post depositional processes including impacts from flooding and bioturbation are likely to have resulted in the movement of archaeological deposits, potentially skewing the archaeological record. A search of the AHIMS database identified six (6) registered sites within and twenty-two (22) registered sites in proximity to the subject site. Identified site types included ancestral burials, earth mounds, areas of PADs, hearths, artefacts (isolated or scattered) and culturally modified trees. An archaeological field survey program was completed in consultation with the local Aboriginal community, consisting of twenty-five (25) survey units. Newly identified Aboriginal sites included artefact sites (isolated or scattered), ancestral burials, hearths, earth mounds and areas of PAD. Four (4) of the Aboriginal sites contained evidence of worked glass, suggesting post-contact sites. A total of 209 new Aboriginal sites were identified during the assessment.
Jacobs. 2022. Yanco Delta Wind Farm Technical Report – Aboriginal Cultural Heritage Assessment Report. Report for Virya Energy.	Jacobs undertook an Aboriginal cultural heritage assessment for the proposed Yanco Delta Wind Farm (the 'subject site'), located approximately 15 km south-east of the current Project Area. A desktop search of the AHIMS database identified two (2) registered Aboriginal sites within the curtilage of the subject site. The predictive model completed for the subject site concluded that culturally modified trees were possible at locations with remnant native vegetation, stone artefacts may be identified in proximity to road verges and/or within 200 m of watercourses and that siliceous sand landscapes have a higher potential to contain Aboriginal objects. An archaeological field survey was undertaken, with a focus on areas of higher visibility/exposure, elevated landforms, watercourses/waterbodies, and mature trees. The survey identified eight (8) new Aboriginal sites, comprising artefact scatters, hearths, areas of PAD and complex sites. Artefact sites represented the dominant site type identified, consisting of silcrete, quartz, quartzite, and sandstone artefacts. The results of the artefact analysis show that grindstones, complete flakes, single platform cores, multi-platform cores, and flaked pieces were identified. The subject site was considered to be of moderate cultural heritage significance. It was anticipated that of the eight (8) Aboriginal sites within the subject site, four (4) may be partially impacted and two (2) sites would be directly impacted by the proposed works.

Author/Assessment	Summary
Navin Officer Heritage Consultants. 2022. EnergyConnect Project, NSW Eastern Section. Aboriginal Cultural Heritage Assessment Report. Report for Transgrid	Navin Officer undertook an ACHA to support the EIS for the EnergyConnect Project, NSW Eastern Section. The assessment area comprised a 540 km linear corridor between Buronga and Wagga Wagga (the 'subject site'). Portions of the study passed through the current Study Area, generally parallel to North Boundary Road. Survey was completed within a 100 m corridor and also included location-specific visual assessment at proposed brake and winch locations and proposed camp location outside of the survey corridor. Field survey was undertaken between May and September 2021. The pedestrian survey program was conducted by multiple survey teams, with an emphasis on flat alluvial landforms and areas of higher ground surface visibility, and existing areas of PAD. The survey program identified 91 Aboriginal sites. Isolated artefacts and artefact scatters were the most common site types recorded, accounting for 50.5 % (n=46) and 29.67% (n=27), respectively. Culturally modified trees (n=9, 9.89%), hearths (n=5, 5.49%) and earth mounds (n=3, 3.29%) were comparatively uncommon. A single shell midden (n= 1, 1.09%) was also identified. Aboriginal sites identified during the survey were generally located within elevated alluvial landform elements adjacent to flat plains. Generally, Aboriginal sites were assessed to be in fair condition owing to localised ground disturbance from agricultural activities. Area of PAD associated with surficial artefact sites were, in general, assessed as having moderate to high archaeological potential. Note: a subsequent test excavation program was completed after the public exhibition phase of the project. In general, surficial artefact assemblages were assigned low scientific significance due to either poor condition or low subsurface archaeological potential. NOHC noted that extensive portions of the broader subject site, inclusive of the current Study Area, had been impacted by grazing activities. The Navin Officer 2021 survey program recorded four (4) Aboriginal sites within the current Study Area. 'PEC-E-PAD24' (AHIMS ID #48-6-0233), 'PEC-E-PAD25' (AHIMS ID #48-6-0230), 'PEC-E-38' (AHIMS ID #48-6-0160) and 'PEC-E-39' (AHIMS ID #48-6-0161). Aboriginal site 'PEC-E-PAD24' (AHIMS ID #48-6-0233) was recorded as an area of PAD located approximately 70 m north of North Boundary Road. Comprising an irregular shaped area of 725 m x 540 m, the area of PAD was noted as retaining "low levels of deep underground disturbance". A single lithic object was recovered from the subsequent test excavation program. Aboriginal site 'PEC-E-PAD25' (AHIMS ID #48-6-0230) was initially recorded as an area of PAD comprising an irregular area of 1,070 m x 630 m along a portion of North Boundary Road. The area of PAD was recorded in association with the nearby surficial artefact scatter site 'PEC-E-39' (AHIMS ID #48-6-0161). Subsequent test excavation identified two (2) subsurface objects. Aboriginal site 'PEC-E-38' (AHIMS ID #48-6-0160) was recorded as a surficial artefact site located approximately 270 m north of North Boundary Road. Occupying an area of 20 x 20 m, six (6) discrete lithic objects were recorded within the site boundaries. Flaked lithic objects manufactured from quartz, fine grained siliceous[6] (fgs) and chalcedony were identified.

[6] Fine grained siliceous (fgs) is a term typically assigned to high silicate rock types that cannot be readily identified in-field.

Author/Assessment	Summary
ERM. 2024. The Plains Wind Farm, Aboriginal Cultural Heritage Assessment Report. Report for Engie Australia and New Zealand.	ERM undertook an Aboriginal cultural heritage assessment for the proposed 'The Plains Wind Farm' (the 'subject site'), located approximately 15 km south of Hay and within the boundary of the Hay Local Aboriginal Land Council. A desktop search of the AHIMS database identified a total of 48 previously registered Aboriginal sites within the curtilage of the subject site, consisting of artefacts, hearths, modified trees, and earth mounds. The Aboriginal cultural heritage assessment prepared for the subject land EIS notes that 41 of these Aboriginal sites are valid. An archaeological field survey was undertaken and identified a total of 93 new Aboriginal sites, comprising artefacts, hearths, areas of PAD and modified trees. The Aboriginal cultural heritage assessment prepared for the subject land EIS notes that based on the current project footprint potential harm to 54 sites has been identified. Proposed key measures to manage and mitigate impacts to identified heritage sites (including the future undertaking of archaeological test or salvage excavations for the 54 sites which would be harmed within the current project footprint) are also provided.
ERM. 2024. The Plains Solar Farm, Aboriginal Cultural Heritage Assessment Report. Report for Engie Australia and New Zealand.	ERM undertook an Aboriginal cultural heritage assessment for the proposed 'The Plains Solar Farm' (the 'subject site'), located approximately 25 km south of Hay and within the boundary of the Hay Local Aboriginal Land Council. A desktop search of the AHIMS database identified a total of two (2) previously registered Aboriginal sites within the curtilage of the subject site, consisting of artefacts and a hearth. An archaeological field survey was undertaken and identified a total of 16 new Aboriginal sites, comprising artefacts, hearths, and areas of PAD. The Aboriginal cultural heritage assessment prepared for the subject land EIS notes that based on the current project footprint potential harm to 12 sites has been identified. Proposed key measures to manage and mitigate impacts to identified heritage sites (including the future undertaking of archaeological test or salvage excavations for the 12 sites which would be harmed within the current project footprint) are also provided.

6.4 Archaeological Predictions

The review of existing environmental and archaeological context for the Study Area and regional environs presented in earlier sections of this report identify evidence of widespread Aboriginal occupation and associated activities. Central to the prediction of Aboriginal site distribution across a landscape, Aboriginal lifeways, are in part, reflected in landscape and environment variables (refer to **Section 5.1**). Evidence of Aboriginal occupation of the Riverina Bioregion from approximately 50,000 years BP attests to the adaptability of peoples across a variety of environmental and climatic conditions, which is subsequently reflected in the archaeological record.

At varying times, the Study Area and environs likely contained potable water, were rich in edible resources and the broadly flat topography with interconnected dune rises would have provided ample habitation sites and facilitated regional travel. The distribution of recorded Aboriginal sites within the Study Area generally attests to peoples targeting elevated landform elements (i.e. dunes) adjacent to flats which, during rainfall, would have provided access to ample freshwater resources. Dunes, for the purposes of this assessment comprise any elevated landform element that has a perceivable elevation difference from the surrounding alluvial 'flats'[7].

Table 6.4 provides a preliminary predictive model for the potential Aboriginal archaeological resource of the Study Area.

Table 6.4 Predictive Model for Aboriginal Sites

Site Type	Potential
Open Artefact Sites	High: Lithic artefact sites have been extensively recorded in the region, being the most common site type represented within the AHIMS search area. Typically located on elevated, level, and well-drained topographies (i.e. dunes) proximal to reliable sources of freshwater. Higher concentrations of lithic artefacts meanwhile, will generally be associated with landform elements adjacent to higher order watercourses and creek confluences.
Hearths	High: Often associated with open artefact sites, hearths have also been extensively recorded in the AHIMS search area. Generally also associated with domestic activities, hearths will often be located on elevated, level, and well-drained topographies (i.e. dunes) proximal to reliable sources of freshwater. Recorded hearths will also vary in level of integrity, ranging from intact concentrated clusters of clay and/or stone heat retainers to highly dispersed and fragmented heat retainers with no clear foci.
Culturally Modified Trees	Moderate: Culturally modified trees (scarred, carved and/or otherwise modified) are relatively common site in the region and often associated with the interment of ancestral remains, birthing practises, and landscape/resource, territorial, or cultural markers. Due to extensive vegetation clearance within the Study Area, the survivability of culturally modified trees will be limited. Where present, culturally modified trees may appear in any portion of the landscape but are often best preserved on flats adjacent to watercourses or waterbodies where extant vegetation has been retained.

[7] For the purposes of this assessment, 'flats' may comprise alluvial landform elements including alluvial fans, floodplains, undulating plains, sandplains and depressions. 'Dunes' may comprise any elevated and/or deflated aeolian landform element including source bordering dunes, residual rises and lunettes.

Site Type	Potential
Earth mounds	Moderate: While uncommon, earth mounds have been recorded within the AHIMS search area. Like open artefact sites and hearths, earth mounds are often associated with domestic activities and will be present on elevated, level and well-drained topographies (i.e. dunes) proximal to reliable sources of fresh water. Mound formation is generally accepted as the result of repeated hearth cooking activity occasioning the agglomeration of oven structures and so earth mounds may be found near hearths. While the repeated baking of clays and surrounding soils may harden and consolidate sediments, promoting erosion resistance, like culturally modified trees, the survivability of earth mounds is often related to historical landscape practises and surviving evidence may be present as highly dispersed and/or deflated expressions of baked clay, charcoal and secondary evidence (e.g. artefacts, bone etc).
Middens	Low: There is no record of standalone shell midden sites within the AHIMS search area. Reference to available literature suggests middens are generally identified adjacent to riverine and lacustrine environments but may also be identified in similar contexts to domestic sites (i.e. hearths, open artefact scatters, earth mounds).
Quarries	Low: There is no record of any raw material quarries being within the Study Area or environs. Reference to geological mapping suggests that raw material sources within the Study Area and environs are absent. Secondary sources (e.g. watercourses, alluvial deposits) may contain opportunistic gravels.
Grinding grooves	Nil: Grinding grooves generally occur in exposed bedrock, which geological mapping indicates is entirely absent from the Study Area and local environs.
Aboriginal ancestral remains	Moderate: Aboriginal ancestral remains (burial) sites have not been recorded within the AHIMS search area. Reference to literature for the Hay Plain suggests a trend of Aboriginal ancestral remains being found further away from water sources, whereas clusters of ancestral remains are often found in closer proximity to seasonal waterbodies. Intact sand dunes >2 m are more likely to retain Aboriginal ancestral remains.
Rockshelters with art and/or deposit	Nil: Rockshelter sites containing art and/or archaeological deposit generally occur in exposed bedrock and escarpments, which geological mapping indicates is entirely absent from the Study Area and local environs.
Aboriginal Ceremony and Dreaming sites	Moderate: There is no record of ceremonial and Dreaming sites within the AHIMS search area. Generally, ceremonial and Dreaming sites are associated with traditional/cultural practises and deeply rooted in mythology and religion. To date, no known recorded Dreaming stories for the Study Area and immediate environs have been identified. However, consultation with RAPs may identify associated ceremonial and Dreaming sites.
Contact sites	Moderate: There is no record of contact sites within the AHIMS search area. However, available literature suggests that Aboriginal peoples likely worked on early farming sites and may have continued traditional practises (i.e. utilising glass or other materials for tools). If present, contact sites will likely be in association with historical homesteads, outbuildings (e.g. shearing sheds) and/or other historical farming infrastructure.

With reference to the predictive model presented above, a series of specific predictions regarding the potential Aboriginal archaeological resource of the Study Area have been made. These are presented in **Table 6.5** below.

Table 6.5 Archaeological Predictions

Prediction Number	Prediction
1	Material evidence of past Aboriginal activity within the Study Area is likely to be dominated by flaked lithic artefacts in surface contexts, and to a lesser degree in subsurface contexts. The remains of hearth sites (hearth retainer clay/stones), where present, will likely be in poor condition.
2	The dominant (if not exclusive) raw material for flaked lithic artefact production within the Project area will be silcrete that is likely traded from outside the Study Area, with other material types (e.g., quartz, quartzite and chert) comparatively less common.
3	Flaked lithic artefact assemblages will be dominated by flake debitage items, with non-flake debitage and formed objects (i.e., cores and retouched implements) comparatively poorly represented. Some grinding implements may be present in small numbers.
4	It is possible that silcrete lithic objects will exhibit evidence of thermal alteration, though the majority will generally be untreated.
5	Lithic tool types of demonstrated chronological significance will be restricted to backed and/or retouched artefacts.
6	Surface artefact distribution across the Study Area will likely be concentrated on the peripheries of 'dune' landforms. Subsurface potential for extant lithic artefacts is likely to be low in consideration to the likely deflation of dune landforms throughout the Study Area.

7.0 Fieldwork Program

7.1 Objectives and Methods

The following sections present a summary of the fieldwork program for the ACHA. A methodology for the fieldwork program (comprising systematic survey and test excavation) was presented to all RAPs in accordance with Sections 4.3.1 and 4.3.2 of the Consultation Requirements (DECCW, 2010a), which is discussed in further detail in **Section 3.0** of the ACHA. The overarching objectives of the fieldwork program were:

- To investigate the cultural heritage values associated with the material cultural resource of the Study Area by way of background research, archaeological survey, test excavation and consultation with RAPs.
- To compile an Aboriginal Archaeology report to inform the ACHA to develop an appropriate management and/or mitigation strategy for identified and potential Aboriginal cultural values associated with the known and/or potential material cultural resource of the Study Area.

The primary aim of the archaeological survey was to identify and record any existing surface evidence of past Aboriginal occupation within the Study Area. All survey was conducted on foot, where ground conditions allowed. Vehicles were utilised in some areas of the survey to provide initial reconnaissance for area access, gates and assess ground conditions. A total of 32 pedestrian transects were completed within the Study Area over the course of the 20-day survey during August and September 2023. The location of the survey transects, including start and end points, were recorded using a handheld differential GPS unit, with associated transect data (e.g., ground surface visibility [GSV] and ground integrity [GI] ratings) entered directly into the same unit upon the completion of each transect.

Disturbance areas associated with off-site road works were inspected during fieldwork activities in August/September 2023 and February/March 2024. Typically, road verges that exhibited clear evidence of earthworks, grading or embankment construction were recorded as disturbed, where relevant.

In recognition of the potential for portions of the Study Area to contain intact subsurface archaeological deposits, a 15-day program of archaeological test excavation was completed for the current investigation. Test excavation commenced on 26 February 2024 and concluded on 15 March 2024. In accordance with Requirement 3.1 of the Code of Practice, the overarching objective of the test excavation program was to collect information about the nature and extent of subsurface Aboriginal objects across the Development Corridor and environs by testing a representative portion of the Aboriginal sites and/or sensitive landform elements identified during the survey (refer **Section 7.0**). In compliance with Requirement 15c of the Code of Practice (DECCW, 2010b), notification of Umwelt's intention to undertake the program of test excavation detailed was provided in writing to Heritage NSW on 16 January 2024.

The archaeological test excavation program comprised the advancement of 120 test pits measuring 0.5 m x 0.5 m (0.25 m^2) placed across a series of transects targeting six (6) representative site complexes and/or open artefact sites identified during the survey program. Test pits were generally spaced at approximately ten (10) m intervals across both representative landform elements in each transect, though some variability in spacing was required on the basis of on-site conditions and/or landform variability.

These areas have been extensively disturbed by historical activity, including road construction and ongoing maintenance. As such, there is a low likelihood of Aboriginal sites being present. Accordingly, targeted archaeological survey of these areas was not undertaken.

7.2 Results of Survey

7.2.1 Development Corridor

Systematic survey of the Development Corridor and its surrounds identified 31 new Aboriginal sites (summarised in **Table 7.1,** shown in **Figure 7.1** and discussed in further detail in **Appendix A**). Generally consistent with regional and local AHIMS data, the recorded sites primarily comprised open artefact sites (comprising one (1) of more lithic objects), with or without identified areas of PAD.

Of the 31 sites identified, 22 (70.97%) were recorded as open artefact sites. The survey also recorded a single culturally modified tree (n=1, 3.23%), a single earth mound (n=1, 3.23%), and a single hearth (n=1, 3.23%). In addition, the survey recorded six (6) (19.35%) 'site complexes', comprising large geographic and/or topographic areas with more than one (1) site feature represented (e.g. comprising open artefact sites within associated hearths).

In general, open artefact and hearth sites, collectively, were identified on the eroding edges of elevated landforms (i.e., dunes). Lithic objects, where exposed, generally translocated up to 5 m from the edges of the dunes onto adjacent flats and in most instances, were visible on the ground surface. Likewise, hearths comprised eroded exposures of heat-altered clayey soils and/or scattered/remnant remains of clayey heat retainers (*sensu* Fanning *et al*., 2009) dispersed between 0.5 m and 5 m from a central foci. Observed remanent hearth retainers comprised amalgamations of clayey soil into roughly 10 cm diameter balls, though fragments of the aforementioned were also common.

Existing Aboriginal sites registered on the AHIMS database that fell either within or near the Development Corridor (i.e. within 500 m) were reinspected to assess the current condition of the sites, and to provide RAP field representatives with the opportunity to see and experience these sites. Of the twelve (12) existing Aboriginal sites located within the Study Area, five (5)[8] could be identified based on spatial mapping and site card descriptions and consequently were reinspected. In general, the five inspected Aboriginal sites appeared in fair condition with dispersed surficial evidence (i.e. lithic artefacts, heat retainers etc.) observed in the recorded location and/or general environs. Earth mound site 'South Burrabogie 1.2' (AHIMS ID #48-6-0132) appeared to be in poor condition and was heavily deflated, with no clearly visible surficial evidence apparent (i.e. raised mound, baked clay, artefacts etc.). The general environs of water hole site 'South Burrabogie 1.7' (AHIMS ID #48-6-0137) appeared to be in fair condition and had been subject to extensive weed growth and cattle trampling. No standing water was observed at the time of the survey. Open artefact/hearth site South Burrabogie 2' (AHIMS ID #48-6-0139) and hearth site 'South Burrabogie 3' (AHIMS ID #48-6-0140) appeared to be in good condition with intact evidence of both sites visible. All site boundaries were generally discernible based on the distribution of surface evidence and in general, were at least 200 m from the Development Corridor.

Surficial evidence of open artefact sites 'PEC-E-38' (AHIMS ID #48-6-0160) and 'PEC-E-39' (AHIMS ID #48-6-0161) were clearly visible and the site appeared to be in generally good condition. Observations of

[8] Including South Burrabogie 1.1(AHIMS ID #48-6-0131), South Burrabogie 1.2 (AHIMS ID# 48-6-0132, South Burrabogie 1.3(AHIMS ID #48-6-0133), South Burrabogie 1.7 (AHIMS ID # 48-6-0137) and South Burrabogie 3 (AHIMS ID # 48-6-0140).

lithic artefacts were generally consistent with that recorded on the corresponding AHIMS site card and indicated the site extent was outside the boundaries of the Development Corridor.

Table 7.1 Summary of Recorded Aboriginal Sites

AHIMS ID	Site Name	Easting	Northing	Description
48-6-0311	Bullawah-IF1_2023	340975	6146917	Isolated quartz complete flake located on erosion scour. Likely isolated discard with low subsurface archaeological potential. Site dimensions <1 m^2.
48-6-0312	Bullawah-IF2_2023	336654	6144277	Isolated silcrete flaked piece located erosion scour to the west of a larger dune landform. Likely isolated discard with low subsurface archaeological potential. Site dimensions <1 m^2.
48-6-0313	Bullawah-IF3_2023	337387	6141787	Isolated silcrete flake. Likely isolated discard with low subsurface archaeological potential. Site dimensions <1 m^2.
48-6-0314	Bullawah-IF4_2023	333377	6145357	Isolated quartz flake. Likely isolated discard with low subsurface archaeological potential. Site dimensions <1 m^2.
48-6-0315	Bullawah-IF5_2023	335284	6142950	Isolated quartz flake. Likely isolated discard with low subsurface archaeological potential. Site dimensions <1 m^2.
48-6-0170	Bullawah-AS1_2023	332343	6146293	Artefact scatter comprising 10 objects, located on an exposed vehicle track within a flat landform, approximately 250 m x 300 m. Potential for additional objects in surrounding area but limited visibility due to grass cover. Silcrete, quartz and quartzite objects observed. Site boundaries defined as extent of visible surface evidence.
48-6-0316	Bullawah-AS2_2023	332871	6146296	Artefact scatter comprising 20+ objects, located on an exposed western periphery of a dune. Silcrete, quartz, chalcedony, volcanic and quartzite objects observed over an area of approximately 300 m x 400 m. Site boundaries defined as extent of visible surface evidence.
48-6-0171	Bullawah-AS3_2023	333262	6146361	Artefact scatter comprising four (4) quartz and silcrete objects observed over an area of approximately 100 m x 110 m. Site boundaries defined as extent of visible surface evidence.
48-6-0317	Bullawah-AS4_2023	335179	6142930	Artefact scatter comprising 13+ objects, located on a dune, approximately 400 m x 250 m. Silcrete, quartz and quartzite objects observed. Site boundaries defined as extent of visible surface evidence.
48-6-0319	Bullawah-AS5_2023	335509	6143029	Artefact scatter comprising two (2) quartz flakes, located on a dune approximately 75 m x 165 m. Site boundaries defined as extent of visible surface evidence.
48-6-0318	Bullawah-AS6_2023	334204	6143094	Artefact scatter comprising 50+ objects, located on the edge of a dune approximately 95 m x 80 m. Raw materials included silcrete, quartz and quartzite. Site boundaries defined as extent of visible surface evidence.
48-6-0325	Bullawah-AS7_2023	339885	6141067	Artefact scatter comprising 40+ objects, located on the edge of a dune, approximately 500 m x 450 m. Site boundaries defined as extent of visible surface evidence.

AHIMS ID	Site Name	Easting	Northing	Description
48-6-0324	Bullawah-AS8_2023	333456.6	6145222	Artefact scatter comprising 10+ objects across an area of approximately 115 m x 120 m, including five (5) green glass fragments, three (3) of which showed possible indications of flaking and/retouch. Five (5) quartz and silcrete objects also identified. Site boundaries defined as extent of visible surface evidence.
48-6-0322	Bullawah-AS9_2023	343316.4	6143496	Large artefact scatter comprising 50+ objects dispersed across an area of 430 m x 360 m. Adjacent to an ephemeral water source with a fenced off perimeter. Saltbush and scrubby surrounds. Located outside Development Corridor. Site boundaries defined as extent of visible surface evidence.
48-6-0323	Bullawah-AS10_2023	331618.2	6144334	Extensive artefact scatter located on the south and eastern peripheries of a prominent dune. Approximately 20+ objects extending over 400 m on broadly flat landform. Site mapped as comprising dispersed lithic objects on flat, and area of PAD restricted to dune.
48-6-0321	Bullawah-AS11_2023	334408.1	6144621	Artefact scatter comprising 50+ objects on the edge of a dune, dispersed across a linear area of approximately 160 m x 80 m. Raw materials observed included silcrete, volcanic, quartz. Artefact types observed included flaked pieces, flakes and cores. Site extent over large area, continuous linear scatter.
48-6-0320	Bullawah-AS12_2023	335729.3	6144516	Artefact scatter comprising 30+ objects in an area of exposure on the edge of a deflated dune, over an area of approximately 200 m x 190 m. Raw materials observed included silcrete, quartz and volcanics/meta-sedimentary. Artefact types represented included flakes and flake debris, core/s and hammerstone/s.
48-6-0330	Bullawah-AS13_2023	342257.4	6142609	Artefact scatter comprising five (5)+ objects dispersed across a flat landform, comprising an area 200 x 270 m. Low subsurface potential. Site boundaries defined as extent of visible surface evidence.
48-6-0329	Bullawah-AS14_2023	341279.5	6143169	Artefact scatter comprising five (5)+ objects on low dune, over an area of approximately 380 m x 200 m. Raw material included fine grained silcrete and quartz. Site boundaries defined as extent of visible surface evidence.
48-6-0328	Bullawah-AS15_2023	336761.4	6139453	Artefact scatter comprising 10 objects across 230 m x 430 m exposure on the edge of a dune. Site boundaries defined as extent of visible surface evidence.
48-6-0327	Bullawah-AS16_2023	334942.6	6139439	Artefact scatter comprising 10 objects located within an exposure on the edge of a dune over approximately 100 m. Raw materials included include quartz and silcrete. Site boundaries defined as extent of visible surface evidence.
48-6-0326	Bullawah-AS17_2023	334656.4	6139881	Artefact scatter comprising 50+ objects over an area of approximately 240 m x 180 m. Raw materials included silcrete, quartz and quartzite. Site boundaries defined as extent of visible surface evidence.
48-6-0335	Bullawah-Hearth1_2023	336464.2	6134685	Dispersed remnants of clay hearth retainers located on an alluvial flat, approximately 10 m diameter area. Site boundary recorded to extent of identified material evidence.
48-6-0336	Bullawah-Culturally Modified Tree1_2023	342454.9	6134782	Tree (unknown species) identified as a grafted by cultural practices. RAP field representatives identified high associated cultural values and 'women's business'. Notably distinct from neighbouring trees.

AHIMS ID	Site Name	Easting	Northing	Description
48-6-0331	Bullawah-Earth_Mound1_2023	332227.6	6146394	Large 6-12 m diameter, round and gently elevated feature located on a broadly flat landform. No visible surface evidence identified.
48-6-0167	Bullawah-Site_Complex1_2023	328869.5	6145770	Extensive artefact scatter comprising approximately 30+ objects observed comprising quartz, silcrete and minor chert objects over an area approximately 300 m long north to south, 100 m wide located along the western edge of a dune landform. Four (4) hearths identified in fair condition. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform. Located outside Development Corridor.
48-6-0168	Bullawah-Site_Complex2_2023	331116.9	6146509	Artefact scatter comprising approximately 10 objects observed over an area of 600 m x 100 m, comprising quartz and silcrete objects in an exposed portion of a dune. A single hearth identified in fair condition. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform.
48-6-0334	Bullawah-Site_Complex3_2023	340648.8	6136179	Low density artefact scatter comprising approximately 10 objects dispersed across an area of 900 m x 400 m. Five (5) quartz flakes and two (2) silcrete flakes. Three (3) hearths identified in fair condition. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform.
48-6-0333	Bullawah-Site_Complex4_2023	342555.4	6134809	Artefact scatter with nine (9) remnant hearths in fair to poor condition over an area of 150 m x 120 m. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform.
48-6-0332	Bullawah-Site_Complex5_2023	335762.2	6142771	Low density artefact scatter comprising five (5) lithic objects and three (3) hearths in fair condition, dispersed over an area of 500 m x 400 m, located on the edge of a deflated dune. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform.
48-6-0337	Bullawah-Site_Complex6_2023	340941.2	6140658	Artefact scatter comprising 30+ objects and hearth/s over an area of 800 m x 400 m. Site boundaries defined as extent of visible surface evidence and boundaries of visible dune landform.

7.2.2 Off-site Road Works Area

Systematic survey of the off-site road works areas did not identify any new Aboriginal sites and/or areas of PAD. A single existing Aboriginal site; 'PEC-E-PAD25' (AHIMS ID# 48-6-0230), comprising an area of PAD, extended across the off-site road works area across North Boundary Road. An artefact scatter, 'PEC-E-39' (AHIMS ID #48-6-0161), located approximately 120 m north of North Boundary Road, was reinspected but was ultimately outside the proposed off-site road works area.

In total, five (5) areas were surveyed as part of the off-site road works, as summarised in **Table 7.2** below:

Table 7.2 Off-site Roads Works Area

Location	Approximate footprint (ha)	Centroid Easting	Centroid Northing
Site Access Point Upgrades	3.28	329210	6148532
Jerilderie Road 2	0.32	328693	6152049
Jerilderie Road 3	0.21	317958	6161317
North Boundary Road	20.36	338128	6141897
Jerilderie Road/Cobb Highway	0.41	301006	6170876

All off-site road works areas were generally restricted to road verges and surrounding environs. The corridor along North Boundary Road generally comprised the elevated road verge which appeared to have been subject to historical earth works to raise the area above the surrounding flood-prone land and appeared to be visually disturbed. The remaining four (4) locations on Jerilderie Road and the Jerilderie Road/Cobb Highway intersection were all located on flats with no elevated landforms present. All four (4) areas contained intermittent scouring from stock grazing and/or erosion. No inspected off-site road works areas contained archaeologically sensitive landscape features.

7.3 Results of Test Excavation

A total of 31 lithic items, all of which satisfied pre-established criteria for identification as artefacts, were recovered from test pits excavated for the current assessment (the 'lithic assemblage'). Of the areas subject to test excavation, lithic objects were only recovered from two (2) site complexes, Bullawah Site Complex 5, and Bullawah Site Complex 6 (refer to **Appendix A**). Of those, 94% of the 31 objects were recovered from 14 tests pits in Bullawah Site Complex 6.

In general, objects were recovered from the upper 20 cm of all test pits, with only 13% recovered in deeper strata (maximum depth of recovered objects was 40 cm below ground surface). Though impeded by overall low artefact numbers, landform distribution of lithic objects suggested greater recovery from test pits excavated within 'dune' contexts, with those within 5–10 m of the dune-flat interface reporting comparatively higher concentrations. Lithic objects recovered from flat contexts, while rare, were generally recovered from the upper 0–10 cm, suggesting objects were the result of 'wash-in' effects of erosional processes.

- A simplified breakdown of the lithic assemblage, having a total combined weight of just over 54 g, shows that it was dominated by complete flake and/or flake debitage items (comprising complete, distal/proximal, angular fragments, split flakes and retouched flakes and/or backed objects), which accounted for 90% of the lithic assemblage by count and 76% by weight. Recovered flake and flake

debitage items (n=28) consisted principally of angular fragments (n=16, 57.1%) and complete flakes (n=8, 28.6%). While impeded by small sample size, this data potential suggests a tendency towards skilled, methodical production and knowledge of raw materials during manufacturing. Only two (2) broken flakes (i.e., proximal flakes) were present which may also in part, support the supposition presented above.

- Densities for artefact-bearing test pits in were generally low (<2 objects), with only a single test pit containing nine (9) lithic objects. Although complicated by sample size, preliminary examination of artefact distribution in relation to the key landscape variables, suggests that elevated dune landforms were favourable for settlement and associated activities by Aboriginal peoples occupying the Study Area. The paucity of subsurface objects, however, may suggest that dune elements retained thicker A horizon soils prior to European occupation. Subsequent destabilisation of dune surfaces has likely resulted in loss of biomantle soils and further resulted in a palimpsest of objects represented as a 'lag' deposit on the ground surface and/or near surface soils. Outlier examples of objects recovered from deeper strata are likely the result of trampling and/or treadage impacts from stock movements (e.g. Stockton, 1973; Villa and Courtin, 1983; Gifford-Gonzalez *et al*., 1985; Nielson, 1991; McBrearty *et al*., 1998; Lopinot and Ray, 2007).

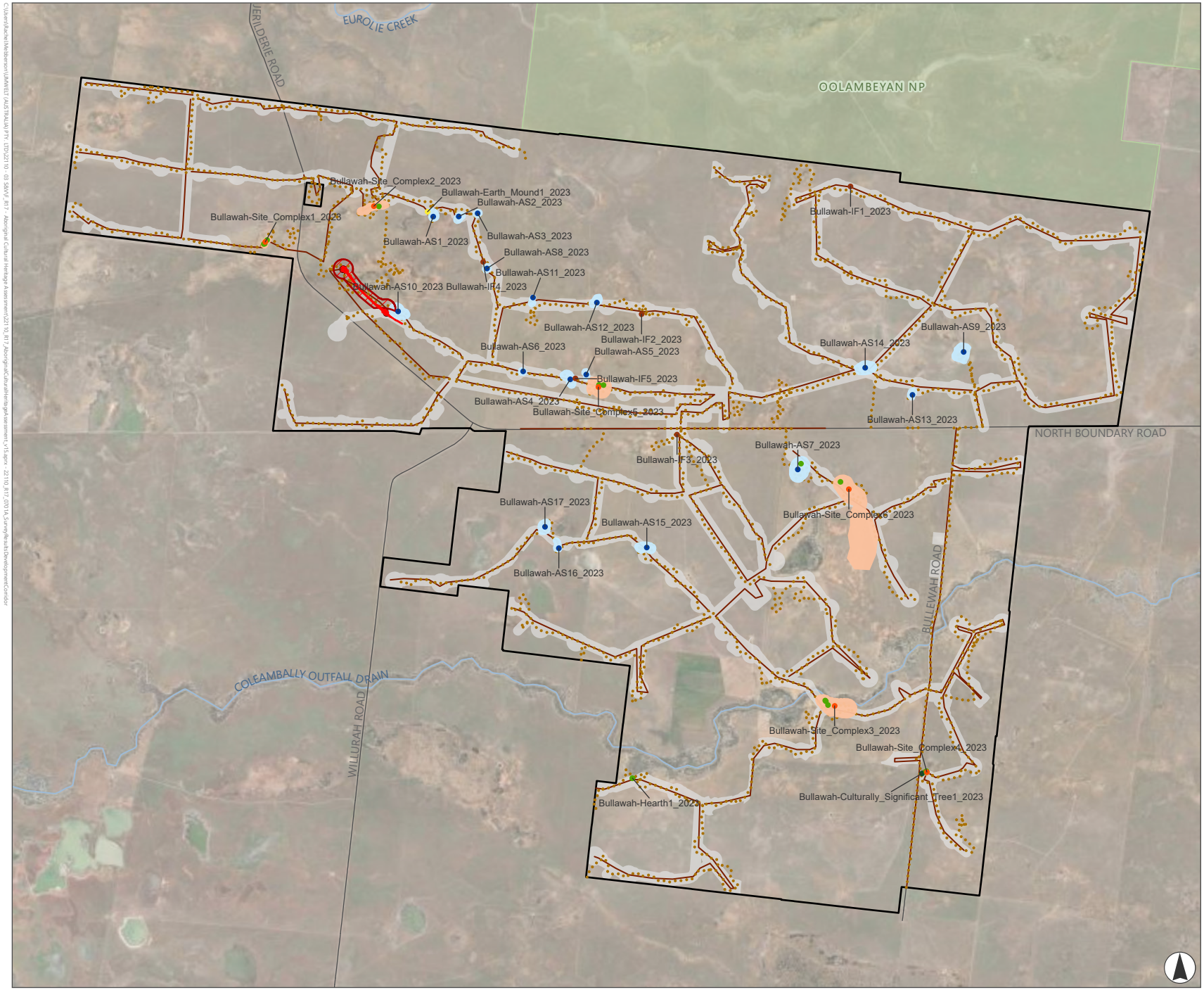
- The overarching pattern of subsurface artefact distribution revealed by testing across the Study Area can be characterised as sparse, but generally concentrated into specific topographic foci. Most (n=106, 88%) pits contained no artefacts. Artefact-bearing pits (n=14) were generally restricted to 'dune ridge' landform elements within Bullawah Site Complex 6, with comparatively smaller numbers reported in Bullawah Site Complex 5. No lithic objects were recovered from the other testing areas.

- Raw material data for the lithic assemblage attest to a dominance of complete reliance on the procurement and reduction of silcrete, with 45.2% of the lithic assemblage manufactured from a variety of silcrete types. Objects manufactured from quartz were also relatively well-represented, accounting for 32.3% (n=10). Other materials including chert, quartzite and petrified wood were comparatively poorly represented.

- Cortical artefacts were almost entirely absent in the lithic assemblage, with only a single object exhibiting clearly visible cortex. The object, a quartz pebble core, may have been locally sourced and opportunistically flaked. All other objects displayed no clearly identifiable cortex, suggesting primary processing occurred away from the immediate environs of the Study Area.

FIGURE 7.1A

Survey Results
Development Corridor



Legend

- Project Boundary
- Development Corridor
- NPWS Reserves
- Survey Transects
- Tracklogs
- Road
- Hydroline

Aboriginal Sites (Centroids)

- Artefact Scatter
- Culturally Significant Tree
- Earth Mound
- Hearth
- Isolated Find
- Site Complex

Aboriginal Sites (Site Extents)

- Artefact Scatter
- Hearth
- Site Complex

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 1 2

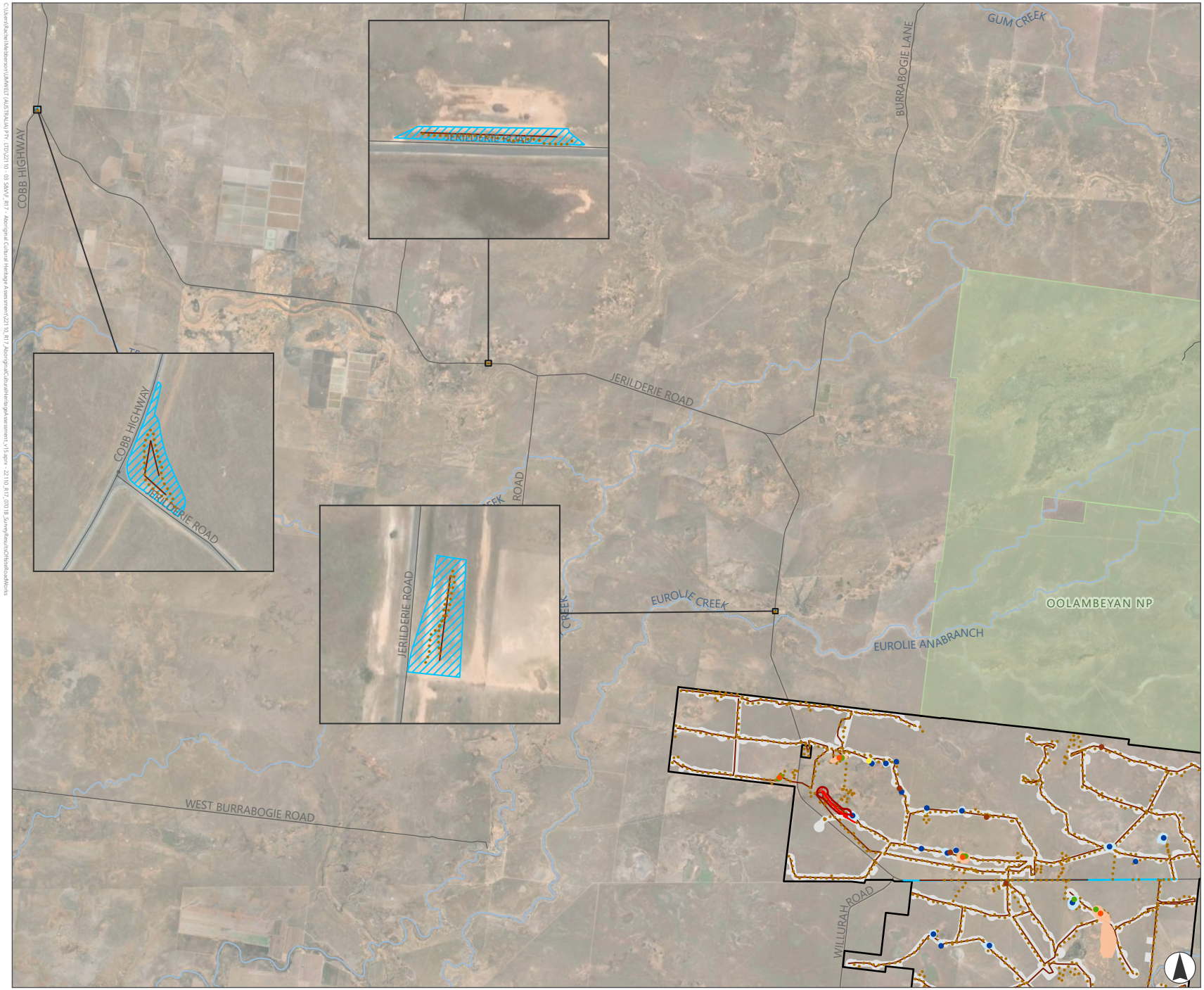
Kilometres

Scale 1:110,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 7.1B

Survey Results
Off Site Road Works



Legend

- Project Boundary
- Development Corridor
- Stage 1 (South) Offsite Disturbance Footprint
- NPWS Reserves
- Road
- Hydroline
- Survey Transects
- Tracklogs

Aboriginal Sites (Centroids)

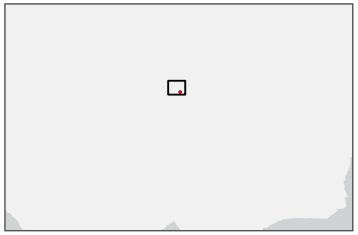
- Artefact Scatter
- Earth Mound
- Hearth
- Isolated Find
- Site Complex

Aboriginal Sites (Site Extents)

- Artefact Scatter
- Site Complex

To be Removed

- Development Corridor
- Disturbance Footprint



0 2.5 5

Kilometres

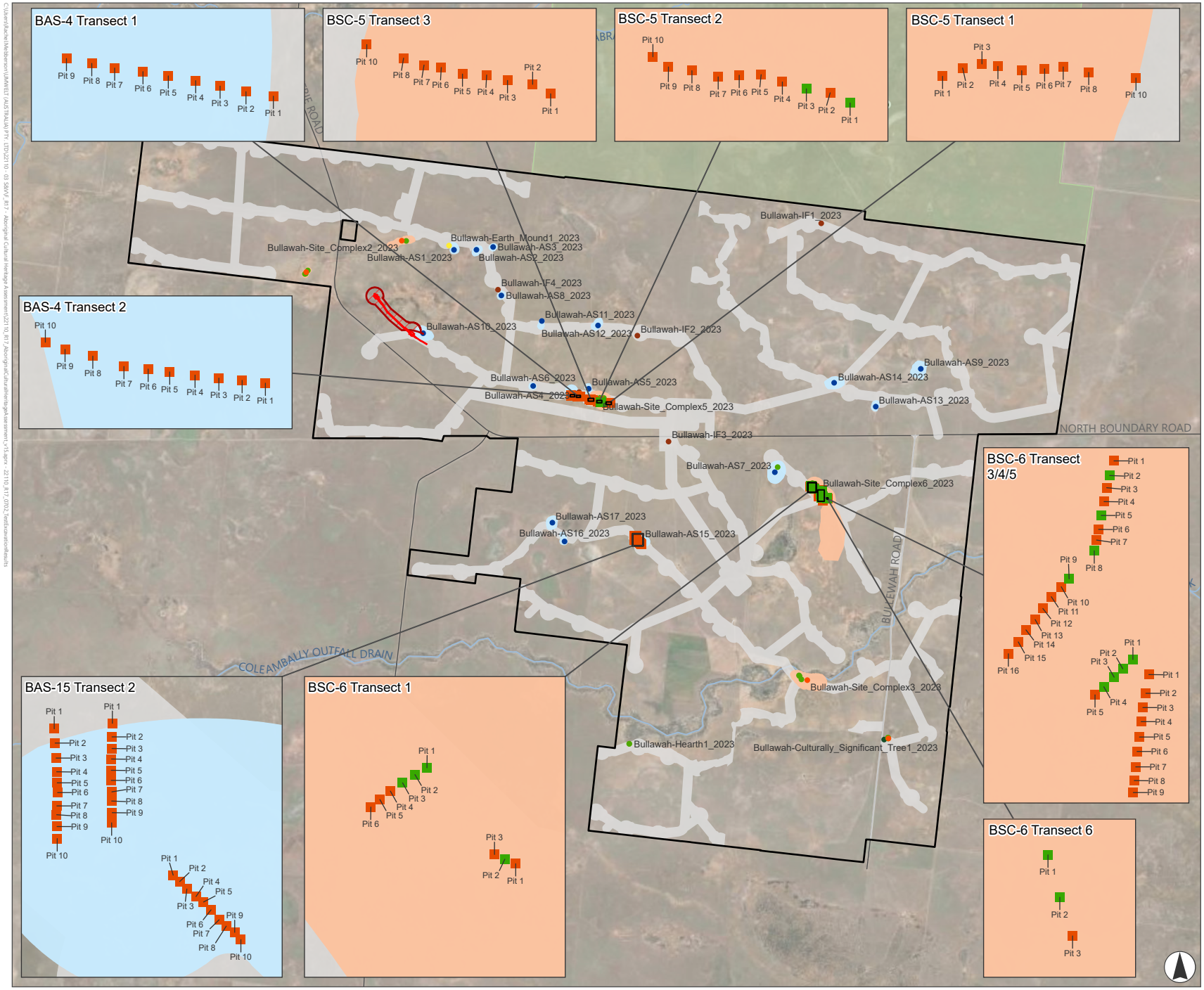
Scale 1:200,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 7.2

Test Excavation Results



Legend

- Project Boundary
- Development Corridor
- NPWS Reserves

Test Exacavation Pits

- Aboriginal objects found
- Aboriginal objects not found

Aboriginal Sites (Site Extents)

- Artefact Scatter
- Hearth
- Site Complex

To be Removed

- Development Corridor
- Disturbance Footprint

0 1 2

Kilometres

Scale 1:125,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

8.0 Significance Assessment

The Burra Charter defines cultural significance in terms of aesthetic, scientific, historic and social values. Aboriginal cultural heritage is typically assessed according to its social and scientific significance; however other values may also be of importance. The assessment of cultural significance is critical in establishing mitigation and management strategies for cultural heritage (Pearson and Sullivan, 1995:21). The assessment of significance provides a guideline for determining appropriate mitigation and management strategies. The relationship between levels of significance and management strategies is summarised below:

- **High significance** – the site should be conserved and protected from the impacts of development, where possible.
- **Moderate significance** – the site should be protected if possible, however, if impacts to the site are unavoidable, appropriate mitigation strategies should be implemented prior to impact.
- **Low significance** – the site should be protected if possible, however, if impacts to the site are unavoidable, the presence of the site should not impede the proposed development.

8.1 Cultural Significance

Cultural significance relates to the values that Aboriginal peoples assign an object, site or place. In assessing this significance, a range of factors may be considered, and this can extend beyond the physical presence of a site and its contents to intangible aspects of the cultural landscapes. Archaeological materials, cultural knowledge, natural resources and landscape attributes may all be considered. RAP consultation identified the following social or cultural values for the Study Area in conversations with Umwelt personnel:

- Prior to European occupation, the Study Area would have been (and continues to be) an important place for Aboriginal peoples and a key transit route for travel inland.
- Raw materials used for flaked stone artefact manufacture in the Study Area and surrounds, where present, were likely imported from neighbouring communities and is tangible evidence of a prosperous trade network within the region.
- The location of lithic objects identified during the fieldwork program indicates that the sandy dune ridge environs were favoured camping locations for Aboriginal peoples and as such, held (and continues to hold) specific cultural value.
- Hearths (remnant and/or intact) and hearth retainers (clay, stone etc) are tangible sites that hold particular cultural value to Aboriginal peoples as an in situ, visible indicator for ancestral activities. RAP field representatives indicated that where possible, hearths should be avoided and protected.
- Daily domestic activities associated with Aboriginal lifeways, including foraging, travel etc., were told through Dreaming stories and Lore and included seasonal knowledge and observations of constellations, and the interconnectedness of animal migrations/mating seasons and plant growth/flowering/seeding cycles.

- Recorded Aboriginal site 'Bullawah-Culturally Modified Tree1 2023' (AHIMS #48-6-0336) was identified by a RAP field representative as having significant cultural value as a 'women's business' site.

8.2 Scientific (Archaeological) Significance

The scientific (or archaeological) significance of Aboriginal sites relates to their potential for providing information about past Aboriginal culture/s and is commonly assessed on the basis of *research potential, representativeness* and *rarity*. Other criteria, such as aesthetic value and education potential, may also be relevant. Specific scientific assessment of open artefact sites identified within the Study Area, in the first instance, can be determined through examination of site contents.

8.2.1 Research Potential

Research potential is defined as the potential of any archaeological site to address specific and defined research questions. Such questions may relate to aspects of human behaviours, occupation patterns and activities and/or environments. Several criteria can be used to assess the research potential of an archaeological site. Particularly pertinent in Aboriginal cultural heritage management is the state of preservation (i.e., integrity) of any site, the complexity of elements within it and its potential for archaeological deposit (NPWS, 1997, p.7).

Integrity refers to the state of preservation of an archaeological site, and/or the extent to which it has been impacted by natural and/or anthropogenic phenomena. The principle of archaeological integrity is founded on the concept that a more intact archaeological site will be able to provide more useful environmental land /or archaeological data, and consequently (albeit subjectively) will retain higher 'value'.

The **complexity** of an archaeological site refers to the nature of elements within it (e.g., the physical size of the site, spatial patterning in observed cultural materials). In the case of open artefact sites, for example, the principal criteria used to assess complexity are the site's size (i.e., number of artefacts and/or spatial extent), the presence, range and frequency of artefact and raw material types, and the presence of features such as hearths.

Potential for archaeological deposit refers to the potential of an archaeological site (or area of PAD) to contain subsurface archaeological evidence which, through systematic archaeological excavation, may assist in answering defined research questions.

Connectedness refers to the relationship between archaeological sites within its surrounding context and may be interpreted through site location, type and contents.

8.2.2 Rarity and Representativeness

Rarity refers to the relative scarcity of an archaeological site, both locally and regionally. The scientific significance of an archaeological site is assessed as being higher if it is unique or rare and conversely, may be considered to be lower in significance if it is common in one or both. The concept of representativeness, meanwhile, refers to the question of whether or not a site is "*a good example of its type, illustrating clearly the attributes of its significance*" (Burke & Smith, 2004).

8.3 Assessment of Archaeological Significance

The significance of Aboriginal sites within the Study Area were assessed in accordance with the criteria presented in **Table 8.1**. The results of the assessment are presented in **Table 8.2**. The open artefact sites identified within the Study Area are, in general, examples of relatively common site types and contain archaeological evidence comparable to sites throughout the local environs and Riverina Region more broadly. The exception was Bullawah AS8_2023 (AHIMS ID #48-6-0324) which contained potential flaked glass objects which are regionally uncommon. Significance ratings for Aboriginal sites recorded by Navin Officer Heritage Consultants (2022)

Table 8.1 Criteria for Assessment of Cultural Significance

Criterion	Low	Moderate	High
Rarity	The site within the surrounding landscape, its integrity, contents and/or potential for subsurface artefacts, are common within the local and regional context.	The site within the surrounding landscape, its integrity, contents and/or potential for subsurface artefacts, are common within the regional context but not the local context.	The site within the surrounding landscape, its integrity, contents and/or potential for subsurface artefacts, are rare within the local and regional context.
Representativeness	This site, when viewed in relation to its integrity, contents and/or potential for subsurface artefacts, is common within a local and regional context and sites of similar nature (or in better condition) are already set aside for conservation within the region.	This site, when viewed in relation to its integrity, contents and/or potential for sub-surface artefacts, is uncommon within a local context but common in a regional context and sites of similar nature (or in better condition) are already set aside for conservation within the region.	This site, when viewed in relation to its integrity, contents and/or potential for subsurface artefacts, is uncommon within a local and regional context and sites of similar nature (or in better condition) are not already set aside for conservation within the locality or region.
Research potential	The site, when viewed in relation to its integrity, contents and/or potential for subsurface artefacts has limited potential to contribute to a greater understanding of how Aboriginal people lived within this area or region.	The site, when viewed in relation to its integrity, contents and/or potential for subsurface artefacts has moderate potential to contribute to a greater understanding of how Aboriginal people lived within this area or region.	The site, when viewed in relation to its integrity, contents and/or potential for subsurface artefacts has high potential to contribute to a greater understanding of how Aboriginal people lived within this area or region.

Criterion	Low	Moderate	High
Education potential	The site is not readily accessible and/or when viewed in relation to its contents, integrity and location in the landscape has limited suitability to be used for educational purposes. Other sites with higher education potential are known to be present in the local area and region.	The site is not readily accessible and/or when viewed in relation to its contents, integrity and location in the landscape provides a tangible example that is suitable to assist in educating people regarding how Aboriginal people lived in this area or region. However, other sites with higher education potential are known or expected to be present in the local area or region.	The site is readily accessible and/or when viewed in relation to its contents, integrity and location in the landscape, provides a very good tangible example that is suitable to assist in educating people regarding how Aboriginal people lived in this area or region. Other sites of higher education potential are generally not known to exist in the local area or region.
Integrity	Stratigraphic integrity of the site has clearly been destroyed due to major disturbance/loss of topsoil. The level of disturbance is likely to have removed all spatial and chronological information.	The site appears to have been subject to moderate levels of disturbance, however, there is a moderate possibility that useful spatial information can still be obtained from subsurface investigation of the site, even if it is unlikely that any useful chronological evidence survives.	The site appears relatively undisturbed and there is a high possibility that useful spatial information can still be obtained from subsurface investigation of the site, even if it is still unlikely that any useful chronological evidence survives.

Table 8.2 Assessment of Archaeological Significance

AHIMS Site ID	Site Name	Rarity	Representative Value	Research Potential	Educational Potential	Integrity	Overall Significance
48-6-0311	Bullawah IF1_2023	Low	Low	Low	Low	Low	Low
48-6-0312	Bullawah IF2_2023	Low	Low	Low	Low	Low	Low
48-6-0313	Bullawah IF3_2023	Low	Low	Low	Low	Low	Low
48-6-0314	Bullawah IF4_2023	Low	Low	Low	Low	Low	Low
48-6-0315	Bullawah IF5_2023	Low	Low	Low	Low	Low	Low
48-6-0170	Bullawah AS1_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0316	Bullawah AS2_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0171	Bullawah AS3_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0317	Bullawah AS4_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0319	Bullawah AS5_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0318	Bullawah AS6_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0325	Bullawah AS7_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0324	Bullawah AS8_2023	High	Low	High	High	Moderate	High[9]
48-6-0322	Bullawah AS9_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0323	Bullawah AS10_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0321	Bullawah AS11_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0320	Bullawah AS12_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0330	Bullawah AS13_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0329	Bullawah AS14_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0328	Bullawah AS15_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0327	Bullawah AS16_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0326	Bullawah AS17_2023	Low	Low	Low	Moderate	Moderate	Moderate

[9] Assessed as retaining 'high' significance due to the presence of potential flaked glass.

AHIMS Site ID	Site Name	Rarity	Representative Value	Research Potential	Educational Potential	Integrity	Overall Significance
48-6-0167	Bullawah Site Complex 1_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0168	Bullawah Site Complex 2_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0334	Bullawah Site Complex 3_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0333	Bullawah Site Complex 4_2023	Low	Low	Low	Moderate	Moderate	Moderate
48-6-0332	Bullawah Site Complex 5_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0337	Bullawah Site Complex 6_2023	Low	Low	Moderate	Moderate	Moderate	Moderate
48-6-0335	Bullawah Hearth 1_2023	Moderate	Moderate	Moderate	Moderate	Low	Moderate
48-6-0331	Bullawah Earth Mound 1_2023	High	Moderate	Moderate	Moderate	Low	High
48-6-0336	Bullawah Culturally Modified Tree1_2023	High	High	Moderate	Moderate	Moderate	High
48-6-0233	PEC-E-PAD24	N/A	N/A	N/A	N/A	N/A	Low[10]
48-6-0230	PEC-E-PAD25	N/A	N/A	N/A	N/A	N/A	Low

[10] After Navin Officer (2022.p 189)

9.0 Impact Assessment

9.1 Summary of Proposed Impacts

The Project will include the installation, operation, maintenance and decommissioning of up to 141 wind turbine generators (WTGs), battery storage, ancillary infrastructure and temporary facilities associated with construction of the Project which are summarised in **Table 9.1**.

The Project would have direct and indirect impacts on the environment, with all direct impacts contained within the Project's Development Corridor. The Development Corridor comprises approximately 4,274 ha and is a conservatively defined area in which all ground disturbing works for the Project would occur but allows flexibility for micro-siting of infrastructure to avoid key constraints.

The indicative 'Disturbance Footprint' is the proposed disturbance area required for the Project, as defined by ground disturbing activities and infrastructure, and as such comprises a much smaller area of approximately 637 ha.

The actual location and extent of this indicative Disturbance Footprint will be determined prior to construction; however, all changes will be limited to within the boundaries of the Development Corridor. Ground disturbing construction activities and permanent infrastructure would typically include, but are not limited to:

- Removal of native and exotic vegetation.
- Investigative drilling, excavation or salvage works.
- Excavation works associated with the construction of temporary and permanent infrastructure, including for construction of transmission lines, road construction and upgrades, construction of hardstands, utilities and other infrastructure.
- Construction of permanent ancillary infrastructure, temporary facilities and off-site road works as described in **Table 9.1**.

The indicative Disturbance Footprint does not include activities that occur on the ground surface, including but not limited to, driving or parking vehicles on the ground during construction. For the purposes of this assessment, it has been conservatively assumed that any recorded Aboriginal site that lies within the Development Corridor may be impacted.

Table 9.1 Potential Impacting Activities

Activity Type	Impact description
Up to 141 WTGs	Earthworks activities associated with site preparation and laydown area associated with the construction of the proposed WTGs. For example, grading, excavation, placement and levelling of ground surface.
359 MW / 718 MWh battery energy storage facility	Earthworks activities associated with the construction of the site for the battery energy storage facility.
Permanent ancillary infrastructure including internal roads, hardstands, main and collector substations, a switchyard, operations and maintenance facilities, underground and overhead electricity transmission lines and poles, telecommunications facilities and utility services, permanent meteorological masts and water storage tanks	Earthworks activities associated with site preparation and laydown areas associated with the construction of the permanent infrastructure. For example, grading, excavation, placement and levelling of ground surface.
Temporary facilities including temporary workforce accommodation (if required), site offices, amenities, construction compounds and laydown areas, on-site borrow pits, rock crushing facilities, concrete or asphalt batching plants, minor 'work front' construction access roads, temporary meteorological masts, environmental management and monitoring and signage	Earthworks associated with use of construction and laydown areas, including placement of temporary infrastructure.
Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points to facilitate delivery of wind turbine components to the Project Area as required	Earthworks associated with road widening and construction of site access points. No Aboriginal sites have been identified within proposed disturbance areas associated with off-site road works.

The proposed development activities will have the potential to directly impact the 27 Aboriginal sites[11] (plus the hearths located within site complexes) which are located within the Development Corridor (refer to **Table 9.2** and **Figure 9.1**). In the absence of these measures, consideration of the location of sites in relation to the proposed layout plan indicates a likely partial to total loss of value for all Aboriginal sites listed. Direct disturbance represents by far the most widespread type of potential impact. Direct impacts can occur within a varying degree of impact, including:

- Partial disturbance, where Aboriginal objects are moved locally from their current setting and/or only a portion of a wide site area are disturbed. For the current assessment, partial disturbance is included in the Development Corridor.
- Complete disturbance denoting when the entirety of an Aboriginal site and/or objects within a site are removed entirely from their current context and/or destroyed.

Consequences of harm indicate the complete or partial loss of a site's elements, such as through large scale earthworks. Total loss of value can also include the modification of a landscape even where Aboriginal objects are removed and later returned. Partial loss describes the loss of part of an Aboriginal site; this could include earthworks related to the installation of wind farm infrastructure (e.g. turbines etc) and/or disturbance through the use of access tracks and supporting infrastructure.

[11] Of those, PEC-E-PAD25 (AHIMS ID #48-6-0230) comprises an area of PAD with unknown archaeological resource. Further targeted assessment and/or salvage would be integrated into standalone management measures post-approval if the area cannot be avoided.

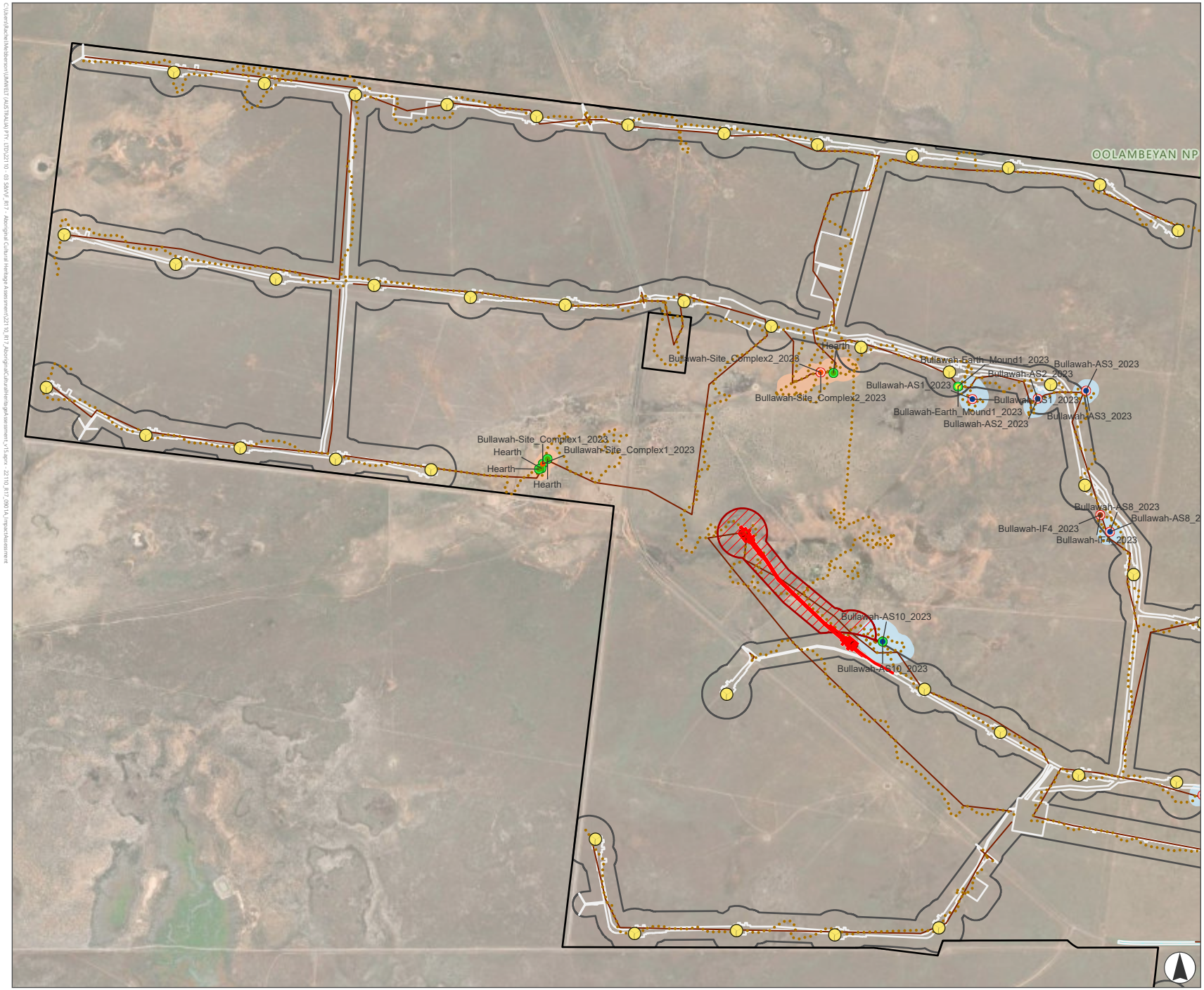
Table 9.2 Aboriginal Sites Impacted by the Project (Without Mitigation)

AHIMS Site ID	Site Name[12]	Scientific Significance	Type of Harm	Degree of Harm	Consequence of Harm
48-6-0311	Bullawah IF1_2023	Low	Direct	Complete	Complete loss
48-6-0312	Bullawah IF2_2023	Low	Direct	Complete	Complete loss
48-6-0313	Bullawah IF3_2023	Low	Direct	Complete	Complete loss
48-6-0314	Bullawah IF4_2023	Low	Direct	Complete	Complete loss
48-6-0315	Bullawah IF5_2023	Low	Direct	Complete	Complete loss
48-6-0170	Bullawah AS1_2023	Moderate	Direct	Partial	Partial loss
48-6-0316	Bullawah AS2_2023	Moderate	Direct	Partial	Partial loss
48-6-0171	Bullawah AS3_2023	Moderate	Direct	Partial	Partial loss
48-6-0317	Bullawah AS4_2023	Moderate	Direct	Partial	Partial loss
48-6-0319	Bullawah AS5_2023	Moderate	Direct	Partial	Partial loss
48-6-0318	Bullawah AS6_2023	Moderate	Direct	Partial	Complete Loss
48-6-0325	Bullawah AS7_2023	Moderate	Direct	Partial	Partial loss
48-6-0324	Bullawah AS8_2023	High	Direct	Partial	Partial loss
48-6-0321	Bullawah AS11_2023	Moderate	Direct	Partial	Partial loss
48-6-0320	Bullawah AS12_2023	Moderate	Direct	Partial	Partial loss
48-6-0330	Bullawah AS13_2023	Moderate	Direct	Partial	Partial loss
48-6-0329	Bullawah AS14_2023	Moderate	Direct	Partial	Partial loss
48-6-0328	Bullawah AS15_2023	Moderate	Direct	Partial	Partial loss
48-6-0327	Bullawah AS16_2023	Moderate	Direct	Partial	Partial loss
48-6-0326	Bullawah AS17_2023	Moderate	Direct	Partial	Partial loss
48-6-0168	Bullawah Site Complex 2_2023	Moderate	Direct	Partial	Partial loss
48-6-0334	Bullawah Site Complex 3_2023	Moderate	Direct	Partial	Partial loss
48-6-0333	Bullawah Site Complex 4_2023	Moderate	Direct	Partial	Partial loss
48-6-0332	Bullawah Site Complex 5_2023	Moderate	Direct	Partial	Partial loss
48-6-0337	Bullawah Site Complex 6_2023	Moderate	Direct	Partial	Partial loss
48-6-0233	PEC-E-PAD24	Low	Direct	Partial	Partial loss
48-6-0230	PEC-E-PAD25	Low	Direct	Partial	Partial loss

[12] Site complexes listed in this table comprise both open artefact sites and hearth. For the purposes of the impact assessment presented herein, hearths contained within site complexes are to be treated as standalone sites and in the first instance are to be avoided as per the below recommendations for management as they apply to standalone hearths.

FIGURE 9.1A

Impact Assessment



Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators
- NPWS Reserves

Aboriginal Sites (Centroids)

- Artefact Scatter
- Earth Mound
- Hearth
- Isolated Find
- Site Complex

Aboriginal Sites (Site Extents)

- Artefact Scatter
- Site Complex

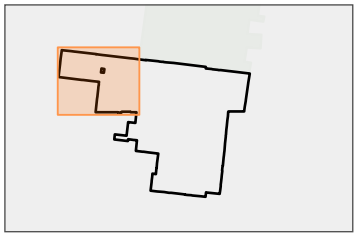
Type Harm

- Avoidance
- Impacted

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 1 2

Kilometres

Scale 1:43,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

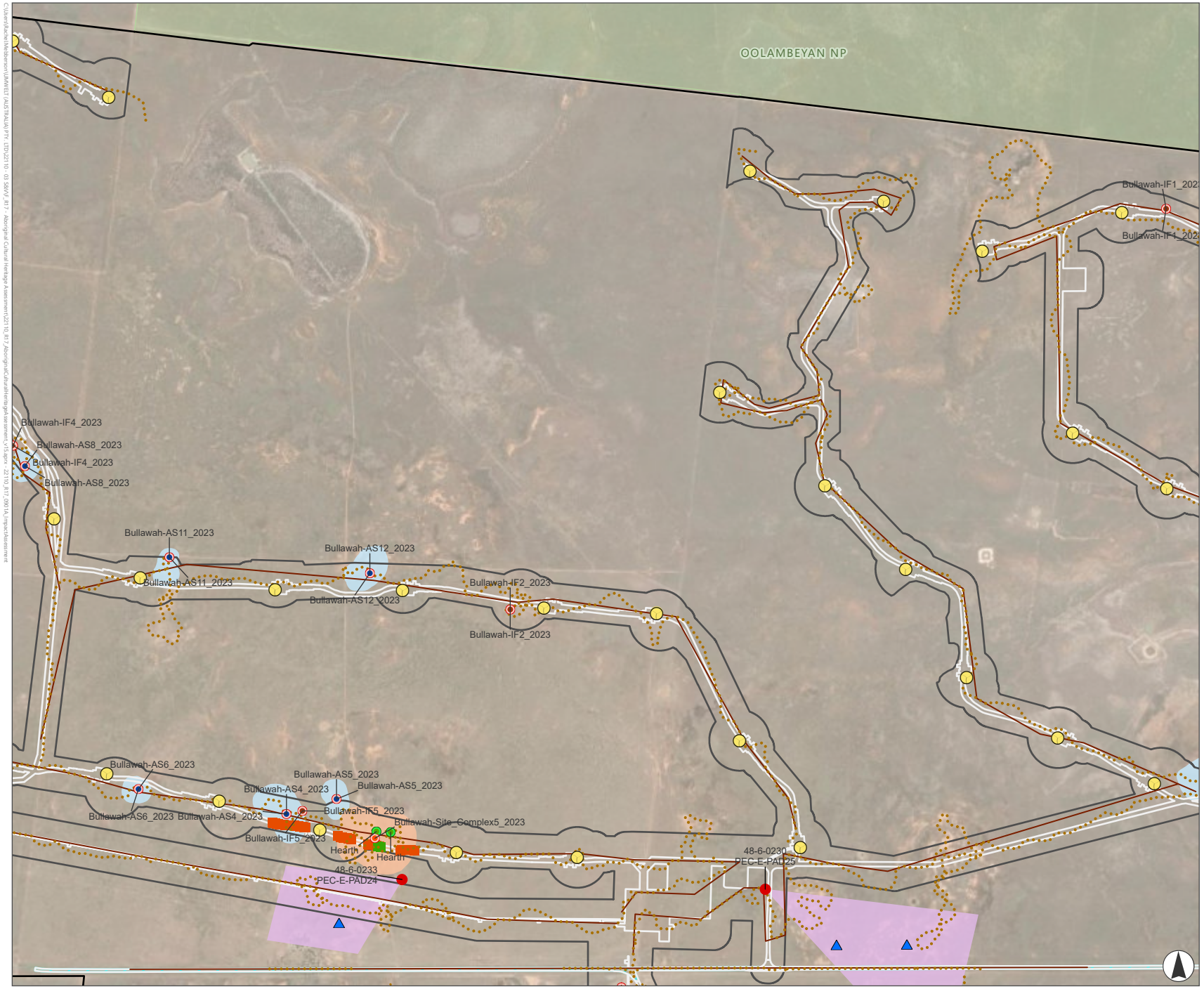


FIGURE 9.1B

Impact Assessment

Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators
- NPWS Reserves

Aboriginal Sites (Centroids)

- Artefact Scatter
- Hearth
- Isolated Find
- Site Complex

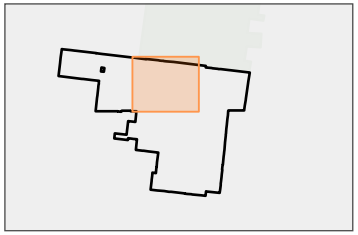
Aboriginal Sites (Site Extents)

- Artefact Scatter
- Site Complex

Type Harm

- Avoidance
- Impacted

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.75 1.5

Kilometres

Scale 1:35,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

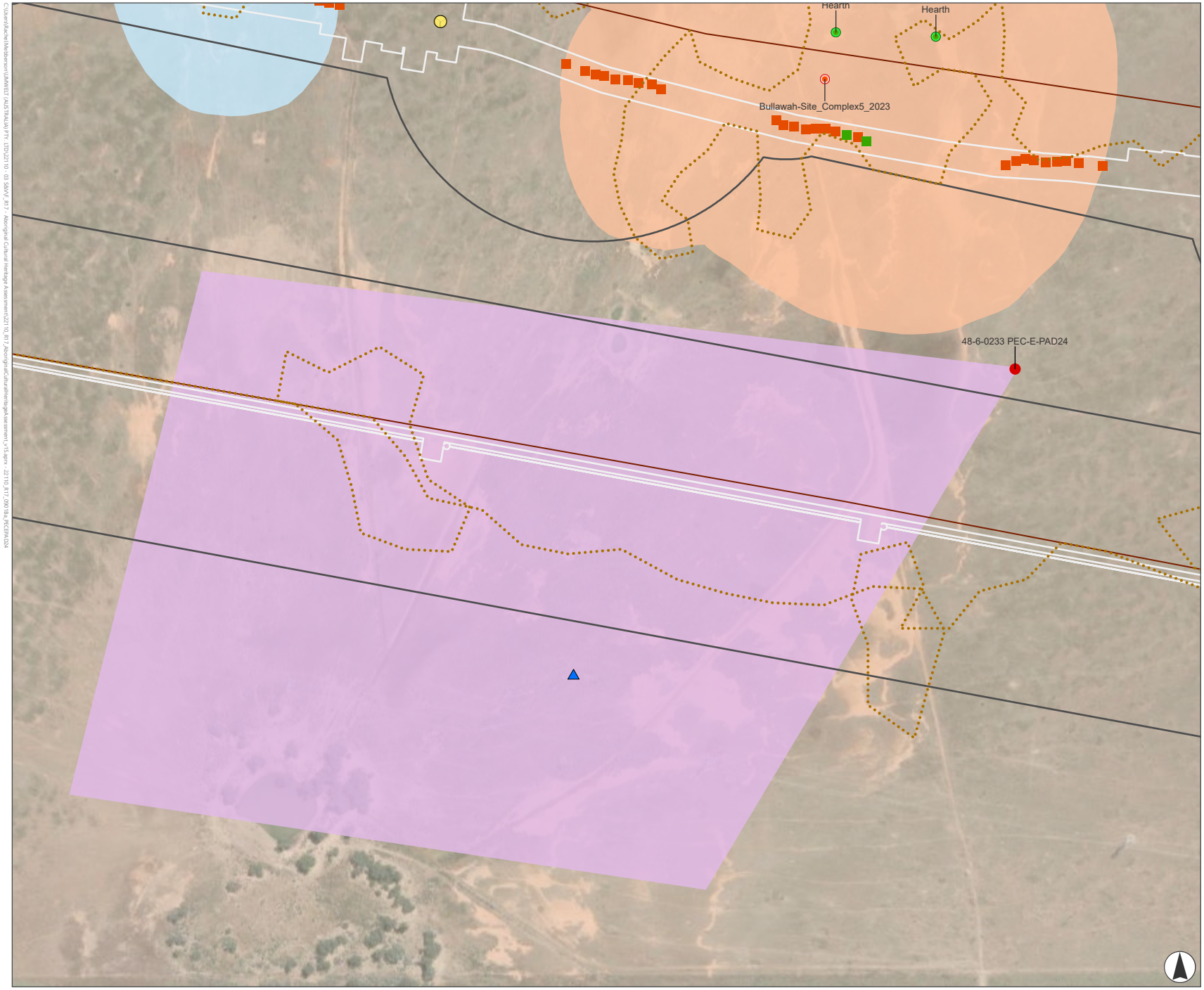


FIGURE 9.1B(a)

Impact Assessment
PEC-E-PAD24

Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators
- Navin Officer (2022) ACHAR Testing Site
- Survey Transects
- Tracklogs

Aboriginal Sites (Centroids)

- Hearth
- Site Complex

Aboriginal Sites (Site Extents)

- Artefact Scatter
- Site Complex
- Potential Archaeological Deposit (PAD)

Type Harm

- Avoidance
- Impacted

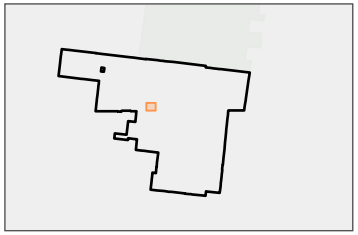
Test Excavation Pits

- Aboriginal objects found
- Aboriginal objects not found

superseded - AHIMS Search Results

- Potential Archaeological Deposit (PAD)

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.1 0.2

Kilometres

Scale 1:5,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

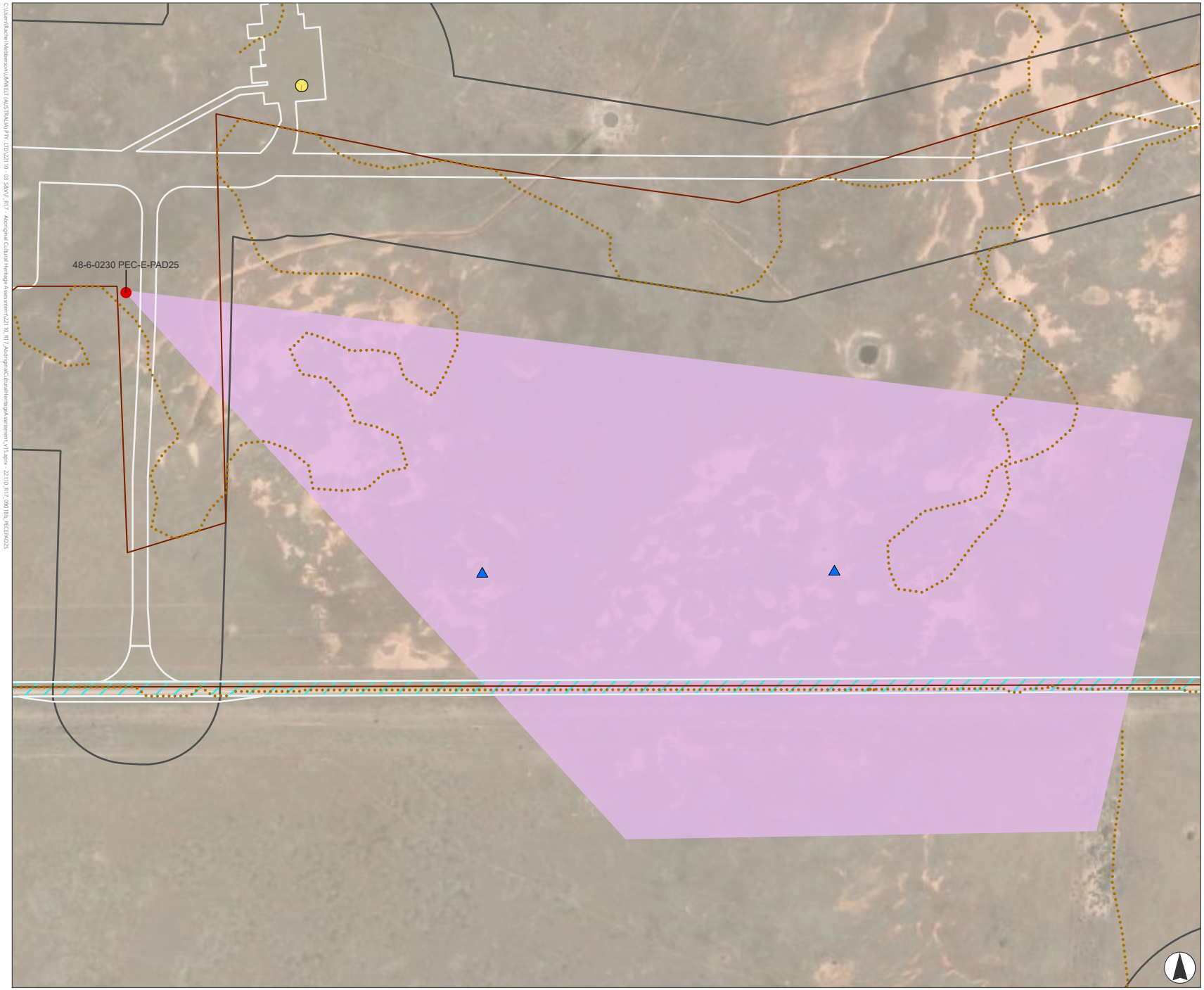


FIGURE 9.1B(b)

Impact Assessment
PEC-E-PAD25

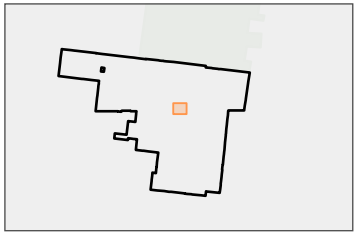
Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- North Boundary Road Widening Disturbance
- Wind Turbine Generators
- Survey Transects
- Tracklogs
- Potential Archaeological Deposit (PAD)
- Navin Officer (2022) ACHAR Testing Site

superseded - AHIMS Search Results

- Potential Archaeological Deposit (PAD)

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.15 0.3

Kilometres

Scale 1:7,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

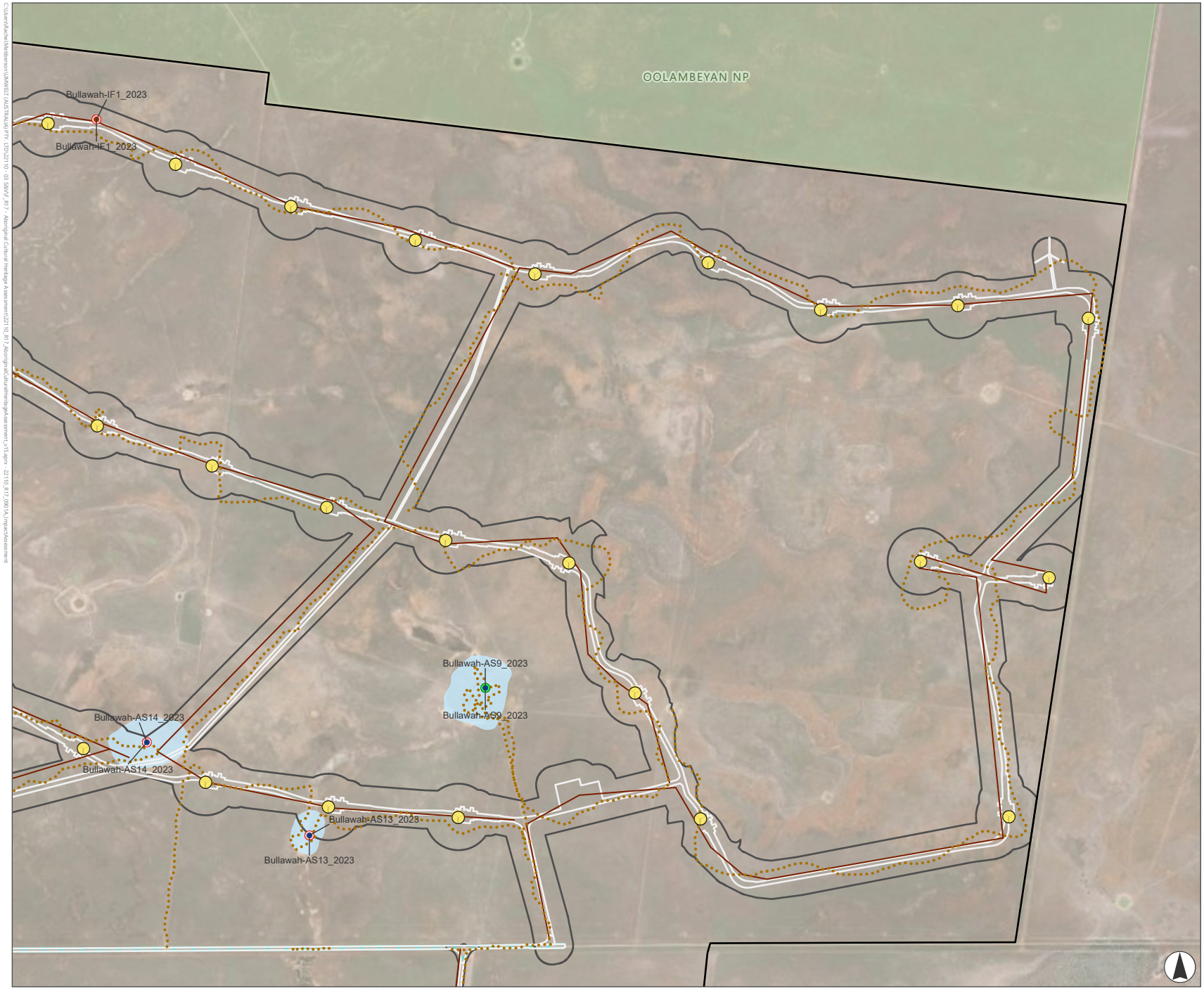


FIGURE 9.1C

Impact Assessment

Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators
- NPWS Reserves

Aboriginal Sites (Centroids)

- Artefact Scatter
- Isolated Find

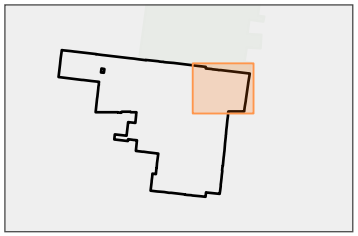
Aboriginal Sites (Site Extents)

- Artefact Scatter

Type Harm

- Avoidance
- Impacted

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.7 1.4

Kilometres

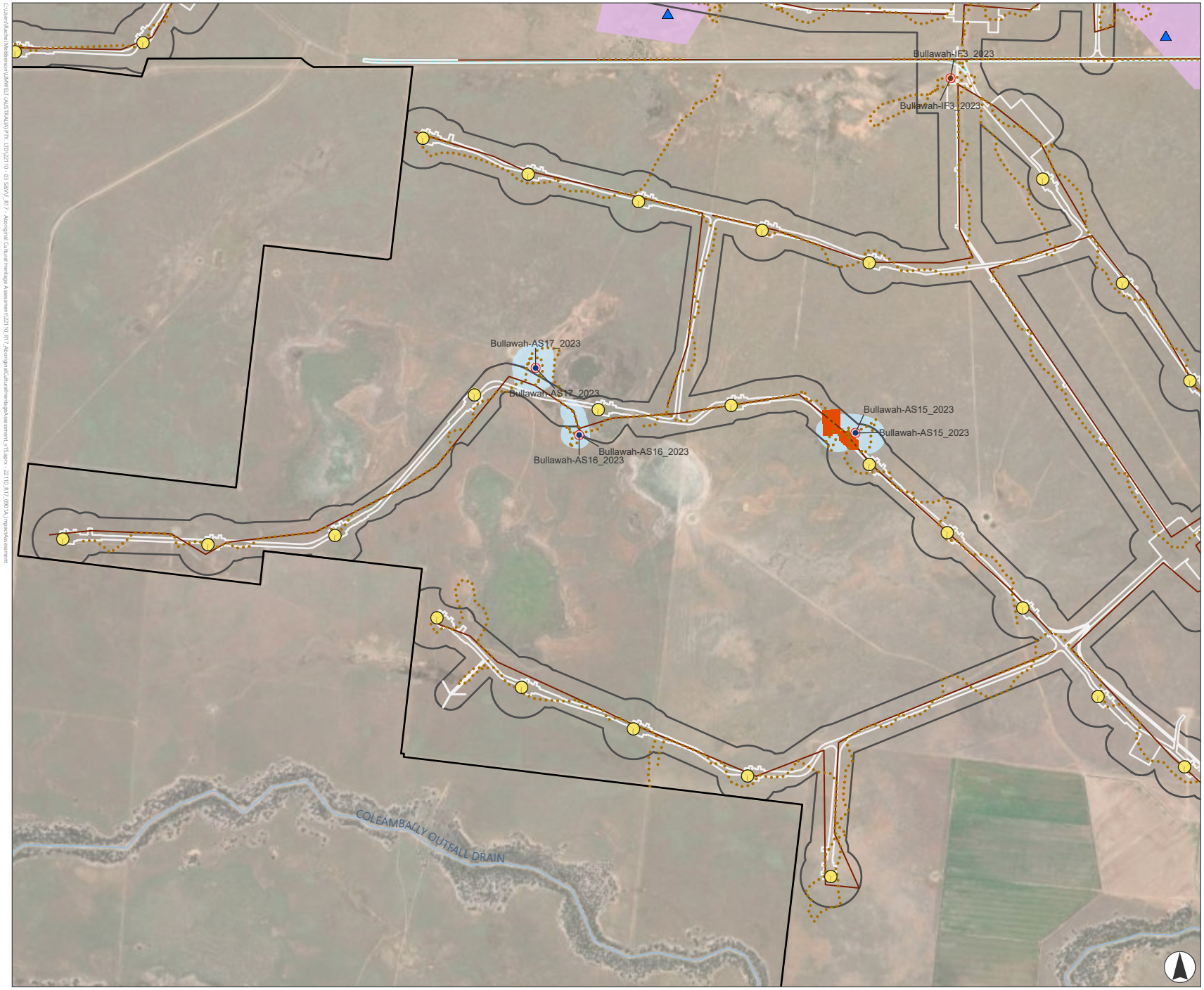
Scale 1:32,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 9.1D

Impact Assessment



Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators

Aboriginal Sites (Centroids)

- Artefact Scatter
- Isolated Find

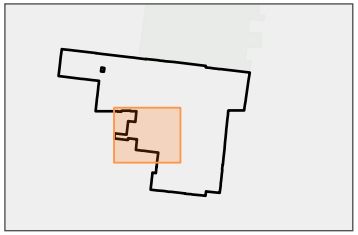
Aboriginal Sites (Site Extents)

- Artefact Scatter

Type Harm

- Impacted

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.75 1.5

Kilometres

Scale 1:35,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 9.1E

Impact Assessment

Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators

Aboriginal Sites (Centroids)

- Artefact Scatter
- Hearth
- Site Complex

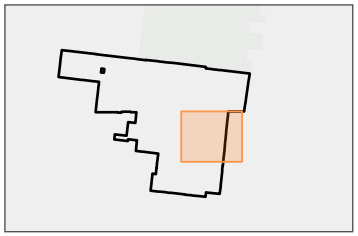
Aboriginal Sites (Site Extents)

- Artefact Scatter
- Site Complex

Type Harm

- Avoidance
- Impacted

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.7 1.4

Kilometres

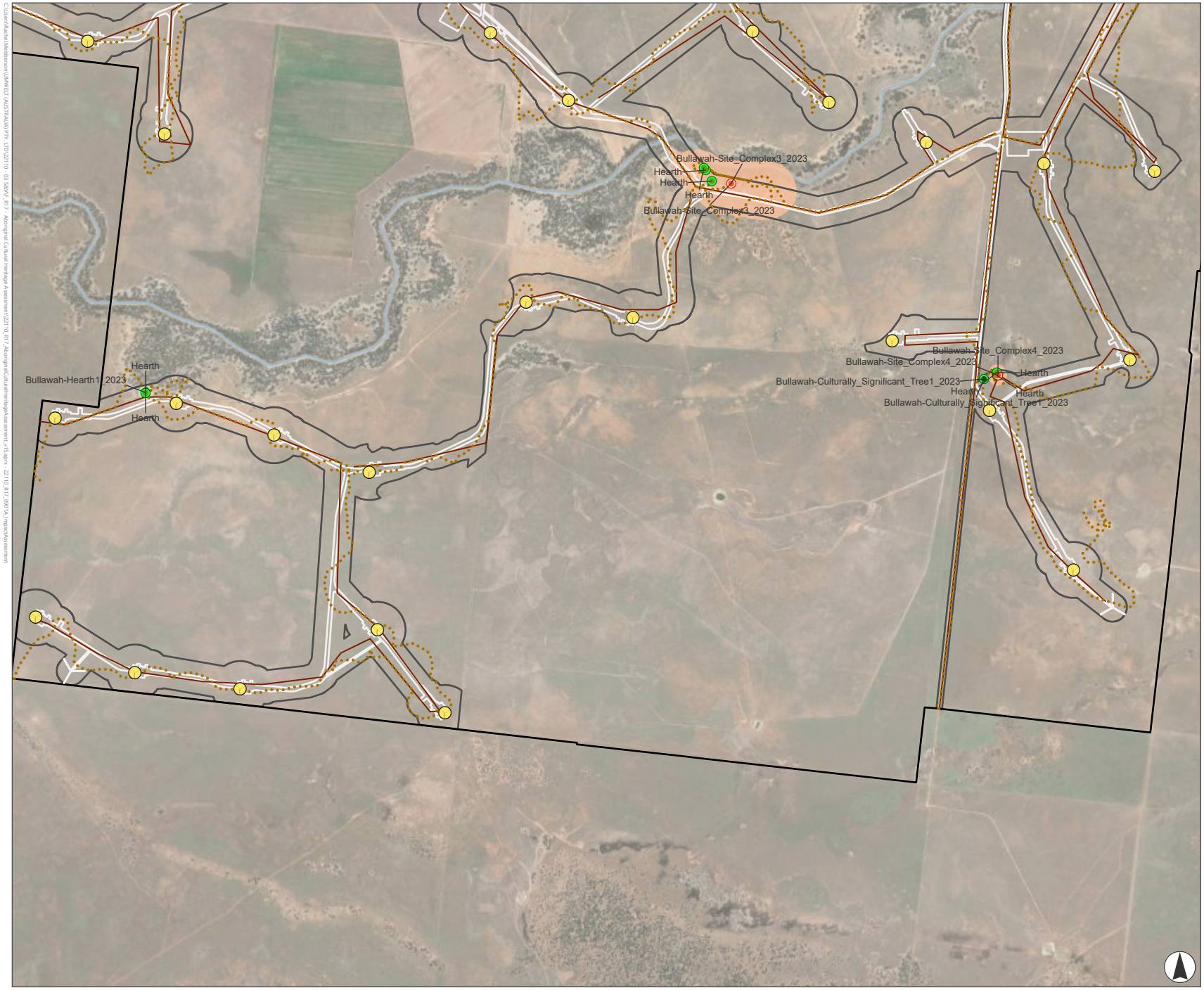
Scale 1:32,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

FIGURE 9.1F

Impact Assessment



Legend

- Project Boundary
- Development Corridor
- Disturbance Footprint
- Wind Turbine Generators

Aboriginal Sites (Centroids)

- Culturally Significant Tree
- Hearth
- Site Complex

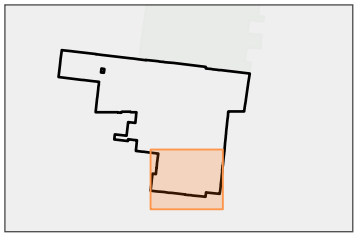
Aboriginal Sites (Site Extents)

- Hearth
- Site Complex

Type Harm

- Avoidance
- Impacted

Note: AHIMS 48-6-0233 and 48-6-0230 site extents have been digitized from AHIMS site cards and is indicative only.



0 0.85 1.7

Kilometres

Scale 1:38,000 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

9.2 Impacts to Potential Archaeological Resource

This assessment has determined that it is likely that subsurface Aboriginal objects will be directly impacted by the Project. The construction of the Project includes disturbance to the ground surface within the Disturbance Footprint. This construction has the potential to disturb Aboriginal sites; however, through detailed project design, BWF will seek to minimise harm where possible.

The Project involves multiple ground disturbance components, each with varying potential to impact the potential subsurface archaeological resource of the Study Area and the similar predicted archaeological resource that extends beyond the mapped boundary of existing PAD and open artefact sites across the whole Study Area. Discussions with RAP field representatives during the fieldwork program incorporating potential risks to tangible Aboriginal site elements and/or perceived cultural values facilitated a qualification of risk associated with proposed Project components. These Project components and their potential to impact on the archaeological resource of the Study Area is assessed in **Table 9.3.**

Table 9.3 Potential Impact Types

Project Component	Likelihood of impact to resources that extend across the Study Area
141 WTGs	High
359 MW battery energy storage facility	High
Permanent ancillary infrastructure	Medium
Temporary facilities	Medium
Off-site road works	Low

9.3 Avoiding and Minimising Harm

9.3.1 Early Design Refinement to Avoid and Minimise Harm

During the preparation of the EIS, refinements were made to the Project design to avoid and minimise impacts to key cultural and ecological values within the Project Area. These refinements, which incorporated feedback from RAPs, amongst other key stakeholders, included:

- Removal of all Project infrastructure (including two (2) WTGs) from the sand dune area which crosses Jerilderie Road in the western portion of the Project Area. This design change avoided Site Complex 1 in its entirety, along with the majority of Site Complex 2.
- Refinements to the indicative Disturbance Footprint, including:
    - Relocation of 11 WTGs (and associated ancillary infrastructure as required) to avoid Aboriginal sites.
    - Relocation of a further two (2) WTGs (and associated ancillary infrastructure as required) to minimise impacts to, or maximise setbacks from, Aboriginal sites.
- Refinements to the Development Corridor to avoid all primary Plains Wanderer habitat.

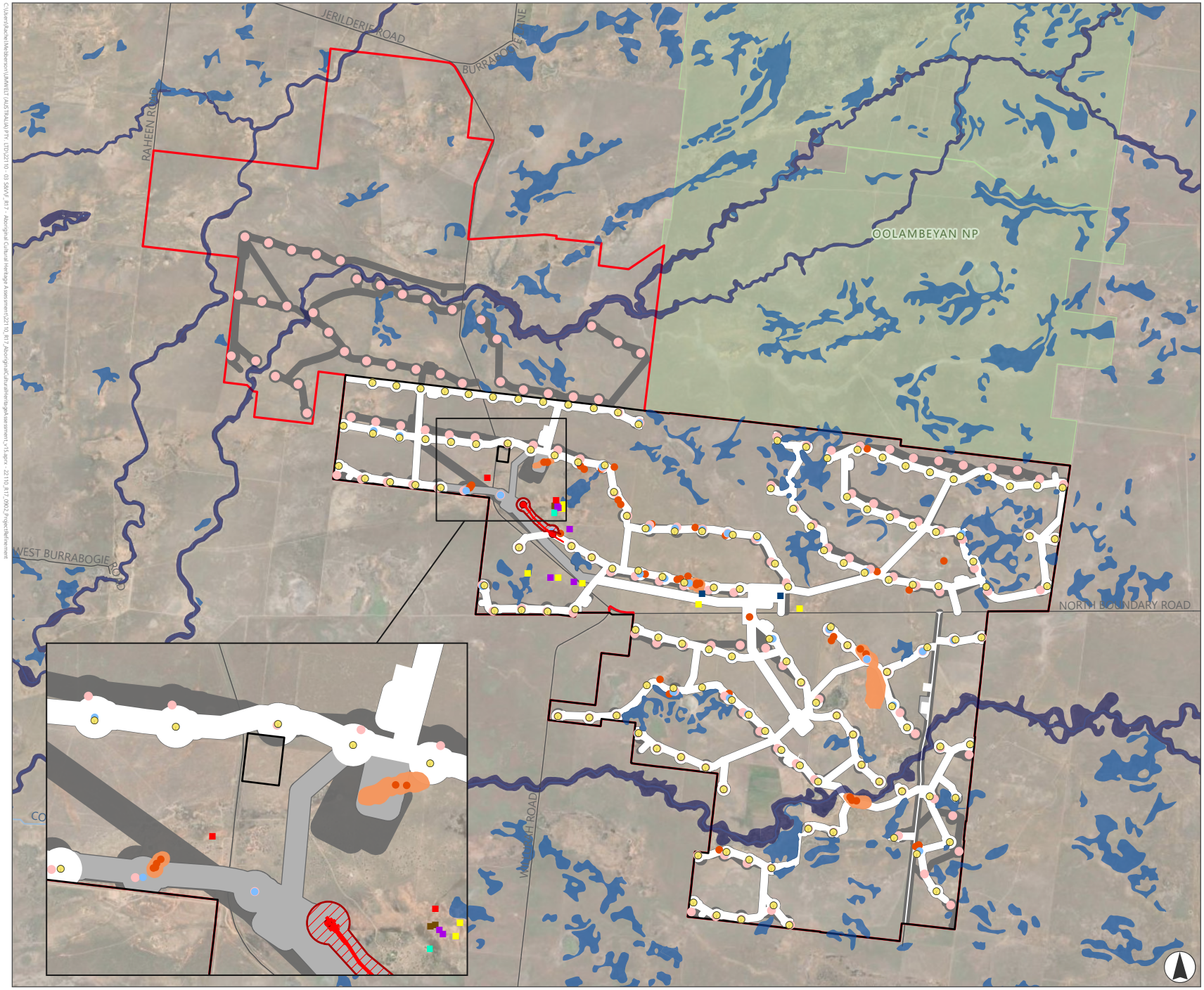
As is noted above these design refinements occurred primarily on the basis of archaeological survey outcomes and then the results of ongoing consultation with RAPs and other key stakeholders.

This approach was iterative, informed by community and aimed to fully avoid impacts to Aboriginal sites. Where full avoidance could not occur, design refinements then aimed to minimise impacts, such that the Project design represented in this ACHA (and more broadly the Project's EIS) addresses only the remaining impacts of the Project i.e. those that remain after avoidance and minimisation strategies are implemented.

Refinements to the Project layout which have occurred throughout the Scoping Report, EIS and Amendment Report phases of the Project, and are shown in **Figure 9.2** below. This ACHA has been undertaken to assess the refined project layout, as presented in **Figure 9.2**.

FIGURE 9.2

Project Refinement



Legend

- EIS Project Boundary
- Scoping Report Project Boundary
- EIS Development Corridor
- Early EIS Development Corridor
- Scoping Report Development Corridor
- EIS Wind Turbine Generators
- Early EIS Wind Turbine Generators
- Scoping Report Turbine Locations
- NPWS Reserves
- Road
- Hydroline
- Aboriginal Heritage Site (Umwelt)
- Aboriginal Site Complex (Site Extent)

Biodiversity Values Mapping

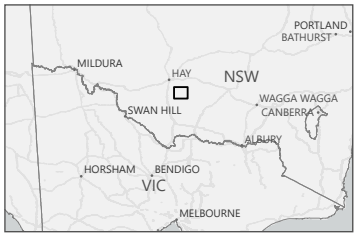
- Biodiverse riparian land
- Threatened species or communities with potential for serious and irreversible impacts

AHIMS Search Results

- Earth Mound
- Hearth
- Open Artefact Site
- Open Artefact Site with Hearth/s
- Potential Archaeological Deposit (PAD)
- Water Hole

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint



0 2.5 5

Kilometres

Scale 1:162,230 at A4

GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

9.3.2 Proposed Harm Minimisation of Aboriginal Sites

The current assessment has determined that the Aboriginal cultural heritage values of the Study Area and environs lie principally with both the known Aboriginal objects/sites within the Study Area, and those that may potentially be present and the tangible cultural connections to which they would be associated (if present). The current assessment determined that the Project would cause direct harm to known Aboriginal objects and the potential resource across the Study Area, however there are Aboriginal sites within the broader Project Area that can be completely avoided by the Project.

Additionally, the assessment identified that hearth sites retain an overall moderate significance and where possible, should be avoided. Recommendations for management measures for Aboriginal sites within the Development Corridor that can be managed by avoidance are provided in **Table 9.4,** with further detail provided in **Section 10.0.**

Table 9.4 Harm Minimisation of Aboriginal Sites

AHIMS ID	Site Name	Mitigation Method	Description
48-6-0322	Bullawah AS9_2023	Avoid	Site not located within Development Corridor and can be avoided
48-6-0323	Bullawah AS10_2023	Avoid	Mapped extent of site can be avoided by current design
48-6-0335	Bullawah Hearth 1_2023	Avoid/Fencing	Mapped location can be avoided by current design
48-6-0331	Bullawah Earth Mound 1_2023	Avoid/Fencing	Mapped location can be avoided by current design
48-6-0336	Bullawah Culturally Modified Tree1_2023	Avoid/Fencing	Mapped location can be avoided by current design
Various	Hearths located within site complexes	Avoid/Fencing	Mapped locations of all hearth sites can be avoided by current design
48-6-0131	South Burrabogie 1.1	Avoid	Site not located within Development Corridor and can be avoided
48-6-0132	South Burrabogie 1.2	Avoid	Site not located within Development Corridor and can be avoided
48-6-0133	South Burrabogie 1.3	Avoid	Site not located within Development Corridor and can be avoided
48-6-0134	South Burrabogie 1.4	Avoid	Site not located within Development Corridor and can be avoided
48-6-0135	South Burrabogie 1.5	Avoid	Site not located within Development Corridor and can be avoided
48-6-0136	South Burrabogie 1.6	Avoid	Site not located within Development Corridor and can be avoided
48-6-0137	South Burrabogie 1.7	Avoid	Site not located within Development Corridor and can be avoided
48-6-0138	South Burrabogie 1.8	Avoid	Site not located within Development Corridor and can be avoided
48-6-0139	South Burrabogie 2	Avoid	Site not located within Development Corridor and can be avoided

AHIMS ID	Site Name	Mitigation Method	Description
48-6-0140	South Burrabogie 3	Avoid	Site not located within Development Corridor and can be avoided
48-6-0222	PEC-E-101	Avoid	Site not located within Development Corridor and can be avoided
48-6-0223	PEC-E-100	Avoid	Site not located within Development Corridor and can be avoided
48-6-0160	PEC-E-38	Avoid	Site not located within Development Corridor and can be avoided
48-6-0161	PEC-E-39	Avoid	Site not located within Development Corridor and can be avoided

In summary, a total of 20 Aboriginal sites[13] are recommended to be avoided, along with the hearths located within the identified site complexes. Additionally, it is noted that there are a further 27 Aboriginal sites within the Development Corridor and/or off-site road works area that have the potential to be directly impacted by the Project (refer to **Table 9.2**). However, where it is reasonable and feasible to do so, BWF would seek to avoid or minimise impacts to these sites through micro-siting. Where impacts cannot be avoided, a program of surface collection and/or test excavation is proposed, as outlined in **Section 10.0.**

9.4 Cumulative Impact Assessment

9.4.1 Ecologically Sustainable Development

Australia's National Strategy for Ecologically Sustainable Development (1992) defines ecologically sustainable development as: 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'. Simply, Ecologically Sustainable Development is development which aims to meet the needs of Australians today, while conserving our ecosystems for the benefit of future generations.

9.4.2 Intergenerational Equity – Cumulative Impact Assessment

NSW Government – EnergyCo seeks to maximise opportunities created by the transformation of the NSW electricity system by coordinating investment in Renewable Energy Zones (REZs) across NSW. A REZ is the equivalent of modern-day power stations, combing new renewable energy infrastructure, including generators (such as solar and wind farms), storage (such as batteries and pumped hydro) and then high-voltage transmission infrastructure. Five (5) dedicated REZs have already been identified in NSW.

The Project is located wholly within the South West REZ. Because of this, and the REZ benefits anticipated by NSW Government – EnergyCo, the South West REZ has the potential to see strong interest for renewable energy development.

[13] For the purposes of this assessment, all individual hearth locations have been counted as a single 'site'.

Based on information available within the public domain, specifically the NSW Government – Major Projects website, the following developments are identified in the vicinity of the Project:

- Pottinger Solar Farm (SSD-59254709)
- Pottinger Wind Farm (SSD-59235464)
- Dinawan Wind Farm (SSD-50725708)
- Dinawan Solar Farm (SSD-50725959)
- Argoon Wind Farm (SSD-64935522)
- Yanco Delta Wind Farm (SSD-41743746)
- The Plains Wind Farm (SSD-50629707)
- The Plains Solar Farm (SSD-51219280)
- Conargo Wind Farm (SSD-70611708)
- Booroorban (Saltbush) Wind Farm (SSD-70636459)
- Romani Solar Farm (SSD-67105475)
- Hay Solar Farm (SSD-8113)
- Tchelery Wind Farm (SSD-59701722).
- Project EnergyConnect (NSW - Eastern Section) (SSI-9172452).

It is noted that because of the development activity in the South West REZ the above list may not address all potential sites being privately developed and not yet in the public domain. Information pertaining to any developments not yet in the public domain is therefore unavailable and excluded for this study.

When assessing likely harm on Aboriginal objects and places it is necessary to consider the principle of intergenerational equity. Intergenerational equity is:

> *"…the principle whereby the present generation should ensure the health, diversity and productivity of the environment for the benefit of future generations".*

In terms of Aboriginal heritage, intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts by historic development or under previous AHIPs/ACHMPs etc.), fewer opportunities remain for future generations of Aboriginal people to benefit from the preservation of their cultural heritage, places and objects. Information about the integrity, rarity or representativeness of the Aboriginal objects and places that may be impacted by a project, and how those tangible cultural heritage elements demonstrate the lifeways of Aboriginal peoples within the region, is pertinent to the consideration of intergenerational equity and the understanding of a project's contribution to cumulative impacts. Where there is uncertainty, the precautionary principle must be followed (DECC [former] 2009: 26).

Comparison of the identified Aboriginal cultural heritage resource of the Study Area with that of the surrounding region, using the results of AHIMS searches, provides a basic framework for identifying the impacts that a project may have on the broader Aboriginal cultural heritage resource of a given geographic region. Alongside those identified within the Study Area, existing open artefact and hearth sites and environs offer opportunities for future research, conservation and education. Accordingly, it is necessary to quantify the impacts of the Project on this collective resource. As indicated in **Section 9.0**, a total of 27 Aboriginal sites and/or areas of PAD have been identified within the Project's Development Corridor and may be directly impacted. Of those, all comprise open artefact sites and includes those areas designated as 'site complexes'[14]. Where reasonable and feasible, impacts to these 27 sites will be avoided or minimised through micro-siting. Where impacts cannot be avoided, a surface collection and/or test excavation program is proposed (refer to **Section 10.0**).

AHIMS data indicates that these sites represent approximately 30% of the extant open artefact resource of the AHIMS search area. While acknowledging the limitations of the AHIMS database with respect to the validity of listed site statuses, on the basis of this data, it seems reasonable to conclude that the loss of these sites would constitute a minor adverse impact to the known open artefact resource of the region. Consideration of the character of these sites however, the majority of which have been assessed as being of low scientific significance, provides support to this suggestion. Additionally, the observation that, while a large number of Aboriginal archaeological investigations incorporating survey and/or excavation have been undertaken within the AHIMS search area, the majority of land within this region has not been physically inspected for Aboriginal sites which are likely present within the broader landscape.

[14] For the purposes of this impact assessment, it is assumed hearths can be avoided. Where hearths cannot be avoided, management contingencies are presented in **Section 10.2**

10.0 Management Strategy

10.1 Overview

The ACHA forms part of the EIS and has been subsequently updated to form part of the Amendment Report prepared by Umwelt to accompany BWF's application for SSD Consent under Division 4.1 of Part 4 of the EP&A Act. The Code of Practice (DECCW, 2010b) provides best practice documents for Aboriginal Cultural Heritage Impact Assessments in NSW. Both documents have been considered in the development of the management strategy detailed in the following sections.

In summary:

- A total of 20 Aboriginal sites are recommended to be avoided, along with the hearths located within the identified site complexes (refer to **Table 9.4** in **Section 9.0**). Protection of Aboriginal sites is discussed further in **Section 10.2.5** below.
- A total of 27 Aboriginal sites within the Development Corridor will be directly impacted by the Project, resulting in complete or partial loss (refer to **Table 9.2** in **Section 9.1**), provided that micro siting to avoid and minimise impacts is unachievable at all locations. A surface collection and/or test excavation program for these sites would then be undertaken, as discussed in **Section 10.2.1** and **Section 10.2.2** below.
- No specific harm minimisation measures are required in respect of the off-site road works areas.

10.2 Aboriginal Cultural Heritage Management Plan (ACHMP)

A management strategy to address the potential impacts of the Project on the known and potential Aboriginal heritage resource of the Project Area is provided in the following sections. It is recommended that this strategy be detailed in an Aboriginal Cultural Heritage Management Plan (ACHMP) for the Project, which should be prepared in consultation with RAPs and H-NSW.

This version of the management strategy is revised based on consultation with H-NSW held on 3 June 2025 to discuss Item 6 of its advice received under RFI 2, in relation to additional post-approval management/ mitigation measures. Umwelt's proposed additional measures, as supplied to H-NSW, were deemed to be acceptable as formally recorded in the H-NSW 'DOC number' identified as 'DOC25/431224'.

These additional post-approval management/mitigation measures are set out below where relevant, and include:

- Commitment to more frequent AHIMS extensive searches during ACHMP preparation and implementation, to address any new AHIMS sites registered by PEC/other projects in the region.
- Expansion of the unexpected finds protocol to address both a) standard measures to manage unexpected finds that align with the current archaeological understanding (i.e. low subsurface concentrations of flaked lithic objects, as assessed), and b) additional measures to manage unexpected finds of higher scientific and/or cultural significance (e.g. higher than expected concentrations of lithic objects, hearths etc.).

- Commitments to RAP consultation beyond standard practices during the preparation and implementation of the ACHMP, to ensure proactive engagement with RAPs and effective planning for, and implementation of, agreed management/mitigation measures.

10.2.1 Test Excavation Program

Consistent with Navin Officer (2022 p.204), a targeted archaeological excavation program will be carried out in any part of PEC-E-PAD24 and PEC-E-PAD25 where proposed Project activities would have direct impact to the ground surface[15]. Following Navin Officer (2022, p.204), direct impacting activities may include:

- grading of tracks and construction areas
- excavation activities
- tree removal that includes the root ball.

The purpose of the test excavations would be to identify and characterise the extent of subsurface Aboriginal objects, which in turn would be used to further inform additional design development and/or refinement and construction planning. Archaeological test excavation activities would be carried in accordance with the following general methodology.

1. A suitable testing interval will be determined for the area to be subject to test excavation, which must comply with Clause 5(ii) of Requirement 16a of the Code of Practice (DECCW, 2010b).
2. Test pits must be hand excavated in 0.5 m x 0.5 m units. Excavated materials will be dry-sieved using 5-millimetre aperture wire-mesh sieves. All definite and potential cultural lithic items were collected at the sieves and bagged according to excavated pit number and spit. Sieved spoil, once cleared by the project archaeologist and with agreement by RAP representatives, can be returned to the excavated test pits on completion.
3. Test pits were excavated to the base of extant A horizon soils, B-horizon clay subsoils and/or a conclusively identified cultural sterile layer.
4. Representative profiles of all test pits must be recorded using photographs and test pit stratigraphy recorded on pro forma test pit recording forms, using standard sedimentological terms and criteria (after Isbell & The National Committee on Soil and Terrain, 1997). If obvious and/or suspected/definitive archaeological features such as hearths, earth ovens and/or heat treatment pits are identified, the project archaeologist, in consultation with RAP representatives, will undertake localised excavation to characterise and record the identified materials/feature(s) using the following methodology:

- Targeted archaeological excavation will be undertaken using hand equipment to expose and record the feature/s and recover any Aboriginal objects using accepted techniques and spit levels of no greater than 10 cm (*sensu* Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales; DECCW 2010a).

[15] Where proposed ground disturbances are constrained to the overlapping Development Corridor and area of PAD boundaries.

- The surface of the feature will be cleaned by hand (using trowels, hand shovels and brushes, as required) to allow the edges of the feature to be identified. The feature will then be excavated in cross-section (half-sectioned or part thereof depending on the location of the feature within pit or whether it extends outside of the pit) to investigate the dimensions and orientation of the feature to more accurately assess whether it is a cultural feature or the result of natural process (for example, a burnt tree root/stump or accumulation of bone within a former void).The excavation will proceed according to the stratigraphy (if any) of the in-filling materials. If it is identified as a feature, it will be photographed in cross-section and a stratigraphic profile of the cross-section will be recorded (where possible).

- If it is identified as a feature, it will then be excavated in its entirety within the extents of the pit. All excavated cultural materials will be retained for analysis and samples of relevant materials will be sent for additional analysis, including geochronological analysis. If the feature extends outside the test pit, a further expansion may be undertaken to a maximum of 1 m^2.

- Geochronological sampling would include the processing and analysis of samples to inform the absolute age of the soil profile and/or cultural assemblage recovered. Up to two (2) samples per excavation area would be collected for optically stimulated luminescence (OSL) analysis. Sediment samples would be collected from suitable test pits as determined by the project archaeologist to inform the broader geoarchaeological record of the Study Area. If in situ organic materials (i.e., charcoal) are encountered during excavations, materials will be collected and labelled with applicable provenance information (depth, trench ID etc). Samples deemed appropriate for analysis will be sent to a suitable institution for radiocarbon dating.

5. Protocols for following scenarios will apply to the test excavation program:

- Should high concentrations of lithic objects high (e.g. >100/m^2) and/or shell (i.e. midden) be recorded in any single test pit, excavation activities in the immediate vicinity must cease immediately. The project archaeologist, in consultation with the project manager, must then notify Heritage NSW and seek further guidance.

- Should human/possible human skeletal material be identified (either in situ or in excavated spoil) within any excavated area, excavation activities in the immediate vicinity must cease immediately. The procedure provided in **Section 10.2.10** must then be followed.

- Should historical relics, features or distinct historical fill lenses be observed at any stage during test excavation activities, excavation would immediately cease. The project archaeologist (or a qualified historic heritage archaeologist, if required) would then record the find and determine the nature and extent of any associated deposit. The project archaeologist, in consultation with the project manager, must then notify Heritage NSW and seek further guidance.

- Should evidence of 'contact' archaeology be identified (e.g., European materials such as glass or ceramic utilised to make traditional tools, and/or broken brick/earthenware used as hearth retainers etc), excavation activities in the area must cease immediately. The project archaeologist, once having consulted with RAP field representatives of the find, must then notify the project manager, who in turn must notify Heritage NSW.

10.2.2 Salvage Program

Given their contents and significance, surface collection is considered an appropriate and effective management option for the 27 Aboriginal sites within the Development Corridor (as outlined in **Table 10.1**), in the event that these sites cannot be avoided through micro-siting. A systematic salvage program will be undertaken within the Study Area prior to the commencement of any Project-related ground clearance works. For hearths that cannot be avoided, a targeted excavation will be completed within the mapped extent of the hearth site.

Excavations will be completed in accordance with the standard techniques prescribed by Requirement 16 of the Code of Practice (DECCW, 2010b), and in general, would comprise systematic manual excavation of the hearth, recording of observations and collection of samples for chronological analysis. Note: any excavation methodology must be developed in consultation with RAPs and Heritage NSW that provides an adequate level of recording of site features and must include at least one (1) sample per hearth (e.g. charcoal, bone/shell and/or sediment) that should be submitted to a qualified institution for chronological analysis. Any recovered lithic objects would be retained as part of the broader salvage program.

An addendum to this ACHAR may be required to quantify associated impacts and reissued to RAPs for review and comment.

Table 10.1 Surface Collection Program

AHIMS Site ID	Site Name[1,3]	Overall Significance	Degree of Impact
48-6-0311	Bullawah IF1_2023	Low	Complete
48-6-0312	Bullawah IF2_2023	Low	Complete
48-6-0313	Bullawah IF3_2023	Low	Complete
48-6-0314	Bullawah IF4_2023	Low	Complete
48-6-0315	Bullawah IF5_2023	Low	Complete
48-6-0170	Bullawah AS1_2023[2]	Moderate	Partial
48-6-0316	Bullawah AS2_2023	Moderate	Partial
48-6-0171	Bullawah AS3_2023	Moderate	Partial
48-6-0317	Bullawah AS4_2023	Moderate	Partial
48-6-0319	Bullawah AS5_2023	Moderate	Partial
48-6-0318	Bullawah AS6_2023	Moderate	Partial
48-6-0325	Bullawah AS7_2023	Moderate	Partial
48-6-0324	Bullawah AS8_2023	High	Partial
48-6-0321	Bullawah AS11_2023	Moderate	Partial
48-6-0320	Bullawah AS12_2023	Moderate	Partial
48-6-0330	Bullawah AS13_2023	Moderate	Partial
48-6-0329	Bullawah AS14_2023	Moderate	Partial
48-6-0328	Bullawah AS15_2023	Moderate	Partial
48-6-0327	Bullawah AS16_2023	Moderate	Partial
48-6-0326	Bullawah AS17_2023	Moderate	Partial
48-6-0168	Bullawah Site Complex 2_2023	Moderate	Partial

AHIMS Site ID	Site Name[1,3]	Overall Significance	Degree of Impact
48-6-0334	Bullawah Site Complex 3_2023	Moderate	Partial
48-6-0333	Bullawah Site Complex 4_2023	Moderate	Partial
48-6-0332	Bullawah Site Complex 5_2023	Moderate	Partial
48-6-0337	Bullawah Site Complex 6_2023	Moderate	Partial
48-6-0233	PEC-E-PAD24[4]	Low	Partial
48-6-0230	PEC-E-PAD25[4]	Low	Partial

Notes:

[1]Site complexes listed in this table comprise both open artefact sites and hearth/s. For the purposes of the impact assessment presented herein, hearths contained within site complexes are to be treated as individual site elements and in the first instance, are to be avoided as per the below recommendations for management as they apply to standalone hearths.

[2] Surface collection will be undertaken to the extent the site overlaps with the final Development Corridor, in the event that these sites cannot be avoided through micro-siting.

[3]Areas of PAD listed in this table are assumed to retain surface objects also on the basis of reporting by NOHC (2022).

*[4] As indicated in **Section 10.2.1**, test excavations in areas of PAD may also be required.*

Should BWF wish to proceed with the surface collection of any Aboriginal sites prior to development consent and ACHMP approval, BWF must apply for an AHIP. The archaeological surface collection program for the Project should incorporate the following components:

- Surface collection will occur prior to the commencement of ground disturbance works in their vicinity. The ACHMP for the Project will include a detailed research design and methodology for the surface collection program.
- All works will be undertaken by a combined field team of archaeologists and RAP field representatives. Post-surface collection work should, at minimum, include:
    - All Aboriginal objects salvaged as part of the archaeological surface collection program will be curated in an appropriate manner, as determined through consultation with RAPs during preparation of the ACHMP. Temporary off-site storage of salvaged objects should be allowed for the purposes of analysis and recording.
    - Aboriginal Site Impact Recording (ASIR) forms for all salvaged sites will be submitted to Heritage NSW on the completion of the surface collection program.

10.2.3 Care & Control of Recovered Aboriginal Objects

Following post-surface collection analyses of recovered Aboriginal objects, RAPs will be consulted regarding the appropriate treatment of recovered Aboriginal objects. Requirement 26 of the Code of Practice (DECCW, 2010b) provides standard procedures for the deposition of lithic artefacts. In the absence of a formal Care Agreement, these standard procedures will be followed.

10.2.4 Post-fieldwork Analysis and Reporting

Following the completion of the salvage program, all recovered lithic objects (artefacts) recovered during the surface collection program will be subject to macroscopic attribute analysis, with the number of attributes recorded per specimen differing by technological type. All objects recovered will be temporarily stored until an appropriate option for long-term management of cultural materials is determined in consultation with RAPs. A report detailing the results of the archaeological salvage program undertaken (including the results of macroscopic analyses) will be completed within one (1) year of the fieldwork component of the program. Copies of any stand-alone specialist reports will be appended to the report. Reporting will be consistent with the best practice guidelines suggested by the Code of Practice (DECCW, 2010b). Copies of the final salvage report will be provided to all RAPs and Heritage NSW within 14 days of completion.

10.2.5 Protection of Aboriginal Sites

BWF has made a commitment that the Aboriginal sites identified in **Section 9.3.2** of this report will be avoided and protected from impact as part of the Project. The sites should be documented in the ACHMP as being items of heritage and environmental significance which must be avoided. Fencing and/or barricades must also be erected during Project works to provide ongoing protection, with details to be provided in the ACHMP. Site specific fencing and/or barricade requirements should comprise stable fencing and a gate to provide access for cultural purposes and/or weeding and maintenance.

Fencing buffers must comprise, at a minimum:

- Hearth sites – 2 m from mapped centroid and/or mapped boundary extent.
- Open artefact sites – 5 m from mapped centroid and/or mapped boundary extent.
- Culturally modified tree – 5 m from Tree Protection Zone (TPZ).
- For Aboriginal site 'Bullawah-Culturally Modified Tree1 2023' (AHIMS #48-6-0336) fencing and/or barricades must be established such that they do not interfere with continued tree growth[16]. A program of inspection will also be implemented by an appropriately qualified person (e.g. an arboriculturist) to provide an ongoing assessment of tree condition, and to provide suitable management advice, if needed.

In the unlikely event that BWF determines that Aboriginal sites identified in **Section 9.3.2** cannot be avoided during construction of the Project, provisions for a suitable management strategy (i.e. artefact surface collection, tree removal - salvage and relocation/preservation) must be integrated into the ACHMP and agreed to by RAPs.

In recognition of the quantity of active and/or proposed projects in the South West region, the implementation of a frequent (e.g. quarterly) search program of the AHIMS register will be necessary during the preparation and implementation of the ACHMP to identify and address any new Aboriginal sites that may have been registered within or surrounding the Project.

[16] Note: RAP site representatives to date, have not identified gender specific constraints regarding management of 'Bullawah-Culturally Modified Tree1 2023' (AHIMS #48-6-0336). However, it is recommended that female RAP representatives be invited to participate during fencing works.

In addition, BWF will participate in quarterly reporting to NSW Government - EnergyCo, an agreed process for renewable energy proponents in the South West REZ. The results of this search program would feed into the quarterly reporting to NSW Government - EnergyCo.

10.2.6 Aboriginal Community Consultation

To ensure proactive engagement with RAPs and effective planning for, and implementation of agreed management/mitigation measures, a systematic program of RAP consultation will occur during the preparation and implementation of the ACHMP, which will be implemented for the duration of the Project. Protocols for RAP engagement must also be documented in the ACHMP and include specific measures including but not limited to RAP engagement, dispute investigation and resolution, and community access protocols. The ACHMP may also seek to develop an Aboriginal Community Consultative Committee (CCC) to establish a standardised forum for open discussion between stakeholders, including but not limited to BWF, RAPs and other Aboriginal stakeholders (if identified), local council/s and other stakeholders on any issues directly relating to the heritage and environmental performance, and Aboriginal community relations associated with the construction and operation of the Project.

10.2.7 AHIMS Site Cards

AHIMS site cards must be submitted to Heritage NSW within a reasonable time (as per Section 89A of the NPW Act) for all newly recorded Aboriginal sites within the Study Area. In the event that a previously unidentified Aboriginal site is discovered within the Study Area at any point during the life of the Project, an AHIMS site card for that site must be submitted to Heritage NSW. Timing protocols for the submission of AHIMS site cards should be included in the ACHMP for the Project.

10.2.8 Previously Unrecorded Aboriginal sites and/or Objects

Provisions regarding the appropriate management action(s) for any previously unrecorded Aboriginal sites and/or objects identified within the Study Area throughout the life of the Project must be incorporated into the ACHMP (i.e. an Unexpected Finds Protocol). Management action(s) will vary according to the type of evidence identified, its significance (both scientific and cultural) and the nature of potential impacts.

10.2.9 Previously Unrecorded Aboriginal Objects

Provisions regarding the appropriate management action(s) for any previously unrecorded Aboriginal archaeological sites/materials identified within the Study Area throughout the life of the Project (including construction, operations and decommissioning phases) must be incorporated into the ACHMP (i.e. an Unexpected Finds Protocol). Management action(s) will vary according to the type of evidence identified, its significance and the nature of potential impacts but in general will comprise the following procedure:

- All works would cease immediately in the area to prevent any further impacts to the object(s).
- Notify the BWF Environmental Manager and/or Project Manager immediately.
- A qualified heritage consultant would be engaged to determine the nature, extent and scientific significance of the object(s). RAPs are to be notified in writing regarding the nature of the find and if required, proposed management actions. RAPs will be requested to provide comments within seven (7) days.

- An AHIMS site card would be completed and submitted to Heritage NSW in compliance with Section 89A of the NPW Act. The site cards will be lodged within 21 days and a copy provided to those RAPs who wish to have a copy.
- The ACHMP and any other Project environmental management systems or databases would be updated (as relevant) to address the new Aboriginal site. Management actions would be dependent on the nature and extent of identified Aboriginal sites, and may include the following:
    - Isolated lithic objects or low-density concentrations (e.g. <10 lithic objects/m^2)
    - High density open artefact sites (e.g. >100 lithic objects/m^2)
    - Hearths, earth mounds and middens (i.e. accumulations of shell, bone etc)
    - Culturally modified trees
    - Skeletal remains (refer **Section 10.2.10**).

10.2.10 Human Skeletal Remains

In the event that potential human skeletal remains are identified throughout the life of the Project (including construction, operations and decommissioning phases), the following standard procedure outlined below will be followed (this procedure will also be included in the ACHMP for the Project):

- All work in the vicinity of the remains must cease immediately.
- The location must be cordoned off and the appropriate authorities notified (including NSW Police and if considered of possible Aboriginal descent, NSW Heritage).
- Subject to any alternative instruction from the NSW Policy or Heritage NSW, a physical or forensic anthropologist would be commissioned to inspect the remains *in situ* and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or modern).
- Subsequent management actions will be dependent on the findings of the inspection undertaken under Point 3.
- If the remains are identified as modern and human, the area will become a crime scene under the jurisdiction of the NSW Police.
- If the remains are identified as pre-contact or historic Aboriginal, the site will be secured, and Heritage NSW and all RAPs notified in writing.
- If the remains are identified as historic (non-Aboriginal), the site is to be secured and the Heritage NSW contacted.
- If the remains are identified as non-human, work can recommence immediately.

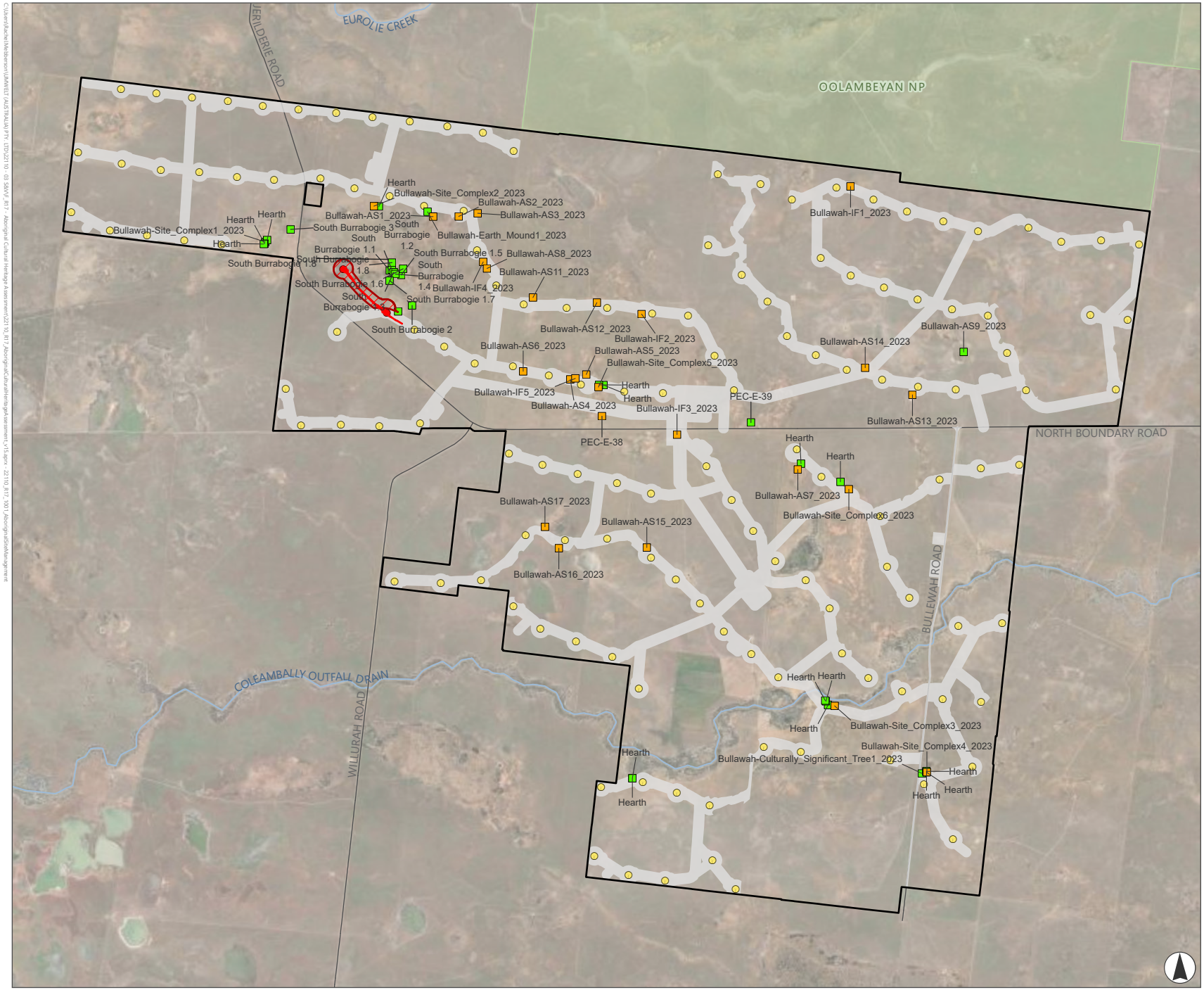
10.3 Aboriginal Cultural Heritage Awareness Training

An Aboriginal cultural heritage awareness training package will be developed for use throughout the life of the Project. This package will be developed in consultation with RAPs and completed prior to the

commencement any ground disturbance works. Aboriginal cultural awareness training will be mandatory for all staff and contractors whose roles may require interaction with Aboriginal sites and/or involve consultation with Aboriginal stakeholders.

FIGURE 10.1

Aboriginal Site Management



Legend

- Wind Turbine Generators
- Project Boundary
- Development Corridor
- NPWS Reserves

Aboriginal Site Management

- Avoidance
- Surface Collection

To be Removed

- Wind Turbine Generators
- Development Corridor
- Disturbance Footprint

0 1 2

Kilometres

Scale 1:110,000 at A4
GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023)

11.0 References

Allen, H (1998). Reinterpreting the 1969–1972 Willandra Lakes archaeological surveys. Archaeology in Oceania, 33(3), 207–220.

Attenbrow (2010) Sydney's Aboriginal Past. Investigating the Archaeological and Historical Records. UNSW Press.

Balek, C.L. (2002). Buried artifacts in stable upland sites and the role of bioturbation: A review. Geoarchaeology 17, 41.

Berryman, A., & Frankel, D. (1984). Archaeological investigations of mounds on the Wakool River, near Barham, New South Wales: A preliminary account. Australian Archaeology, 19(1), 21–30.

Beveridge, P. (1883). Of the Aborigines inhabiting the great lacustrine and riverine depression of the lower Murray, lower Murrumbidgee, lower Lachlan, and lower Darling. Journal and Proceedings of the Royal Society of New South Wales, 17, 19–74.

Biosis (2017) Balranald Sun Farming Project, NSW: Archaeological Report. Unpublished report for Overland Sun Farming Company Pty Ltd.

Biosis. 2017. Hay Sun Farm, NSW Aboriginal Cultural Heritage Assessment Report. Report for Plains SF No1. Pty Ltd.

Bonhomme, T. (1990). Sandmining and burials on the Riverine Plain. Unpublished report to NP&WS, NSW.

Bowler, J. M. (1998). Willandra Lakes revisited: environmental framework for human occupation. Archaeology in Oceania, 33(3), 120–155.

Bowler, J. M., Johnston, H., Olley, J. M., Prescott, J. R., Roberts, R. G., Shawcross, W., and Spooner, N. A. (2003). New ages for human occupation and climatic change at Lake Mungo, Australia. Nature, 421(6925), 837–840.

Brown, P. 1989. Coobool Creek: A morphological and metrical analysis of the crania, mandibles and dentitions of a prehistoric Australian human population. Terra Australis. Prehistory, Research School of Pacific Studies, the Australian National University, Canberra.

Brown, C.M. and Stephenson, A.E. 1991. The Geology of the Murray Basin, Southeastern Australia. Bulletin 235. Department of Primary Industries and Energy (Bureau of Mineral Resources, Geology and Geophysics).

Brumm, A. (2010). 'The falling sky': symbolic and cosmological associations of the Mt William greenstone axe quarry, central Victoria, Australia. Cambridge Archaeological Journal, 20(2), 179–196.

Curr, E.M. 1883 [1968]. Recollections of squatting in Victoria, then called the Port Phillip district, from 1841 to 1851. Australiana facsimile editions no. 130, Libraries Board of South Australia.

Elphick, B and Elphick, D. 2004. An [sic] Historical & Biographical Record of the Warangesda Aboriginal Mission/Station, Darlington Point NSW.

ERM. 2022. Keri Keri Wind Farm, Aboriginal Cultural Heritage Assessment Report. Draft. Report for Acciona Energy Australia Global Pty Ltd.

ERM. 2023. The Plains Renewable Energy Park Solar Farm, Aboriginal Cultural Heritage Assessment Report. Draft. Report for Engie Australia and New Zealand.

Gifford-Gonzalez, D.D. et al. (1985). The third dimension in site structure: an experiment in trampling and vertical displacement. American Antiquity 50, 803–818.

Gilding, J (nd) Assessment of Aboriginal mound sites, Newmarket Station, Hay, NSW.

Gollan, K. 1982. Archaeological Survey of the Route of a proposed Electricity transmission Line from Hay to Darlington Point.

Hiscock, P., & Allen, H. (2000). Assemblage variability in the Willandra Lakes. Archaeology in Oceania, 35(3), 97–103.

Hiscock, P. (1985). The need for a taphonomic perspective in stone artefact analysis. Queensland Archaeological Research 2, 82–95.

Humphries, P. (2007). Historical Indigenous use of aquatic resources in Australia's Murray-Darling Basin, and its implications for river management. Ecological Management & Restoration, 8(2), 106–113.

Jacobs. 2022. Yanco Delta Wind Farm Technical Report – Aboriginal Cultural Heritage Assessment Report. Report for Virya Energy.

Jones, R., Roberts, A., Westell, C., Moffat, I., Jacobsen, G., & Rudd, R. (2022). Aboriginal earth mounds of the Calperum Floodplain (Murray Darling Basin, South Australia): New radiocarbon dates, sediment analyses and syntheses, and implications for behavioural change. The Holocene, 32(8), 816–834.

Kirby, J. (1895). Old Times in the Bush of Australia: Trials and Experiences of Early Bush Life in Victoria during the Forties. Melbourne: George Robinson & Co.

Klaver, J. M. (1998). Late Holocene occupation of the Central Murrumbidgee riverine plain. Unpublished thesis. Australian National University, Canberra.

Lehr, A. K. (2014). Indigenous Peoples' Rights and the Role of Free, Prior and Informed Consent. A Good Practice Note endorsed by the United Nations Global Compact Human Rights and Labour Working Group on 20 February 2014

Littleton, J. (1999). East and west: burial practices along the Murray River. Archaeology in Oceania, 34: 1–14.

Littleton, J. (2002). Mortuary behaviour on the Hay Plain: do cemeteries exist? Archaeology in Oceania, 37(3), 105–122.

Lyons, K. (1988). Prehistoric Aboriginal relationships with the forests of the Riverine Plain in South-Eastern Australia. Australia's Ever Changing Forests, 169–177.

Martin, S. (2007). Inscribing the Plains: Constructed, Conceptualised and Socialized Landscapes of the Hay Plain, South Eastern Australia. Unpublished thesis. University of New England, Armidale.

Martin, S. (2011). Palaeoecological evidence associated with earth mounds of the Murray Riverine Plain, south-eastern Australia. Environmental Archaeology, 16(2), 162–172.

Mitchell, T. L. (1839). Three expeditions into the interior of Eastern Australia: with descriptions of the recently explored region of Australia Felix, and of the present colony of New South Wales (No. 18). Libraries Board of South Australia.

Mitchell (2002). NSW Landscapes, Version 3.1. Accessed 28 May 2024: <https://datasets.seed.nsw.gov.au/dataset/nsw-mitchell-landscapes-version-3-1>.

Navin Officer Heritage Consultants (2022). EnergyConnect Project, NSW Eastern Section. Aboriginal Cultural Heritage Assessment Report. Report for TransGrid

Niche (2015) Balranald Mineral Sands Project. Aboriginal Cultural Heritage Assessment. Unpublished report for Iluka Resources Limited.

Nielsen, A. E. (1991). Trampling the Archaeological Record: An Experimental Study. American Antiquity 56, 483–503.

Paton, T.R., G.S. Humphreys, and P.B. Mitchell. (1995). Soils, A New Global View. Yale University Press, New Haven and London.

Pardoe, C. (1995). Riverine, biological and cultural evolution in southeastern Australia. Antiquity, 69(265), 696–713.

Pardoe, C. (2003). The Menindee Lakes: a regional archaeology. Australian Archaeology, 57(1), 42–53.

Pardoe, C., & Martin, S. (2001). Murrumbidgee province Aboriginal cultural heritage study. Unpublished report to the New South Wales National Parks and Wildlife Service.

Richards, C. (1902). Wirra-Dthoor-ree Wir-ai' Yar-rai Wair-rach' ar-ree Wir-ra Jer-ree. Science of Man 5, 114–19.

Speight, J. G. (2009). Landform. In R. C. McDonald Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. (Ed.), Australian soil and land survey field handbook (3rd ed., pp. 15–72). Book Section, Melbourne: CSIRO Publishing.

Spry, C., Armstrong, B., Ingram, N., Williams, A., Williams, J., Ingram, G., Sutherland, I.D., Ngullubul Men's Corporation, Y., Hines, M., Potts, T. and Conyers, L. (2023). Investigating Wiradjuri marara (carved trees or dendroglyphs) and dhabuganha (burials) in the Central Tablelands, southeastern Australia. Australian Archaeology, 89(3), pp.209–226.

Stockton, E.D. 1973 Shaw's Creek Shelter: human displacement of artefacts and its significance. Mankind 9, 112–117.

Stone, A. C. (1911). The Aborigines of Lake Boga, Victoria. Proceedings of the Royal Society of Victoria 23(2), 433–68.

Witter, D. C. (2004). Regional variation of the archaeology in western New South Wales. The Rangeland Journal, 26(2), 129–149.

APPENDIX A

Aboriginal Archaeology Report

1.0 Aboriginal Archaeology Report

1.1 Archaeological Survey and Test Excavation

1.1.1 Introduction

The following sections detail Umwelt's approach to the fieldwork program for the Aboriginal Cultural Heritage Assessment. A methodology for the fieldwork program (comprising systematic survey and test excavation) was presented all RAPs in accordance with Sections 4.3.1 and 4.3.2 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010a), which is discussed in further detail in **Section 3.0** of the ACHA. A review of existing environmental and archaeological data for the Study Area and environs is likewise presented in **Section 4.0** and **Section 6.0** of the ACHA, respectively to give context to Umwelt's assessment methodology. The overarching objectives of the fieldwork program was to:

- To investigate the cultural heritage values associated with the material (i.e. 'archaeological) cultural resource of the Study Area by way of background research, archaeological survey, test excavation and consultation with RAPs.
- To compile an Aboriginal Archaeology report to inform the ACHA to develop an appropriate management and/or mitigation strategy for identified and potential Aboriginal cultural values associated with the known and/or potential material cultural resource of the Study Area.

1.1.2 Archaeological Survey

1.1.2.1 Objectives and Methods

The primary aim of the archaeological survey was to identify and record any existing surface evidence of past Aboriginal occupation within the Study Area. Survey was completed over 20 days. All survey was conducted on foot, where ground conditions allowed. Where necessary, vehicles were utilised to avoid areas of long grass which posed a safety risk (i.e. snakes) and/or travel to key property access points. As per Umwelt's methodology, a two (2) staged archaeological field survey approach was undertaken across the Study Area. The primary aims of the survey will be to:

- Identify surface evidence of Aboriginal occupation and/or areas of cultural significance.
- Characterise the landscape to aid predictions of surface and subsurface archaeological potential.
- Identify areas that should be avoided by Project construction where possible.

Stage 1 comprised an approximately 50% survey coverage of the Study Area targeting a representative sample of all landforms within the using a combination of pedestrian and vehicle survey. Prior to commencing the survey, Umwelt generated a landform map for the Study Area and identified all watercourses and water bodies (both permanent and ephemeral). The intensity of survey (i.e., spacing of survey members) in each landform unit was guided by the archaeological sensitivity and level of ground exposures in each landform unit. On completion of the survey, Umwelt reviewed collected archaeological site data and landform mapping to generate a refined predictive model and landscape analysis for the Study Area (refer to **Section 6.4**).

The predictive model was used to inform the strategy for the following survey stage. Stage 2 comprised a strategic pedestrian survey targeting areas of archaeological sensitivity identified from the Stage 1 predictive model analysis. Where possible, the approach comprised a full coverage survey of archaeologically sensitive landscape features *sensu* the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (i.e., dunes, areas within 200 m of water courses etc). Both survey stages were undertaken using the following general methodology:

- The survey generally comprised survey team members evenly spaced walking transects, where possible.
- Transect survey and recording were completed along pre-defined linear sections of the Development Corridor. Landform element units and/or other changes in landscape characteristics were recorded where variations occurred within predefined transects.
- Records were collected of the beginning and end points of transects.
- Records were collected of key landform data, soil information, land surface, vegetation conditions, visibility and exposure, and survey coverage for each transect.
- All identified Aboriginal sites were recorded in accordance with Requirements 18-24 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) (Code of Practice). Existing Aboriginal sites near or within the Development Corridor[1] that could be accessed and/or relocated were inspected and notes taken of their current condition.

A total of 32 transects were completed over the course of the survey, including the offsite road works areas. The location of the survey transects, including start and end points, were recorded using a handheld differential GPS unit, with associated transect data (e.g., ground surface visibility [GSV] and ground integrity [GI] ratings) entered directly into the same unit upon the completion of each transect.

Archaeological survey of the Study Area was undertaken by a combined field team of two (2) Umwelt archaeologists and up to five (5) rostered RAP field representatives per day.

Table A. 1 RAP Field Survey Team

Date	Field Representative	Organisation
7–11 August 2023	Lindsay (LJ) Reay	Griffith LALC
	Natasha Simpson	Griffith LALC
	Uncle Allan McKenzie	Griffith LALC
	Roslyn Simpson	Griffith LALC
14–17 August 2023	Robert Young	Konanggo Aboriginal Cultural Heritage Services
18 August 2023	Tracy Hamilton	Yarkuwa Indigenous Knowledge (Deniliquin)
	Mary Pappin	Pappin Family Aboriginal Corporation
	Leon Johnson	Geraldine Johnson
4–8 September 2023	Ian Woods	Hay LALC
	Tara Dixon	Hay LALC
	Kerrie Parker	Hay LALC
	Tiem Wilson	Hay LALC

[1] Note: PEC-E-PAD25 (AHIMS ID #48-6-0230) was not available on the AHIMS database at the time of the survey program.

Date	Field Representative	Organisation
	Brian (BJ) Gash	Hay LALC
	Cherokee Dixon	Hay LALC
	Richard Dixon	Hay LALC
11–14 September 2023	Kevin Atkinson	Bangarang Aboriginal Corporation
	Owen Johnson	N/A
	Tyronn Ross	Yarkuwa Indigenous Knowledge (Deniliquin)
	Patricia Winch	Mutthi Mutthi Group

1.1.2.2 Survey Coverage and Effective Coverage

As indicated in **Section 1.1.2** a total of 32 transects were completed over the course of the survey within the Development Corridor and off-site road works areas. In general, the landscape of the Study Area and environs (inclusive of the Disturbance Footprint and off-site road works areas) comprised a dominantly flat landscape with intermittent elevated landform elements dispersed throughout. Typically, two (2) discrete landform elements were recorded, comprising large 'flats', with adjoining elevated 'dunes'. These dunes were typically low-lying, with a general relief of up to 0.5 m from the adjacent flats. Offsite road works generally comprised disturbed ground surfaces along road verges and/or stock and wind-eroded surfaces. No inspected offsite road works area contained archaeologically sensitive landscape features. It is noted that landform mapping also identified hydrological landscape elements, which were generally omitted from the survey, but included on relevant mapping for reference. Where relevant, areas mapped as containing hydrological landscape elements were omitted from survey calculations.

Photo 1.1 View over example 'dune' landform showing typical erosion and ground surface exposure on the landform boundaries. Right side of image showing low elevation 'flats'. Although the elevation difference is minor, these wide flats become waterlogged during seasonal rainfall events which allows the formation of wetland environs.

Image source: Umwelt 2023.

Recorded transect data indicate that a total survey coverage of approximately 500 ha, representing around 12% of the Development Corridor, was achieved. Effective coverage estimates for each of the 32 transects completed during survey, shown in, are consistently low, with three (3) transects exceeding 20%. Grounds visibility (GSV) across the survey area on average, was generally high (83%) however ground surface exposure was on average, comparatively low (18%) due to grass and/or other vegetation cover, areas of paved hardstand, buildings or vehicle tracks covered with gravel. Areas of high exposure comprised erosion exposures along the peripheries of elevated landform elements and on flats within five (5) m of the aforementioned features. Exposure in these features was typically high (80–90%). Calculation of the total effective coverage achieved for the current survey indicates that around 11% (*c.* 490 ha) of the survey area could be effectively surveyed for surficial Aboriginal objects. Consideration of levels of effective survey coverage by landform unit shows that, in general landform influence was not a significant factor due to near uniform vegetation coverage across both respective landform types discussed above. Consideration of levels of effective survey coverage by landform unit (refer to **Table A. 1** below) shows that effective coverage was highest in the flat landform units. With the exceptions of eroded portions of dunes (from stock damage, rabbit damage or eroding dune boundaries), effective coverage was comparatively low.

Table A. 2 Effective Coverage Data for the Survey

Transect	Survey Unit Area (ha)	Landform/s	Visibility	Exposure	Effective coverage[2] (ha)	Effective coverage[3]	Aboriginal Site/s Identified
1	42.74	Flats/Dunes	80%	20%	6.84	16%	None
2	30.75	Flats/Dunes	80%	20%	4.92	16%	Bullawah-AS13_2023, Bullawah-AS14_2023, Bullawah-AS9_2023, Bullawah-IF1_2023
3	21.44	Flats/Dunes	80%	20%	3.43	16%	None
4	49.01	Flats/Dunes	80%	20%	7.84	16%	Bullawah-Site_Complex4_2023, Bullawah-Culturally_Significant_Tree1_2023
5	12.78	Flats/Dunes	80%	20%	2.05	16%	None
6	31.98	Flats/Dunes	80%	20%	5.12	16%	Bullawah-Site_Complex3_2023
7	19.21	Flats/Dunes	90%	10%	1.73	9%	Bullawah-Hearth1_2023
8	9.87	Flats/Dunes	80%	20%	1.58	16%	None
9	16.21	Flats/Dunes	80%	20%	2.59	16%	None
10	19.68	Flats/Dunes	90%	10%	1.77	9%	Bullawah-AS15_2023, Bullawah-AS16_2023, Bullawah-AS17_2023,
11	9.18	Flats/Dunes	80%	20%	1.47	16%	None
12	5.47	Flats/Dunes	90%	10%	0.49	9%	Bullawah-AS7_2023, Bullawah-Site_Complex6_2023
13	18.78	Flats/Dunes	90%	10%	1.69	9%	None
14	8.20	Flats/Dunes	80%	20%	1.31	16%	None
15	10.54	Flats/Dunes	90%	10%	0.95	9%	Bullawah-IF3_2023
16	12.27	Flats/Dunes	80%	10%	0.98	8%	None
17	27.83	Flats/Dunes	80%	30%	6.68	24%	Bullawah-AS4_2023, Bullawah-AS5_2023, Bullawah-Site_Complex5_2023, Bullawah-AS6_2023, Bullawah-IF5_2023
18	16.62	Flats/Dunes	90%	10%	1.50	9%	Bullawah-AS12_2023, Bullawah-AS11_2023, Bullawah-IF2_2023

[2] Effective coverage area (ha) = survey unit area x visibility % x exposure %).
[3] Effective coverage (%) = effective coverage area/ survey unit area x 100).

Transect	Survey Unit Area (ha)	Landform/s	Visibility	Exposure	Effective coverage[2] (ha)	Effective coverage[3]	Aboriginal Site/s Identified
19	11.00	Flats/Dunes	80%	20%	1.76	16%	None
20	17.48	Flats/Dunes	80%	10%	1.40	8%	Bullawah-AS10_2023
21	5.58	Flats	90%	10%	0.50	9%	None
22	18.67	Flats	90%	10%	1.68	9%	None
23	9.38	Flats	80%	10%	0.75	8%	None
24	22.14	Flats/Dunes	80%	30%	5.31	24%	Bullawah-Site_Complex1_2023
25	18.37	Flats/Dunes	80%	10%	1.47	8%	Bullawah-Site_Complex2_2023
26	11.02	Flats	90%	10%	0.99	9%	Bullawah-AS8_2023, Bullawah-AS2_2023, Bullawah-AS3_2023, Bullawah-AS1_2023, Bullawah-Earth_Mound1_2023, Bullawah-IF4_2023
27	6.12	Flats	80%	20%	0.98	16%	None
28	15.82	Flats/Dunes	80%	10%	1.27	8%	None[4]
29	1.14	Flats	80%	10%	0.09	8%	None
30	0.22	Flats	60%	30%	0.04	18%	None
31	0.37	Flats	60%	20%	0.04	12%	None
32	0.26	Flats	80%	30%	0.06	24%	None

[4] Existing Aboriginal site, area of PAD 'PEC-E-PAD25' (AHIMS ID# 48-6-0230) was located within Transect 28.

Table A. 3 Survey Coverage by Landform

Landform	Total Area	Coverage Area (ha)	% of Total	Effective Coverage (%)
Dunes	209.7	26.76	5%	11%
Flats[5]	4,064.75	463	95%	13%
Total[6]	**4,274.41**	**490.76**	**100%**	**11%**

1.1.2.3 Discussion of Survey Results

Systematic survey of the Study Area and its surrounds identified 31 new Aboriginal sites, including 29 within the Development Corridor. Generally consistent with regional and local AHIMS data, the recorded sites primarily comprised open artefact sites (comprising one (1) of more lithic objects), with or without identified areas of PAD. Of the 31 sites identified, 22 (70.97%) were recorded as open artefact sites. The survey also recorded a single culturally modified tree (n=1, 3.23%), a single earth mound (n=1, 3.23%), and a single hearth (n=1, 3.23%). In addition, the survey recorded six (n=6, 19.35%) 'site complexes', comprising large geographic and/or topographic areas with more than one (1) site feature represented (e.g. comprising open artefact sites within associated hearths). Observed flaked and/or ground lithic objects were generally consistent with regional examples, comprising a combination of flaked silcrete, quartz, quartzite and chert objects. Miscellaneous volcanic and metamorphic rock types were also encountered as both ground-edge, grinding and/or flaked objects, and sandstone was typically encountered as grinding implements. Approximately nineteen (19) non-flaked lithic objects were recorded across seven (7) Aboriginal sites, comprising partial or complete grinding implements, edge-ground implements and/or hammerstones (**Table A. 4**). Where observed, non-flaked lithic objects were typically highly fragmented with few intact examples recorded. A single instance of potential flaked glass was observed, comprising multiple discrete objects flaked from a green glass bottle. Some possible retouch was observed on two (2) of the objects. The observed bottle morphology and glass type suggested a likely mid-late 19th century glass manufacturing date.

Table A. 4 Distribution of Non-Flaked Lithic Objects

Site Name	Object/s Recorded
Bullawah-Site_Complex6_2023	Eleven (11) objects recorded: • Six (6) partial grinding implements • Three (3) partial hammerstone or pestles • One (1) complete grinding implement • One (1) partial edge-ground object
Bullawah-AS7_2023	One (1) partial hammerstone or pestle
Bullawah-AS-23- AS7	One (1) partial grinding implement
Bullawah-AS13_2023	One (1) partial grinding implement
Bullawah-AS14_2023	One (1) partial grinding stone or manuport
Bullawah-AS12_2023	Two (2) objects recorded: • One (1) partial hammerstone

[5] Inclusive of mapped ephemeral hydrology features

[6] Minor discrepancies in area total calculations are the result of portions of Transect 20 (near Jerilderie Road) being removed following design revision.

Site Name	Object/s Recorded
	• One (1) complete hammerstone with observable pecking
Bullawah-Site_Complex5_2023	Two (2) objects recorded: • One (1) complete grinding implement • One (1) complete hammerstone or pestle

In general, open artefact and hearth sites, collectively, were identified on the eroding edges of elevated landforms (i.e., dunes). Lithic objects, where exposed, generally translocated up to five (5) m from the edges of the dunes onto adjacent flats and in most instances, were visible on the ground surface. Likewise, hearths comprised eroded exposures of heat-altered clayey soils and/or scattered/remnant remains of clayey heat retainers (*sensu* Fanning et al., 2009) dispersed between 0.5 m and 5 m from a central foci. Observed remanent hearth retainers comprised amalgamations of clayey soil into roughly 10 cm diameter balls, though fragments of the aforementioned were also common.

In addition to the open artefact sites and hearths, a single culturally modified tree and a single earth mound were also identified. The culturally modified tree comprised a single Eucalypt with five (5) branches emanating from the main trunk and pointing towards the ground. RAP representatives identified the tree as culturally modified in form and indicated the tree held gender-specific cultural association (see **Section 3.2.3** and **Section 3.3.2**).The earth mound comprised a circular area approximately 6-10 m in diameter, and approximately 30–40 cm in elevation above the surrounding flat landscape. The formation was grass covered, resulting in poor visibility but a distinctly mounded feature was visible. RAP representatives noted the similarity in form to other recorded earth mounds in the area which comprised similar dimensions.

Site descriptions of all recorded Aboriginal sites, along with representative photographs of each site and/or site elements, are presented in **Appendix D**.

Attempts were made during the survey program to reinspect twelve (12) previously recorded Aboriginal sites located within or near the Disturbance Corridor (i.e. within 500m) to determine if there was an immediate risk of harm to previously recorded sites resulting from the Project and to provide RAPs with the opportunity to observe these sites. It is noted that the associated AHIMS entries for eight (8) sites[7] lacked sufficient detail to make any reasonable conclusions regarding relative condition, however reference to Pardoe and Martin (2011) provided some guidance of the site condition at the time of recording. For those Aboriginal sites that could be relocated, notes and photographs of the sites were recorded and details provided to the AHIMS registrar to update the associated site card entries as a record of the current condition of these sites.

1.1.3 Test Excavation

1.1.3.1 Purpose, Sampling Strategy & Methods

In recognition of the potential for portions of the Study Area to contain intact subsurface archaeological deposits, a fifteen (15) day program of archaeological test excavation was completed for the current investigation. Test excavation commenced on 26 February 2024 and concluded on 15 March 2024.
In accordance with Requirement 3.1 of the Code of Practice (DECCW, 2010b), the overarching objective of the test excavation program was to collect information about the nature and extent of subsurface

[7] Comprising South Burrabogie 1.1 - 1.8 (AHIMS ID #48-6-0131 – 48-6-0138)

Aboriginal objects across the Development Area and environs. In compliance with Requirement 15c of the Code of Practice (DECCW, 2010b), notification of Umwelt's intention to undertake the program of test excavation detailed was provided in writing to Heritage NSW on 16 January 2024.

The archaeological test excavation program comprised the advancement of 120 test pits measuring 0.5 m x 0.5 m (0.25 m²) placed across a series of transects targeting six (6) representative site complexes and/or open artefact sites identified during the survey program. Test pits were generally spaced at approximately ten (10) m intervals across both representative landform elements in each transect, though some variability in spacing was required on the basis of on-site conditions and/or landform variability.

The testing program considered both the initial desktop-based predictive model for archaeological site patterning generated by Umwelt during early stages of the Project, and subsequent visual observation through systematic survey of the Development Corridor. As discussed in **Section** Error! Reference source not found., Umwelt's predictive model and GIS-based spatial analysis suggested that, in general, two (2) discrete landform elements were represented throughout the Study Area, comprising 'flats', and sandy elevated landforms (i.e. dune elements). Background research of the regional archaeological resource of the Hay Plain supported the hypothesis that seasonal precipitation events result in the waterlogging of 'flats', and establishment of seasonal wetland environs. Archaeological site patterning follows that elevated landform elements (i.e. dunes) immediately adjacent to and surrounding these wetland environs support sustained and/or periodical occupation and habitation activities. The survey program, in general, identified surface evidence of Aboriginal occupation on the outer peripheries of these elevated landforms, and generally within 5-10 m of the boundary (extending onto the flats) In recognition of the aforementioned and in accordance with Requirement 15b of the Code of Practice (DECCW, 2010b), Umwelt's test excavation sampling strategy was developed to achieve the following:

- Provide a framework for sampling areas of PAD that may be impacted within the Study Area.
- Differentiate between areas of identified PAD (i.e. outer extents on elevated dune landforms (i.e. 'dunes') to be test-excavated from the surrounding archaeological landscape (i.e. 'flats').
- Test areas of PAD that have no archaeological exposure or visibility, resulting from grass cover observed during the survey program.
- Test the boundaries of known sites and/or areas of PAD.
- Confirm areas of low potential (i.e. 'flats').

As per Umwelt's test excavation methodology, each test excavation area was assigned a series of linear transects with 10 m test pit spacing to targeted respective landforms within each test excavation area. Clause 5(ii) of Requirement 16a of the Code of Practice (DECCW, 2010b) stipulates that the maximum surface area of all test excavation units must be no greater than 0.5% of the area – either PAD or site – being investigated. The test excavation program undertaken for the current investigation was executed in compliance with this clause, with the combined surface area of test pits (30 m²) representing 0.008% of land being investigated, defined in this instance as the portion of the Development Corridor under subsurface investigation (39 ha). Test pits were hand excavated as 0.5 m x 0.5 m units, with 5 cm spits employed during the excavation of the first test pit (BSC-6, Transect 1, TP1) and 10 cm spits thereafter. In general, test pits were excavated to the base of extant A horizon soils (i.e. to the B horizon).
All excavated sediment was dry-sieved on-site through five (5) mm wire-mesh sieves, with sieving generally completed at various mobile. All definite and potential cultural lithic items were collected at the sieves and bagged according to excavated pit number and spit. Representative profiles in all test pits were

photographed, with test pit stratigraphy recorded on pro forma test pit recording forms using standard sedimentological terms and criteria (after Isbell & The National Committee on Soil and Terrain, 1997). All pits were backfilled with sieved spoil following excavation.

1.2 Lithic Assemblage

1.2.1 Assemblage Size and Composition

A total of 31 lithic items, all of which satisfied pre-established criteria for identification as artefacts, were recovered from test pits excavated for the current assessment (the 'lithic assemblage';). A simplified breakdown of the lithic assemblage, having a total combined weight of just over 54 g, shows that it was dominated by complete flake and/or flake debitage items (comprising complete, distal/proximal, angular fragments, split flakes and retouched flakes and/or backed objects), which accounted for 90% of the lithic assemblage by count and 76% by weight. Recovered flake and flake debitage items (n=28) consisted principally of angular fragments (n=16, 57.1%) and complete flakes (n=8, 28.6%). While impeded by small sample size, this data potential suggests a tendency towards skilled, methodical production and knowledge of raw materials during manufacturing. Only two (2) broken flakes (i.e., proximal flakes) were present which may also in part, support the aforementioned supposition. Non-flake items were comparatively poorly represented and comprised only two (2) complete cores and/or core fragments. Formed objects (n=2, 6%) were also relatively rare and comprised a single geometric microlith and a single retouched flake. While low in number, when considered in combination with known surface retouched objects, the collective data implies an intentional strategy towards manufacturing backed objects and retouching existing objects (whether for edge rejuvenation or intentional tool manufacture) within the Study Area and/or environs.

Size and weight data for complete flakes (n=8) indicate an average maximum linear dimension of 16.27±8.6 mm (range: 9.24±31.36 mm) and average weight of 0.74±0.78g (range: 0.12.4 g). Statistical analysis of the size and shape of all complete flakes (n=8) in the lithic assemblage indicate a population of predominantly small to medium-sized, mildly elongate flakes with rare outliers exhibiting longer, blade-like characteristics. Striking platforms where visible, were predominantly natural or flaked (i.e., single scar) (n=7, 70%), with crushed/collapsed (n=3, 30%) platforms also represented. Feather terminations were the most common (n=5, 55.6%), followed by axial (n=3, 33.3%) terminations.

A single flake exhibited a hinge termination (n=1, 11.1%). Dorsal cortex on complete flakes was entirely absent, exhibiting a consistent pattern with the artefactual component of the lithic assemblage as a whole. Cores recovered from the lithic assemblage test pits comprised a single (1) complete core and a single (1) core fragment. The complete core comprised a bipolar-percussed quartz pebble with a single flake scar evident, and the remaining surfaces comprising water-rolled cortex. The lack of complete direct and/or indirect-percussed cores in the lithic assemblage unfortunately impedes further interpretation of lithic reduction strategies with the available dataset. No recovered artefacts within the assemblage exhibited any readily identifiable heat-treatment attributes (i.e., cultural).

The single ground implement fragment was manufactured from a fine-grained sandstone and, while small, appear to comprise a linear section with grinding on one (1) elongate surface. While the object fragment was too small to readily identify function, though the linear grinding form shape possibly suggests the object was a fragment from a grinding dish or similar functional implement.

Silcrete was the dominant raw material, accounting for 45.2% of the lithic assemblage and objects manufactured from quartz accounted for 32.3% (n=10) of the lithic assemblage. Minor instances of chert, petrified wood, fine -grained volcanic and quartzite materials were also recorded, albeit in comparatively small numbers. Objects displaying cortical surfaces were almost entirely absent, represented with only 3% (n=1) of recovered lithic objects retaining readily identifiable cortex. Where present, the single object with observed cortical surfaces suggested exploitation of relatively proximal primary sources.

Table A. 5 Typological Breakdown of Flake Debitage Component of the Lithic Assemblage

Type	Count (n)	% Total	% Total (weight, g)
Ground Implement	1	3.2%	9.1
Misc. Retouched	2	6.5%	7.5
Core	2	6.5%	4.2
Proximal Flake	2	6.5%	2
Complete Flake	8	25.8%	5.9
Angular Fragment	16	51.6%	25.88
Total	**31**	**100.0%**	**54.58**

Table A. 6 Descriptive Statistics for the Size and Weight of Recovered Complete Flakes (n=8)

Attribute	Count (n)	Mean	Min	Max	Standard Deviation
Length (mm)	8	16.27	9.24	31.36	8.6 mm
Weight (g)		0.74	>0.1	2.4	0.78

Table A. 7 Summary of Lithic Artefact Distribution

Total no. of artefacts per test pit				Total m²	Total no. of artefacts
0	**1–5**	**6–10**	**10 +**		
106	**13**	**1**	**0**	30	31

1.2.2 Artefact Distribution

Of the areas subject to test excavation, lithic objects were only recovered from two (2) site complexes, Bullawah Site Complex 5, and Bullawah Site Complex 6. Of those, 94% of the 31 objects were recovered from 14 tests pits in Bullawah Site Complex 6. In general, objects were recovered from the upper 20 cm of all test pits, with only 13% recovered in deeper strata (maximum depth of recovered objects was 40 cm below ground surface). Though impeded by overall low artefact numbers, landform distribution of lithic objects suggests greater recovery from test pits excavated within 'dune' contexts, with those within 5–10 m of the dune-flat interface reporting comparatively higher concentrations. Lithic objects recovered from flat contexts, while rare, were generally recovered from the upper 0–10 cm, suggesting objects were the result of 'wash-in' effects of erosional processes.

Photo 1.2 Selection of fine-grained silcrete complete flakes and flake debris recovered from TP8 (BSC-6, Transect 3

Image source: Umwelt 2024.

Photo 1.3 Dorsal and ventral surfaces of elongate silcrete flake recovered from TP8 (BSC-6, Transect 3

Image source: Umwelt 2024.

Photo 1.4 Dorsal surface of complete flake showing short and wide morphology, recovered from TP8 (BSC-6, Transect 3

Image source: Umwelt 2024.

1.2.3 Soils & Geomorphology

1.2.3.1 General Observations

Observations prior to and during excavation closely aligned to mapped and predicted stratigraphic patterning. The landscape was observed to be broadly flat though gentle undulations could be observed over a broad spatial scale. Gentle rises in topography (referred to as 'dune ridges' in earlier sections) were clear and were scattered across the landscape. These rises were characterised by red to brown sand supported silts likely relating to the Shepperton Formation, and specifically the Western Edge Complex (*wx*) soil landscape described in **Section 4.3.** Surface sediments at lower topographies as well as subsurface sediments revealed to underlie the red/brown silty sands were grey clay-dominated silts. At surface-level exposures these grey clays exhibited cracking when dry and were noticeably more compact and consolidated at depth, likely self-mulching and potentially the capacity to incorporate surface material and burial through repeated shrink-swell cycles as water comes and goes (e.g. Grant and Blackmore, 1991). Calcareous concretions and carbonate mottling were identified during excavation. Organic material was restricted to the uppermost layers, with root activity observed within the top 10 cm of the sediments. Humic material was not observed, and no organic-rich soil horizon expected for the upper-most layers of a typical sediment profile was observed.

Photo 1.5 North section of TP10 (BSC-6, Transect 3)

Image source: Umwelt, 2024.

Photo 1.6 North section of TP7 (BSC-5, Transect 1)

Image source: Umwelt, 2024.

1.2.3.2 Discussion

The presence of Aboriginal objects was strongly correlated with landform and generally associated with sands and areas of elevated topography. Aboriginal sites featuring surface scatters of flaked and/or ground lithic objects and hearths were most found on the margins of dune ridges where the impacts of erosion were most focused. These observations of surface objects resulted in the development of a predictive model which posited the potential for Aboriginal objects and sites to be preserved in subsurface contexts, and that the surface finds identified during the 2023 survey program were unearthed through processes of erosion.

The results of the 2024 test excavation program presented in this report, however, reported relatively few Aboriginal object in subsurface contexts. This is in spite of numerous surface artefacts, hearths and hearth retainers being identified, as well as the location of test pits targeting sandy dune ridges most-commonly associated with Aboriginal objects. Where subsurface Aboriginal objects were identified, these were typically confined to the upper-most 15 cm of sediment. Previous archaeological investigations purported that the landscape of the Study Area and environs experienced substantial erosion following the introduction of European agricultural and grazing practices (e.g. Pardoe and Martin, 2001). Predictive models suggest that the observed surface archaeology is likely a 'lag deposit' resulting from eroded sandy dune ridges and associated landform elements and thus any Aboriginal objects likely represent a palimpsest of previously spatially discrete phases of Aboriginal objects (e.g. Bailey, 2007). Erosional forces and geomorphological activity played a substantial role in the present-day landscape in the Study Area and environs. Climatic shifts in the mid- to late-Holocene driving aridification of a once fertile region, large-scale vegetation clearing to make room for pastoral activity, as well as the introduction of destructive livestock and feral animals have contributed to scour the land surface stripping topsoil and the upper layers of sediment. Wind and water wash away lighter sediments, leaving heavier material, such as lithic artefacts, to remain on the surface. The end result being Aboriginal objects have largely been displaced from their primary depositional context to their secondary depositional context as components of a lag deposit or palimpsest (*sensu* Schiffer, 1972).

Although impeded by small sample size, explaining the paucity of subsurface lithic objects can likely be reduced to a discussion over the extent of erosion. It is possible that the sediments carrying Aboriginal objects have been entirely eroded away, rather than partially eroded. The remaining red/brown silty sands observed on the surface and forming the upper soil layers during excavation are therefore lower than what would have been artefact-bearing strata. This artefactually sterile layers then represent the last remaining evidence of a sediment profile now almost entirely eroded away (*sensu* Paton *et al*., 1995). The subsurface lithic objects that were recovered during the test excavation program can be explained through the transformation processes of the landscape in which they were found and sediments Translocation of lithic objects move horizontally and vertically via bioturbation (e.g. Paton *et al*., 1995; Balek, 2002), through soil erosion/deposition cycles, sorting and settling effects (Johnson, 1992), self-mulching clays (e.g. Grant and Blackmore, 1991) and trampling and treadage effects (e.g. Nielson, 1991). To the latter, since trampling is ubiquitous on the majority of occupation sites (whether at the time of artefact discard or later in the archaeological record from modern sources, e.g. agricultural practices, and stock animals) its resulting effect is a key consideration in archaeological assessing. Consideration must then be given to the dynamic nature of soil and the associated processes that can affect the placement of artefacts in the archaeological record. Soils form upon a wide variety of parent materials and under a range of climatic conditions in different regions and archaeologists should consider these factors when interpreting the presence of artefacts within a soil profile. Key variables, which could be correlated with the degree of vertical dispersion of cultural material, include the composition of the sediments, topography, and temperature fluctuations. Hiscock and Clarkson (2000) argued that since archaeological materials undergo taphonomic alteration, it is essential to identify the nature of those changes in order to accurately interpret a lithic assemblage.

Observations of stock activity lead towards the supposition that trampling and treadage effects on the presence and/or displacement of the lithic resource of the Study Area is a key discussion point. A number of authors have considered the effects of trampling and the associated alterations to archaeological deposits. Additionally, experiments have been undertaken in an effort to qualify and quantify these affects in a controlled setting (e.g. Stockton, 1973; Villa and Courtin, 1983; Gifford-Gonzalez *et al*., 1985; Nielson, 1991; McBrearty *et al*., 1998; Lopinot and Ray, 2007). These experiments have generally focused on the effects of trampling on the vertical and horizontal distribution of artefact assemblages and the patterns of damage (mostly on lithics, pottery sherds and bone fragments) caused by trampling and the differentiation between tool production (flaking) and use-wear and post-depositional/post-discard damage. While a number of generalisations have resulted from this work, contradictions have become evident from the experimental process relating to the interpretation of edge-damage and the relation between artefact size/weight and depth. Villa and Cortin (1983) hypothesised that trampling can cause vertical dispersal of artefacts in the soil and can create false stratigraphic associations. Stockton (1991) noted that intensive trampling could modify the horizontal and vertical distribution of artefacts, in turn obscuring patterns existing in their original distribution, and consequently introducing new patterns in their spatial arrangement. Stockton's experiment involved the placement of different material types (e.g. sherds, bones, lithics, brick and wood fragments) on the ground surface and covering them with five (5) cm of sand. The area was then indiscriminately trampled for a day. The results of Stockton's experiment indicated that objects had vertically displaced to a depth of 16 cm below ground level, with half of the objects rising vertically and an apparent sorting of artefacts based on weight. Notably, Stockton reported that the action of trampling increased the penetrability of the substrate, thereby allowing artefacts to migrate vertically through the profile. Experiments by Gifford-Gonzalez *et al*. (1985) in sandy soils demonstrated that the sandy substrate acts as 'artefact traps', facilitating the downward migration of artefacts.

In summary, the following model of depositional, transformational, and erosional history of the Study Area and environs is proposed:

- **Primary context:** Lithic objects are buried by local sediments shortly after being discarded or lost.
- **Secondary context:** The entire of soil and sediment profile that carried Aboriginal objects is eroded and redeposited, leaving material evidence on the surface as a lag deposit (i.e. a palimpsest).
- **Tertiary context:** Displaced lithic objects in their secondary context are reburied through self-mulching soils and/or stock trampling.

1.3 Summary of Results

A summary of the key findings of the program of archaeological test excavation undertaken within the Study Area is provided below:

- In general, soil materials observed were texturally and spatially consistent with those described and mapped by Sahukar *et al*. (2003, p.97) and for the Shepparton Formation soils occupying the entirety of the Development Corridor.
- The overarching pattern of subsurface artefact distribution revealed by testing across the Development Corridor can be characterised as sparse, but generally concentrated into specific topographic foci. Most (n=106, 88%) pits contained no artefacts. Artefact-bearing test pits (n = 14) were generally restricted to 'dune' landforms within Bullawah Site Complex 6, with comparatively

smaller numbers reported in Bullawah Site Complex 5. No lithic objects were recovered from the other testing areas.

- Densities for artefact-bearing test pits in were generally low, with only a single test pit contained nine (9) lithic objects. Although complicated by sample size, preliminary examination of artefact distribution in relation to the key landscape variables, suggests that elevated dune landforms were favourable for settlement and associated activities by Aboriginal peoples occupying the Study Area. The paucity of subsurface objects, however, may suggest that dune elements retained thicker A horizon soils prior to European occupation. Subsequent destabilisation of dune surfaces has likely resulted in loss of biomantle soils and further resulted in a palimpsest of objects represented as a 'lag' deposit on the ground surface and/or near surface soils. Outlier examples of objects recovered from deeper strata are likely the result of trampling and/or treadage impacts from stock movements (e.g. Stockton, 1973; Villa and Courtin, 1983; Gifford-Gonzalez *et al*., 1985; Nielson, 1991; McBrearty *et al*., 1998; Lopinot and Ray, 2007).

- Raw material data for the lithic assemblage attest to a reliance on the procurement and reduction of regionally available silcrete, with 45.2% of the lithic assemblage manufactured from a variety of silcrete types. Objects manufactured from quartz were also relatively well-represented, accounting for 32.3% (n=10). Other materials including chert, quartzite and petrified wood were comparatively poorly represented.

- Cortical artefacts were almost entirely absent in the lithic assemblage, with only a single object exhibiting clearly visible cortex. The object, a quartz pebble core, may have been locally sourced and opportunistically flaked. All other objects displayed no clearly identifiable cortex, suggesting primary processing occurred away from the immediate environs of the Study Area.

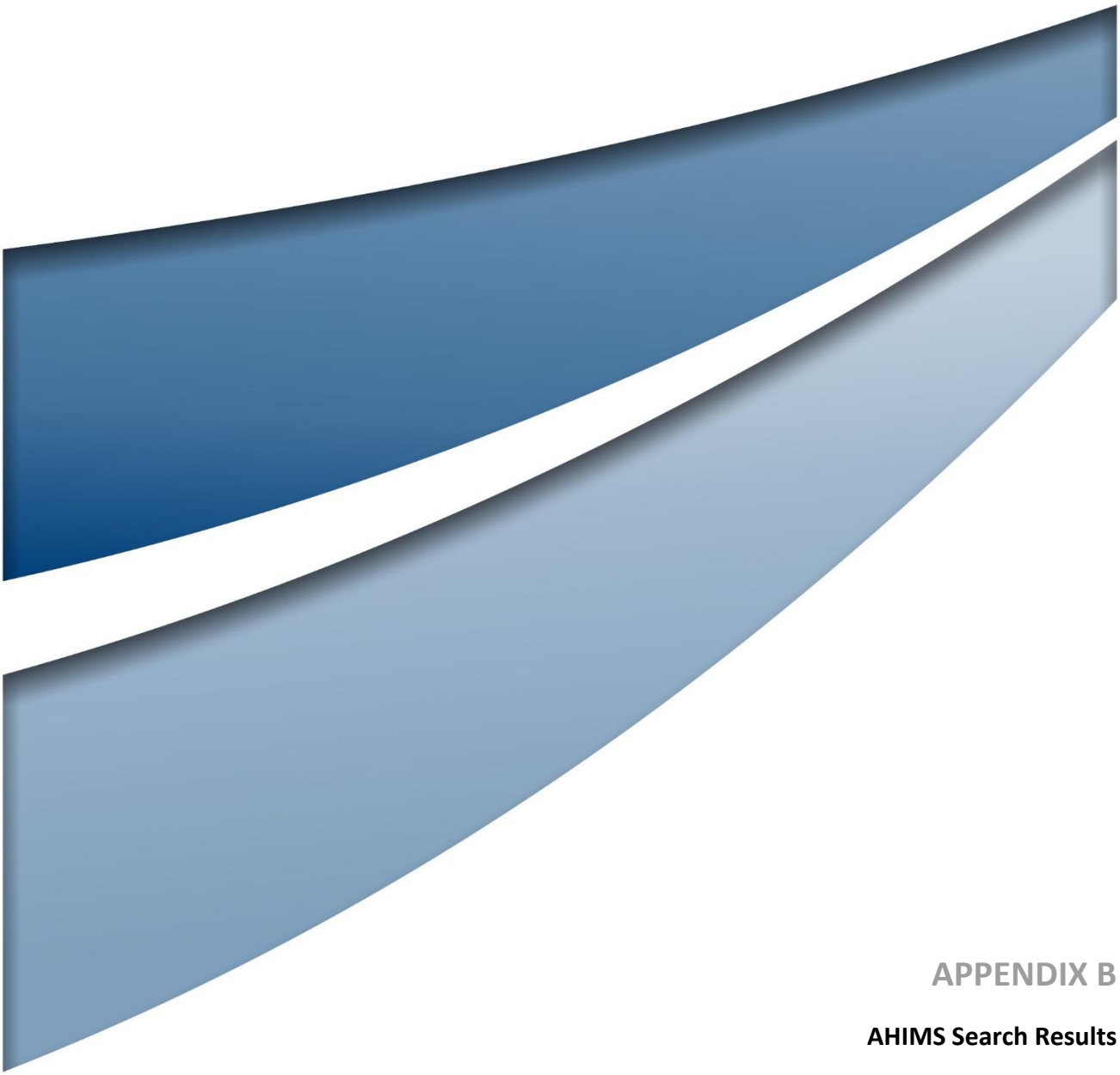
- A model of depositional, transformational and erosional history of the Study Area and environs comprises three (3) key contexts, comprising 'primary', i.e. lithic objects are buried by local sediments shortly after being discarded or lost; 'secondary', i.e. the entire of soil and sediment profile that carried Aboriginal objects is eroded and redeposited, leaving the material culture on the surface as a lag deposit/palimpsest and 'tertiary', i.e. displaced lithic objects in their secondary context are reburied through self-mulching soils and/or stock trampling.

1.4 Reassessment of Archaeological Predictions

In **Section 6.4** of the ACHA, a series of predictions were made regarding the Aboriginal archaeological record of the Study Area. In , the validity of these predictions is assessed against the survey and test excavations results detailed in the preceding sections.

Table A. 8 Evaluation of Archaeological Predictions

Prediction	Reassessment
Material evidence of past Aboriginal activity within the Study Area is likely to be dominated by flaked lithic artefacts in surface and subsurface contexts, and the remains of hearth (hearth retainer clay/stones) sites, likely in poor condition.	The results of the survey and test excavation program undertaken support this prediction, with identified surface and subsurface evidence of Aboriginal occupation restricted to flaked stone artefacts in surface and subsurface contexts. Though relatively uncommon, nineteen (19) discrete objects recorded as grinding implements, edge-ground implements and/or hammerstones were identified. Where observed, non-flaked objects were typically highly fragmented with few intact examples recorded. A single instance of potential flaked glass was observed, comprising multiple discrete objects flaked from a green glass bottle. Hearths were relatively common within the Study Area and were generally found in a highly eroded state.
The dominant (if not exclusive) raw material for flaked lithic artefact production within the Project area will be silcrete that is likely traded from outside the Study Area, with other material types (e.g., quartz, quartzite and chert) comparatively less common	The results of the survey and test excavation program undertaken support this prediction, with a major portion (45.2%) of lithic objects recovered from subsurface testing manufactured out of silcrete. The relatively poor representation of cortical surfaces supports the supposition that raw materials were likely quarried, traded and/or processed from outside the Study Area.
Flaked lithic artefact assemblages will be dominated by flake debitage items, with non-flake debitage and formed objects (i.e., cores and retouched implements) comparatively poorly represented	The results of the test excavation program supports this prediction. Flake debitage items dominated the artefactual components of the lithic assemblage.
It is possible that silcrete lithic objects will exhibit evidence of thermal alteration	No evidence of intentional thermal alteration was identified during survey or test excavation.
Lithic tool types of demonstrated chronological significance will be restricted to backed and/or retouched artefacts	The results of the test excavation program undertaken support this prediction, with backed artefacts the only implement type of demonstrated significance identified during fieldwork the fieldwork program.
Surface artefact distribution across the Study area will likely be concentrated on the peripheries of dunes. Subsurface potential for extant lithic artefacts is likely to be low	The results of the test excavation program undertaken for the current investigation provide support for this prediction, with the majority of test pits retaining no artefacts, and the highest recovered artefact densities identified within dunes.



APPENDIX B

AHIMS Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Bullawah Revised ACHAR_3

Client Service ID : 1021745

Umwelt (Australia) Pty Limited - Individual users

75 York Street

Teralba New South Wales 2284

Attention: Luke Wolfe

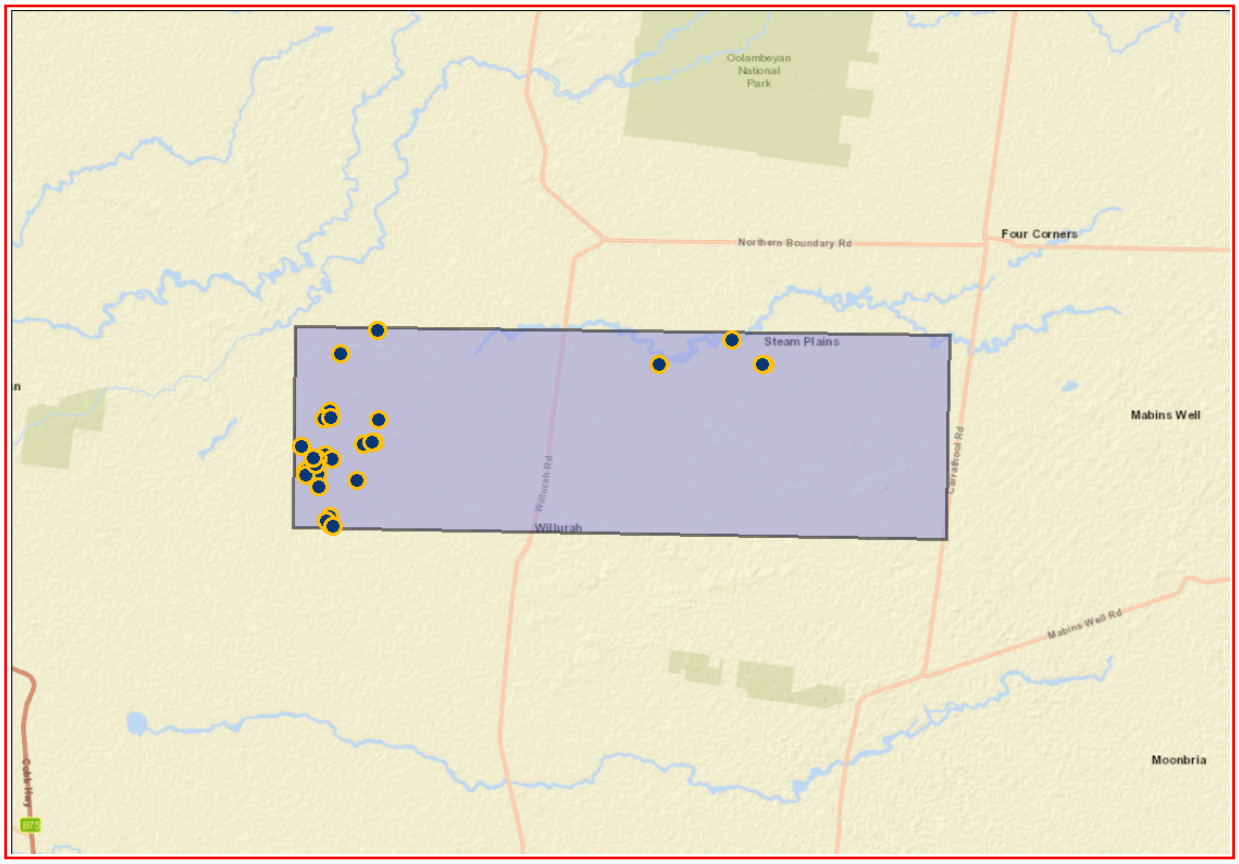
Email: lwolfe@umwelt.com.au

Date: 08 July 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment, conducted by Luke Wolfe on 08 July 2025.

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



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

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

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

Important information about your AHIMS search

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

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Bullawah Revised ACHAR_2

Client Service ID : 1021744

Umwelt (Australia) Pty Limited - Individual users

75 York Street
Teralba New South Wales 2284

Attention: Luke Wolfe

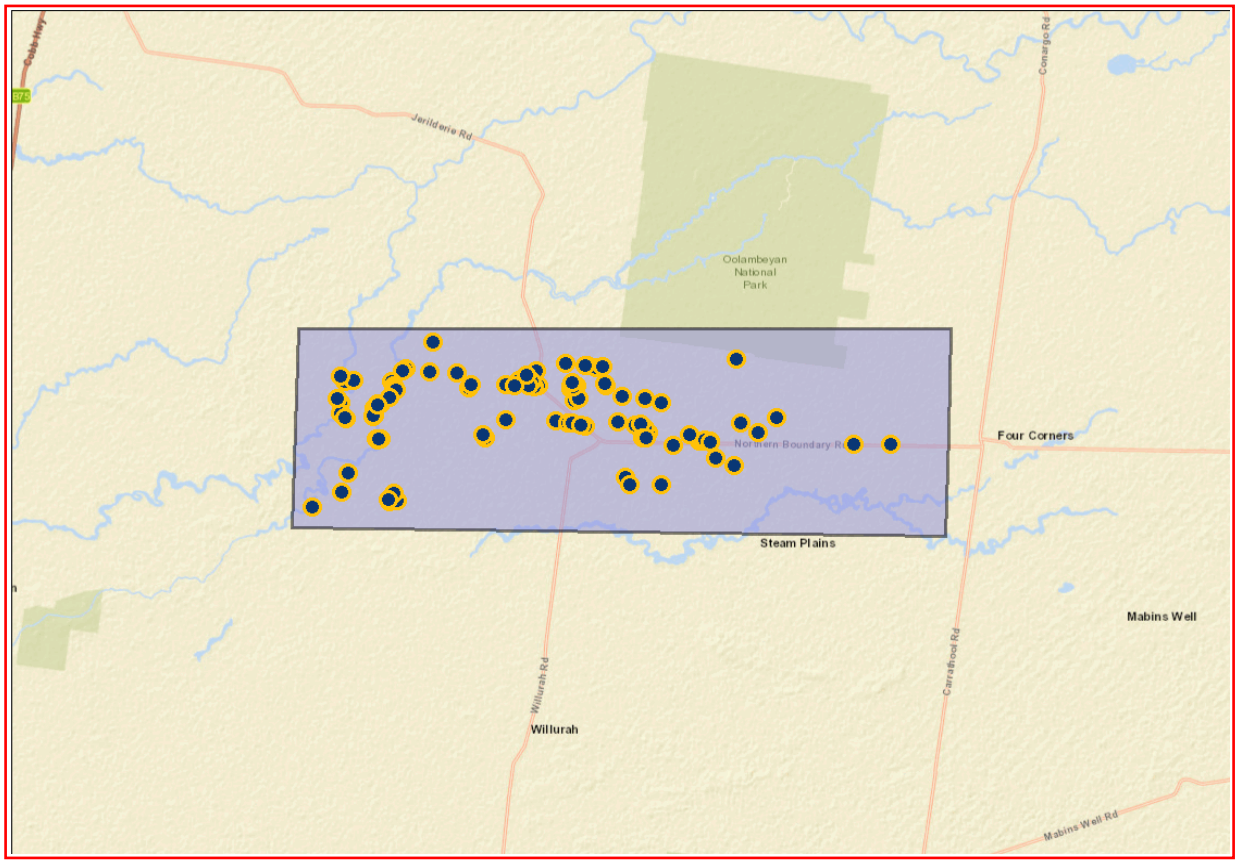
Email: lwolfe@umwelt.com.au

Date: 08 July 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment, conducted by Luke Wolfe on 08 July 2025.

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



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

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

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

Important information about your AHIMS search

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

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Bullawah Revised ACHAR

Client Service ID : 1021743

Umwelt (Australia) Pty Limited - Individual users

75 York Street
Teralba New South Wales 2284

Attention: Luke Wolfe

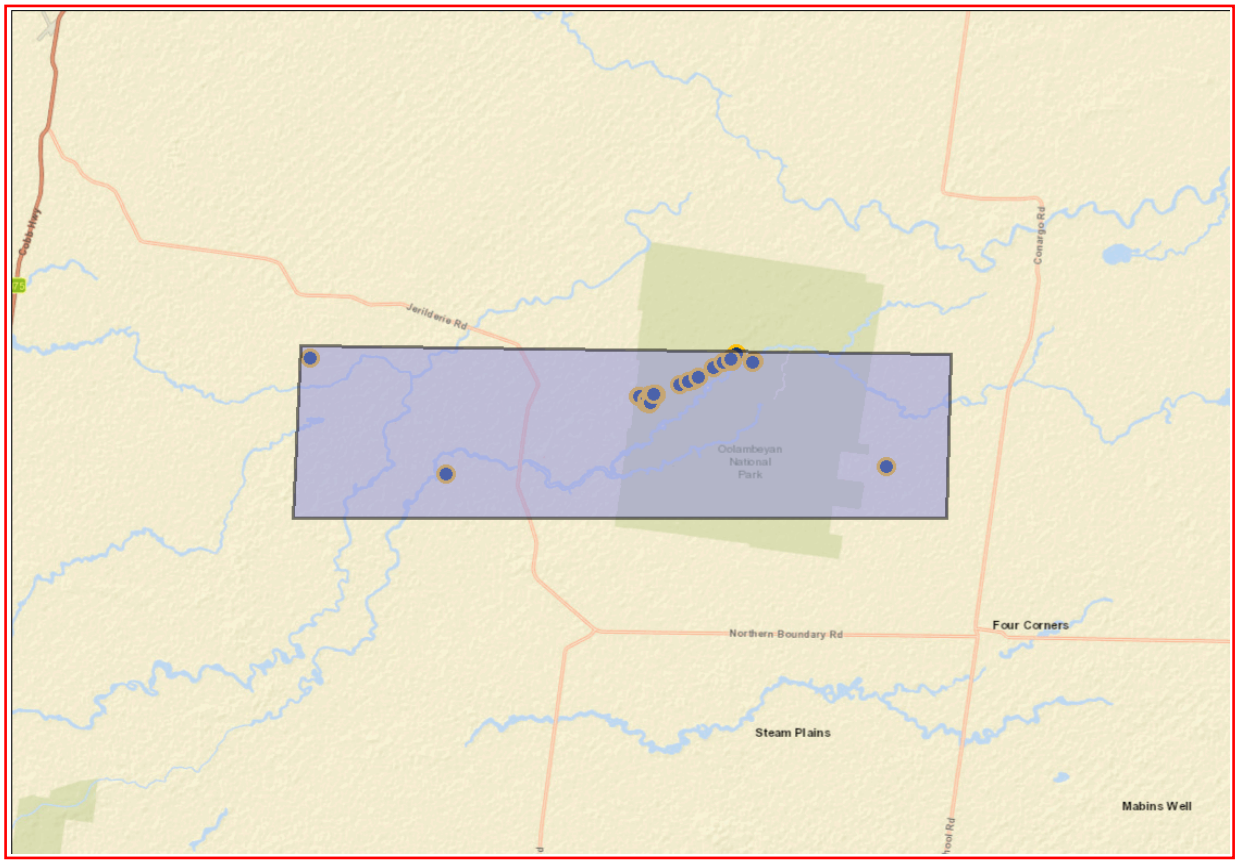
Email: lwolfe@umwelt.com.au

Date: 08 July 2025

Dear Sir or Madam:

AHIMS Web Service search for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment, conducted by Luke Wolfe on 08 July 2025.

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



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

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

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

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

Important information about your AHIMS search

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

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR_3

Client Service ID : 1021745

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0335	Bullawah-Hearth1_2023	GDA	55	336464	6134685	Open site	Valid	Hearth : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-5-0626	PWF SUG 19	GDA	55	317325	6129005	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0299	PWF SUG 17	GDA	55	320146	6129804	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0300	PWF SUB 12	GDA	55	320197	6136393	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-5-0629	PWF SUG 11	GDA	55	315969	6129527	Open site	Valid	Hearth : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0296	PWF SUG 15	GDA	55	319208	6127534	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0302	PWF SUG 07	GDA	55	317575	6131581	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-5-0623	PWF SUG 28	GDA	55	316937	6127908	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0333	Bullawah-Site_Complex4_2023	GDA	55	342555	6134809	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0304	PWF SUG 05	GDA	55	320385	6131123	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-5-0620	PWF SUG 33	GDA	55	316214	6128082	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0334	Bullawah-Site_Complex3_2023	GDA	55	340648	6136179	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-5-0625	PWF SUG 25	GDA	55	316986	6127127	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 28

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR_3

Client Service ID : 1021745

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0294	PWF SUG 21	GDA	55	317646	6125402	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0297	PWF SUG 18	GDA	55	319531	6129691	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
54-3-0075	PWF SUG 22	GDA	55	317761	6124894	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0295	PWF SUG 20	GDA	55	317739	6128806	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0298	PWF SUG 16	GDA	55	320008	6129841	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-5-0627	PWF SUG 34	GDA	55	316236	6127834	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-5-0630	PWF SUG 14	GDA	55	317220	6131170	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-5-0622	PWF SUG 30	GDA	55	316922	6128763	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-5-0624	PWF SUG 29	GDA	55	316800	6128483	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
54-2-0269	PWF SUG 26	GDA	55	317497	6125160	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0301	PWF SUB 11	GDA	55	318111	6134946	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-5-0632	PWF SUG 12	GDA	55	316657	6128796	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0303	PWF SUG 06	GDA	55	317603	6131199	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0336	Bullawah-Culturally Modified Tree1_2023	GDA	55	342454	6134782	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 28

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR_3

Client Service ID : 1021745

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
54-3-0074	PWF SUG 23	GDA	55	317876	6124851	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		

Contact **Recorders** ERM Brisbane,Miss.Mia Linton-Smith **Permits**

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 28

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR_2

Client Service ID : 1021744

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0140	South Burrabogie 3	AGD	55	329282	6145844	Open site	Valid	Hearth : -		
Contact		Recorders	Doctor.Sarah Martin					Permits		
48-6-0131	South Burrabogie 1.1	AGD	55	331332	6144997	Open site	Valid	Artefact : -, Earth Mound : -		
Contact		Recorders	Doctor.Sarah Martin					Permits		
48-6-0133	South Burrabogie 1.3	AGD	55	331415	6144960	Open site	Valid	Artefact : -, Hearth : -		
Contact		Recorders	Doctor.Sarah Martin					Permits		
48-6-0161	PEC-E-39	GDA	55	338916	6142038	Open site	Valid	Artefact : -		
Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini					Permits		
48-6-0239	PWF SUB 09	GDA	55	321070	6138179	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0311	Bullawah-IF1_2023	GDA	55	340975	6146917	Open site	Valid	Artefact : -		
Contact		Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0312	Bullawah-IF2_2023	GDA	55	336654	6144277	Open site	Valid	Artefact : -		
Contact		Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0197	PWF SUC 12	GDA	55	321892	6146028	Open site	Valid	Artefact : -, Hearth : -		
Contact		Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0201	PSF 04	GDA	55	325556	6144959	Open site	Valid	Artefact : -		
Contact		Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0315	Bullawah-IF5_2023	GDA	55	333377	6145357	Open site	Valid	Artefact : -		
Contact		Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0174	PWF SUA 04	GDA	55	318461	6143026	Open site	Valid	Artefact : -, Hearth : -		
Contact		Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0181	PWF SUC 04	GDA	55	320081	6143203	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0322	Bullawah-AS9_2023	GDA	55	343316	6143496	Open site	Valid	Artefact : -		
Contact		Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0233	PEC-E-PAD24	GDA	55	335941	6142498	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					Permits		
48-6-0317	Bullawah-AS4_2023	GDA	55	335179	6142930	Open site	Valid	Artefact : -		
Contact		Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0222	PEC-E-101	GDA	55	332287	6142811	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens						Permits		
48-6-0136	South Burrabogie 1.6	AGD	55	331609	6145031	Open site	Valid	Artefact : -, Hearth : -		
Contact	Recorders	Doctor.Sarah Martin						Permits		
48-6-0163	PEC-E-41	GDA	55	349973	6142084	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini						Permits		
48-6-0236	PWF SUB 06	GDA	55	318670	6139813	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0210	PSF 10	GDA	55	329060	6145350	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0212	PSF 08	GDA	55	328755	6145394	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0200	PSF 05	GDA	55	325670	6145148	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0202	PSF 03	GDA	55	324813	6145779	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0204	PSF 01	GDA	55	323444	6147598	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0313	Bullawah-IF3_2023	GDA	55	337387	6141787	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0178	PWF SUC 07	GDA	55	320090	6143624	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0323	Bullawah-AS10_2023	GDA	55	331618	6144334	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0190	PWF SUC 19	GDA	55	320535	6141853	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0332	Bullawah-Site_Complex5_2023	GDA	55	335762	6142771	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0170	Bullawah AS1 2023	GDA	55	332332	6146374	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Miss.Chantelle Laucht					**Permits**		
48-6-0226	PEC-E-97	GDA	55	330621	6143127	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					**Permits**		
48-6-0168	Bullawah Site Complex 2	GDA	55	331115	6146511	Open site	Valid	Artefact : -, Hearth : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Miss.Chantelle Laucht					**Permits**		
48-6-0208	PWF SUC 20	GDA	55	320535	6141841	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0203	PSF 02	GDA	55	323261	6145843	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0320	Bullawah-AS12_2023	GDA	55	335729	6144516	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0172	PWF SUB 01	GDA	55	327701	6143097	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0180	PWF SUC 05	GDA	55	320096	6143502	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0183	PWF SUC 02	GDA	55	320040	6143174	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0324	Bullawah-AS8_2023	GDA	55	333456	6145222	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0224	PEC-E-98	GDA	55	331315	6142987	Open site	Valid	Artefact : -, Hearth : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					**Permits**		
48-6-0225	PEC-E-99	GDA	55	331549	6142980	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					**Permits**		
48-6-0328	Bullawah-AS15_2023	GDA	55	336761	6139453	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0132	South Burrabogie 1.2	AGD	55	331377	6145011	Open site	Valid	Artefact : -, Earth Mound : -		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Doctor.Sarah Martin					**Permits**		
48-6-0137	South Burrabogie 1.7	AGD	55	331328	6144784	Open site	Valid	Water Hole : -		
	Contact	**Recorders**	Doctor.Colin Pardoe					**Permits**		
48-6-0234	PWF SUB 08	GDA	55	321506	6138234	Open site	Valid	Artefact : -		
	Contact	**Recorders**	ERM Brisbane,Miss.Mia Linton-Smith					**Permits**		
48-6-0237	PWF SUB 07	GDA	55	321350	6138662	Open site	Valid	Artefact : -		
	Contact	**Recorders**	ERM Brisbane,Miss.Mia Linton-Smith					**Permits**		
48-6-0211	PSF 09	GDA	55	328436	6145418	Open site	Valid	Artefact : -, Hearth : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0196	PWF SUC 13	GDA	55	321660	6145897	Open site	Valid	Artefact : -, Hearth : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0316	Bullawah-AS2_2023	GDA	55	332871	6146296	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0339	EH-PEC-E-011	GDA	55	339381	6142063	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Everick Heritage Pty Ltd,Mr.Jason Giang					**Permits**		
48-6-0175	PWF SUA 03	GDA	55	318145	6143959	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0176	PWF SUA 02	GDA	55	318177	6143304	Open site	Valid	Hearth : -, Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					**Permits**		
48-6-0331	Bullawah-Earth_Mound1_2023	GDA	55	332227	6146394	Open site	Valid	Earth Mound : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0319	Bullawah-AS5_2023	GDA	55	335509	6143029	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0329	Bullawah-AS14_2023	GDA	55	341279	6143169	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					**Permits**		
48-6-0342	EH-PEC-E-025	GDA	55	335627	6142186	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Everick Heritage Pty Ltd,Mr.Jason Giang					**Permits**		
48-6-0135	South Burrabogie 1.5	AGD	55	331569	6144904	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Doctor.Sarah Martin					**Permits**		
48-6-0171	Bullawah AS3 2023	GDA	55	333262	6146362	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Miss.Chantelle Laucht					**Permits**		

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0207	PWF SUC 21	GDA	55	320302	6141798	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0191	PWF SUC 18	GDA	55	320529	6141856	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0192	PWF SUC 17	GDA	55	320264	6141825	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0193	PWF SUC 16	GDA	55	320252	6141830	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0194	PWF SUC 15	GDA	55	320279	6141853	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0195	PWF SUC 14	GDA	55	320364	6141856	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0205	PWF SUC 23	GDA	55	321066	6145259	Open site	Valid	Hearth : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0314	Bullawah-IF4_2023	GDA	55	333377	6145357	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0177	PWF SUA 01	GDA	55	318379	6145199	Open site	Valid	Artefact : -, Hearth : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0325	Bullawah-AS7_2023	GDA	55	339885	6141067	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0338	PTR H AS1	GDA	55	329543	6145155	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Doctor.Charles Barnett						Permits		
48-6-0184	PWF SUC 01	GDA	55	320056	6143200	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0232	PEC-E-PAD23	GDA	55	321181	6144982	Open site	Valid	Potential Archaeological Deposit (PAD) : -		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					Permits		
48-6-0326	Bullawah-AS17_2023	GDA	55	334656	6139881	Open site	Valid	Artefact : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0343	EH-PEC-E-026	GDA	55	339098	6142045	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Jason Giang					Permits		
48-6-0139	South Burrabogie 2	AGD	55	331793	6144274	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	Doctor.Sarah Martin					Permits		
48-6-0165	PEC-E-36	GDA	55	318875	6145231	Open site	Valid	Artefact : -, Hearth : -, Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini					Permits		
48-6-0166	PEC-E-37	GDA	55	321210	6144879	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini					Permits		
48-6-0238	PWF SUB 10	GDA	55	321003	6138293	Open site	Valid	Artefact : -		
	Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith					Permits		
48-6-0209	PSF 11	GDA	55	329291	6145057	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0199	PSF 06	GDA	55	327692	6145175	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0186	PWF SUB 02	GDA	55	326519	6142028	Open site	Valid	Artefact : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0337	Bullawah-Site_Complex6_2023	GDA	55	340941	6140658	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0230	PEC-E-PAD25	GDA	55	338335	6142434	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					Permits		
48-6-0346	EH-PEC-E-029	GDA	55	339548	6142085	Open site	Valid	Artefact : -		
	Contact	Recorders	Everick Heritage Pty Ltd,Mr.Jason Giang					Permits		
48-6-0223	PEC-E-100	GDA	55	332030	6142854	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					Permits		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0134	South Burrabogie 1.4	AGD	55	331448	6144923	Open site	Valid	Artefact : -, Hearth : -		
Contact	Recorders	Doctor.Sarah Martin						Permits		
48-6-0162	PEC-E-40	GDA	55	347789	6142051	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini						Permits		
48-5-0611	PWF SUB 04	GDA	55	316614	6137748	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0235	PWF SUB 05	GDA	55	318303	6138690	Open site	Valid	Artefact : -		
Contact	Recorders	ERM Brisbane,Miss.Mia Linton-Smith						Permits		
48-6-0305	PSF 13	GDA	55	329176	6145421	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Mrs.Victoria Gleeson						Permits		
48-6-0306	PSF 12	GDA	55	328977	6145142	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Mrs.Victoria Gleeson						Permits		
48-6-0198	PWF SUC 11	GDA	55	321338	6144731	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0173	PWF SUA 05	GDA	55	318419	6143044	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0179	PWF SUC 06	GDA	55	320074	6143562	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0187	PWF SUC 10	GDA	55	320474	6143904	Open site	Valid	Artefact : -, Hearth : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0188	PWF SUC 09	GDA	55	320263	6143900	Open site	Valid	Artefact : -		
Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison						Permits		
48-6-0344	EH-PEC-E-027	GDA	55	339187	6142130	Open site	Valid	Artefact : -		
Contact	Recorders	Everick Heritage Pty Ltd,Mr.Jason Giang						Permits		
48-6-0345	EH-PEC-E-028	GDA	55	339550	6142030	Open site	Valid	Artefact : -		
Contact	Recorders	Everick Heritage Pty Ltd,Mr.Jason Giang						Permits		
48-6-0318	Bullawah-AS6_2023	GDA	55	334204	6143094	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0169	Bullawah Earth Mound 1	GDA	55	332241	6146396	Open site	Valid	Earth Mound : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Miss.Chantelle Laucht						Permits		
48-6-0327	Bullawah-AS16_2023	GDA	55	334942	6139439	Open site	Valid	Artefact : -		
Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe						Permits		
48-6-0138	South Burrabogie 1.8	AGD	55	331378	6145158	Open site	Valid	Hearth : -		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR_2

Client Service ID : 1021744

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Doctor.Sarah Martin					Permits		
48-6-0160	PEC-E-38	GDA	55	335834	6142168	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini					Permits		
48-6-0164	PEC-E-35	GDA	55	317974	6144178	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini					Permits		
48-6-0213	PSF 07	GDA	55	328195	6145102	Open site	Valid	Artefact : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0206	PWF SUC 22	GDA	55	320978	6144273	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0182	PWF SUC 03	GDA	55	320050	6143190	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0185	PWF SUB 03	GDA	55	326427	6142239	Open site	Valid	Artefact : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0189	PWF SUC 08	GDA	55	320316	6143860	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Environmental Resources Management - Melbourne,Miss.Meghyn Mathison					Permits		
48-6-0321	Bullawah-AS11_2023	GDA	55	334408	6144621	Open site	Valid	Artefact : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		
48-6-0231	PEC-E-PAD22	GDA	55	318134	6145476	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Ellaine Dickens					Permits		
48-6-0167	Bullawah Site Complex 1	GDA	55	328874	6145769	Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Miss.Chantelle Laucht					Permits		
48-6-0330	Bullawah-AS13_2023	GDA	55	342257	6142609	Open site	Valid	Artefact : -		
	Contact	Recorders	Umwelt (Australia) Pty Limited - Individual users,Mr.Luke Wolfe					Permits		

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 112

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR

Client Service ID : 1021743

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0013	Nargundi 1	AGD	55	341966	6157794	Open site	Valid	Hearth : 14		
	Contact	**Recorders**	Steven Meredith					**Permits**		
48-6-0066	ALPS PADDOCK FIVE	AGD	55	340911	6158170	Open site	Valid	Hearth : 3		
	Contact	**Recorders**	Steven Meredith					**Permits**		
48-6-0070	GAP PADDOCK FOUR	AGD	55	335759	6155193	Open site	Valid	Hearth : 3		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0080	GAP PADDOCK 14	AGD	55	336226	6155623	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0085	GAP PADDOCK NINETEEN	AGD	55	336298	6155693	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0090	Clump Paddock Three	AGD	55	338469	6156596	Open site	Valid	Hearth : 4		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0097	Clump Paddock Ten	AGD	55	340661	6157760	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0067	GAP PADDOCK ONE	AGD	55	335311	6155570	Open site	Valid	Hearth : 2		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0072	GAP PADDOCK SIX	AGD	55	335930	6155689	Open site	Valid	Hearth : 3		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0084	GAP PADDOCK EIGHTEEN	AGD	55	336288	6155623	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0093	Cllump Paddock Six	AGD	55	339620	6157338	Open site	Valid	Hearth : 4		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0351	Singorimbah IF-001	GDA	55	349802	6151919	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Andrew Scott,TransGrid - Horsely Park Office (Scott Andrew)					**Permits**		
48-6-0069	GAP PADDOCK THREE	AGD	55	335398	6155575	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0073	GAP PADDOCK SEVEN	AGD	55	335939	6155155	Open site	Valid	Hearth : 3		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0081	GAP PADDOCK FIFTEEN	AGD	55	336259	6155665	Open site	Valid	Hearth : 2		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0082	GAP PADDOCK SIXTEEN	AGD	55	336274	6155672	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0014	Nargundi 2	AGD	55	341877	6157723	Open site	Valid	Hearth : 9		
	Contact	**Recorders**	Steven Meredith					**Permits**		
48-6-0130	CC5 (CORKILL 1994)	GDA	55	324417	6151029	Open site	Valid	Grinding Groove : 2		
	Contact	**Recorders**	Mr.Oliver Brown					**Permits**		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 37

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR

Client Service ID : 1021743

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0075	GAP PADDOCK NINE	AGD	55	336086	6155576	Open site	Valid	Hearth : 2		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0077	GAP PADDOCK ELEVEN	AGD	55	336169	6155736	Open site	Valid	Hearth : 3		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0083	GAP PADDOCK SEVENTEEN	AGD	55	336284	6155736	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0087	GAP PADDOCK TWENTY ONE	AGD	55	336323	6155688	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0088	Clump Paddock One	AGD	55	337674	6156331	Open site	Valid	Hearth : 1		
	Contact S Scanlon	**Recorders**	Steven Meredith					**Permits**		
48-6-0094	Clump Paddock Seven	AGD	55	340189	6157670	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0096	Clump Paddock Nine	AGD	55	340625	6157790	Open site	Valid	Hearth : 2		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0078	GAP PADDOCK TWELVE	AGD	55	336179	6155682	Open site	Valid	Hearth : 7		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0091	Clump Paddock Four	AGD	55	338583	6156659	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0068	GAP PADDOCK TWO	AGD	55	335362	6155585	Open site	Valid	Hearth : 4		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0071	GAP PADDOCK FIVE	AGD	55	335823	6155430	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0076	GAP PADDOCK TEN	AGD	55	336086	6155576	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0086	GAP PADDOCK TWENTY	AGD	55	336316	6155704	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0089	Clump Paddock Two	AGD	55	338220	6156539	Open site	Valid	Hearth : 6		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0092	Clump Paddock Five	AGD	55	338749	6156783	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-6-0095	Clump Paddock Eight	AGD	55	340609	6157882	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		
48-5-0204	Glenmore grinding stone 1	GDA	55	316429	6157671	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Peter Ingram					**Permits**		
48-6-0074	GAP PADDOCK EIGHT	AGD	55	335987	6155249	Open site	Valid	Hearth : 1		
	Contact Searle	**Recorders**	Steven Meredith					**Permits**		

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 37

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Bullawah Revised ACHAR

Client Service ID : 1021743

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
48-6-0079	GAP PADDOCK THIRTEEN	AGD	55	336190	6155716	Open site	Valid	Hearth : 1		

Contact Searle

Recorders Steven Meredith

Permits

**** Site Status**

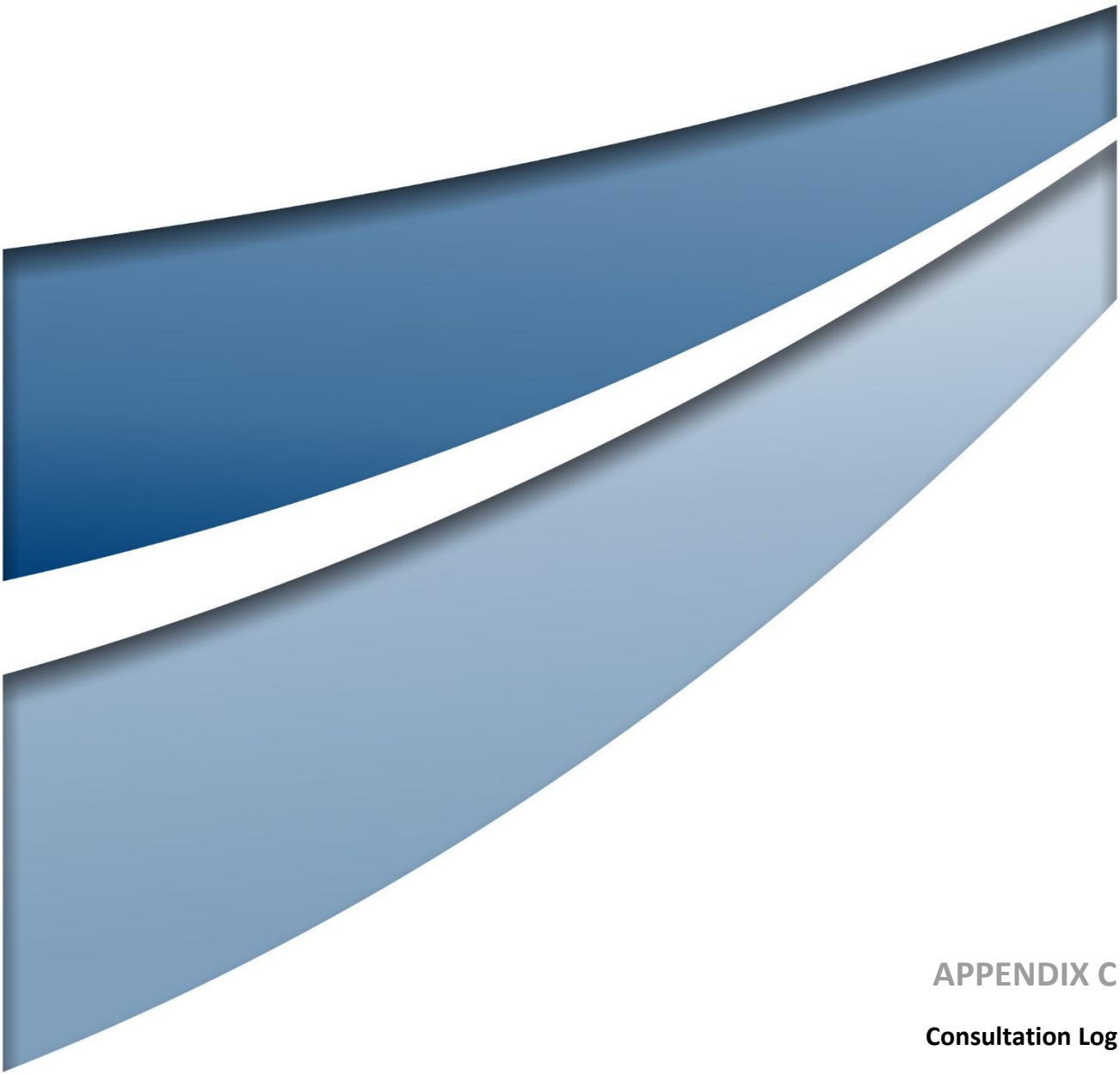
Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 08/07/2025 for Luke Wolfe for the following area at Search using shape-file search area with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 37



APPENDIX C

Consultation Log

Consultation Log

Date	Correspondence	Party/ies Contacted	Outcome
15 November 2022	Request (via email) to agencies for names of Aboriginal stakeholders who may hold cultural knowledge relevant to the Project	• Heritage NSW • Griffith Local Aboriginal Land Council (LALC) • Hay LALC • The Office of Registrar - Aboriginal Land Rights Act • NSW National Native Title Tribunal (NNTT) • Native Title Services Corporation Limited (NTSCORP Limited) • Edward River, Hay Shire and Murrumbidgee Councils • Riverina Local Land Services (LLS)	A single (1) response was received by Heritage NSW, which provide a list identifying 35 Aboriginal stakeholders with potential interest in the Project
16 November 2022	Public Notification in the Riverine Grazier newspaper	N/A	No responses received
15 November 2022	Invitations for expressions of interest sent to individuals and organisations identified by Heritage NSW	Heritage NSW issued list	Three (3) responses were received by the closing date - Pappin Family Aboriginal Corporation (30/11/2022) Yarkuwa Indigenous Knowledge Centre (21/11/2022) Miyagan Culture & Heritage (25/11/2022). A series of follow up telephone calls, emails and letters were made to individuals and/or organisation listed by Heritage NSW. An additional eleven (11) stakeholders who registered their interest.
2 March 2023	Notification of Registered Aboriginal Parties issued to Heritage NSW	Heritage NSW	N/A
9 June 2023	Provision of draft assessment methodology	RAPs	Draft assessment methodology provided to RAPs
31 August 2024	Teams meeting between Hay LALC, Umwelt and BWF	Hay LALC, Umwelt and BWF	Teams meeting with Mr Ian Woods (CEO, Hay LALC) to discuss Umwelt's assessment strategy, survey methodology and provide

Date	Correspondence	Party/ies Contacted	Outcome
			opportunity for feedback. In general, Mr Woods provided positive feedback regarding the proposed approach and clarified some details in regard to the proposed survey strategy and logistics.
11 January 2024	BayWa distributed a project update email to RAPs which included two letters, summarised below 1. a project update letter which included a summary of the assessment to date, as well as providing an understanding of future steps in the assessment process. 2. An interim briefing memorandum which included the proposed test excavation sampling strategy and methodology, requesting RAP feedback	RAPs	Patricia Winch (Mutthi Mutthi) provided feedback regarding this letter, raising concerns about the long-standing impacts of the Project to the cultural landscape of the Study Area and environs. She advised that in order to further engage with and support the local Aboriginal community, that they be directly involved in the construction process and ongoing operations. Additionally, concerns were raised regarding the proposed test excavation methodology and unexpected finds protocol, specifically ancestral remains. Umwelt provided a written response noting the concerns and providing updates to the methodology, as required.
5 February 2024	Email response to Umwelt from Mutthi Mutthi	Umwelt	John Winch, on behalf of Patricia (Mutthi Mutthi) accepted Umwelt's response on and advised they had no further comment at that time
29 May 2024	Draft report (version 1) issued to RAPs	RAPs	(26/06/2024, email) - Konanggo Aboriginal Cultural Heritage Services noted that the assessment gave a clearer insight of history of what process can be applied, in preserving cultural identity to the proposed area. Konanggo Aboriginal Cultural Heritage Services indicated support for the assessment to date. Umwelt responded thanking Konanggo Aboriginal Cultural Heritage Services for their comments and input to the Project to date. (26/06/2024, phone) Miyagan Culture & Heritage (Mr Robert Carroll) indicated they had a good read of the report and were happy with it. Mr Carroll stated he was satisfied with the findings and recommendations.

Date	Correspondence	Party/ies Contacted	Outcome
			(26/06/2024, phone) Yarkuwa Indigenous Knowledge Centre (Ms Tracy Hamilton) had a read of the ACHA and was happy with the findings and recommendations
25 and 26 June 2024	Follow up phone calls and emails	RAPs	Both Umwelt and BWF emailed and telephoned RAPs to identity if they had any last-minute comments or feedback. Hay LALC/Nari Nari Tribal Council – had not read report by cut-off date but would be in touch in future. Griffith LALC – no response. Mutthi Mutthi – had not read report and requested it to be sent again. No response received by cut-off date. Daryl Singh – Indicated he had not received report but noted his information with Heritage NSW was out of date. Report resent using updated email address. No response received by cut-off date. Pappin Family Aboriginal Corporation – had not read report but would aim to. No response received by cut-off date. Bangerang Aboriginal Corporation – Attempted phone call. No response received by cut-off date. Alice Pettit – Message left on voicemail. No response received by cut-off date. Galen Pettit – Attempted phone call. No response received by cut-off date. Terence Singh – Attempted phone call. No response received by cut-off date. John Jackson – had not read report but would aim to. No response received by cut-off date.
13 December 2024	Draft report (revision 2) issued to RAPs	RAPs	BWF prepared a Revised ACHAR to response to advice received from Heritage NSW during exhibition of the Project Environmental Impact Statement (EIS). The Revised ACHAR was issued to RAPS requesting review and/or comment. An email sent by BWF indicated that the Revised ACHAR was intended to address the Heritage NSW comments and provided references to specific location within the Revised ACHAR where changes

Date	Correspondence	Party/ies Contacted	Outcome
			were made. No comments received by the closing date (7 January 2025).
11 July 2025	Addendum Aboriginal Cultural Heritage Assessment Report	RAPs	In response to H-NSW feedback on the Addendum ACHA, a draft version of the updated Addendum ACHA was supplied to all Project RAPs for review and comment. No comments received by the closing date (29 July 2025).
	Draft (version 3) report issued to RAPs	RAPs	Konanggo Aboriginal Cultural Heritage Services provided a response to the Revised ACHA (Version 3) on 29 July 2025 indicating they had read Umwelt's report and noted that "comprehensive coverage of cultural pathways, surveys, and test excavations".

APPENDIX D

Aboriginal Site Records

Bullawah-IF1_2023 (340975.9, 6146917), comprising an isolated quartz complete flake. Image Source: Umwelt 2023

Bullawah-IF2_2023 (336654.5, 6144277), comprising an isolated silcrete flaked piece located erosion scour to the west of a larger dune landform. Likely isolated discard with low subsurface archaeological potential. Image Source: Umwelt 2023

Bullawah-IF3_2023 (337387.1, 6141787), comprising an isolated silcrete flake. Likely isolated discard with low subsurface archaeological potential. Silcrete appeared to be fine-grained and homogenous with no obvious indications of intentional heat treatment. Image source: Umwelt 2023

Bullawah-IF4_2023 (333377.8, 6145357), comprising an isolated quartz flake. Likely isolated discard with low subsurface archaeological potential. The quartz appeared to be poor quality with observed opacity and flaw surfaces. Image source: Umwelt 2023

Bullawah-IF5_2023 (335284.6, 6142950), comprising an isolated quartz flake. Likely isolated discard with low subsurface archaeological potential. Image Source: Umwelt 2023

Bullawah-AS1_2023 (332343.8, 6146293), comprising an artefact scatter of 10+ objects, located on an exposed vehicle track. Potential for additional objects in surrounds but limited visibility due to grass cover. Silcrete, quartz and quartzite objects observed. Image Source: Umwelt 2023

Bullawah-AS2_2023 (332871.6, 6146296), comprising an artefact scatter of 20+ objects, located on an exposed western face of a dune ridge. Silcrete, quartz, chalcedony, volcanic and quartzite objects observed, including a single retouched object. Image Source: Umwelt 2023

Bullawah-AS3_2023 (333262.9, 6146361), comprising an artefact scatter of 4 quartz and silcrete objects. Image Source: Umwelt 2023

Bullawah-AS4_2023 (335179.5, 6142930), comprising an artefact scatter of 13+ objects, located on a deflated dune ridge, 400 m x 250 m. Silcrete, quartz and quartzite objects observed. Image Source: Umwelt 2023

Bullawah-AS5_2023 (335509.4, 6143029), comprising an artefact scatter of two (2) quartz flakes, located on a deflated dune ridge. Image Source: Umwelt 2023

Bullawah-AS6_2023 (334204.4, 6143094), comprising an artefact scatter of 50+ objects, located on the edge of a dune ridge. Raw materials included silcrete, quartz and quartzite.

Bullawah-AS7_2023 (339885.6, 6141067), comprising an artefact scatter of 40+ objects, located on the edge of a dune ridge, approximately 500 m x 450 m.

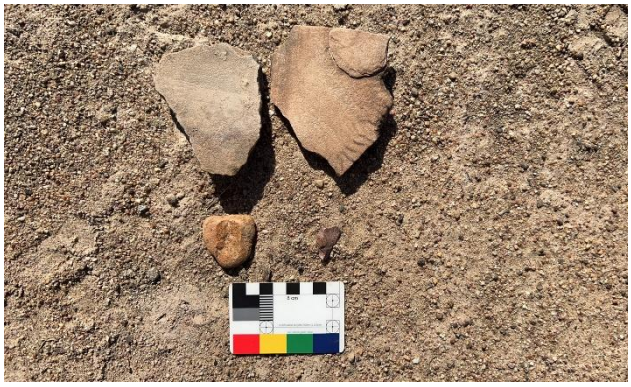
Bullawah-AS8_2023 (333456.6, 6145222), comprising an artefact scatter of 10+ objects, including five (5) green glass fragments, three (3) of which showed possible indications of flaking and/retouch. Five (5) quartz and silcrete objects also identified.

Bullawah-AS9_2023 (343316.4, 6143496) - Large artefact scatter comprising 50+ objects in near ephemeral water source, fenced off perimeter. Saltbush and scrubby surrounds, sandy soils and slight lower depressions.

Bullawah-AS10_2023 (331618.2, 6144334), comprising an extensive artefact scatter located on the south and eastern peripheries of a large lunette. Approximately 20+ objects extending over 400 m. Dune ridge landform interpreted as retaining subsurface archaeological potential within sandy soils. Images above show example of flaked quartz objects, identified in the western portion of Bullawah-AS10_2023 and view across Bullawah-AS10_2023, looking north. Image source: Umwelt 2023

Bullawah-AS11_2023 (334408.1, 6144621) – Artefact scatter comprising 50+ objects on the edge of a dune ridge with indications of stock trampling material silcrete, volcanic, quartz. Artefact types observed included flaked pieces, flakes and cores. Site extent over large area, continuous linear scatter.

Bullawah-AS12_2023 (335729.3, 6144516) – Artefact scatter comprising 30+ objects in an area of exposure on the edge of a deflated dune ridge. Raw materials observed included silcrete, quartz and volcanics/meta-sedimentary. Artefact types represented included flakes and flake debris, core/s and hammerstone/s.



Bullawah-AS13_2023 (342257.4, 6142609) – Artefact scatter comprising 5+ objects within a dam and surrounding exposures.


Bullawah-AS14_2023 (341279.5, 6143169) – Artefact scatter comprising 5+ objects on low dune ridge. Raw material included fine grained silcrete and quartz.


Bullawah-Hearth1_2023 (336464.2, 6134685) – Dispersed remnants of clay hearth retainers, approximately 10 m diameter area.


Bullawah-Culturally Modified Tree1_2023 (342454.9, 6134782) – Complex of five (5) tree limbs (Eucalypt) identified as a grafted by cultural practises. Identified high associated cultural values.

Bullawah-AS15_2023 336761.4, 6139453) – Artefact scatter comprising 10+ objects across 230 m x 430 m sheet wash exposure on the edge of a deflated dune ridge.

Bullawah-AS16_2023 (334942.6, 6139439) – Artefact scatter comprising 10+ objects located within an exposure on the edge of a deflated dune ridge over approximately 100 m. Raw materials included include quartz and silcrete.

Bullawah-AS17_2023 (334656.4, 6139881) – Artefact scatter comprising 50+ objects.

Bullawah-Earth_Mound1_2023 (332227.6, 6146394) – Large 6–12 m round feature interpreted as potential earth mound in proximity to vehicle track.

Bullawah-Site_Complex1_2023 (328869.5, 6145770) – Extensive artefact scatter comprising approximately 30+ objects observed comprising quartz, silcrete and minor chert objects over an area approximately 300 m long north to south, 100 m wide located along the western edge of an elevated landform/dune. Four (4) hearths identified in fair condition.

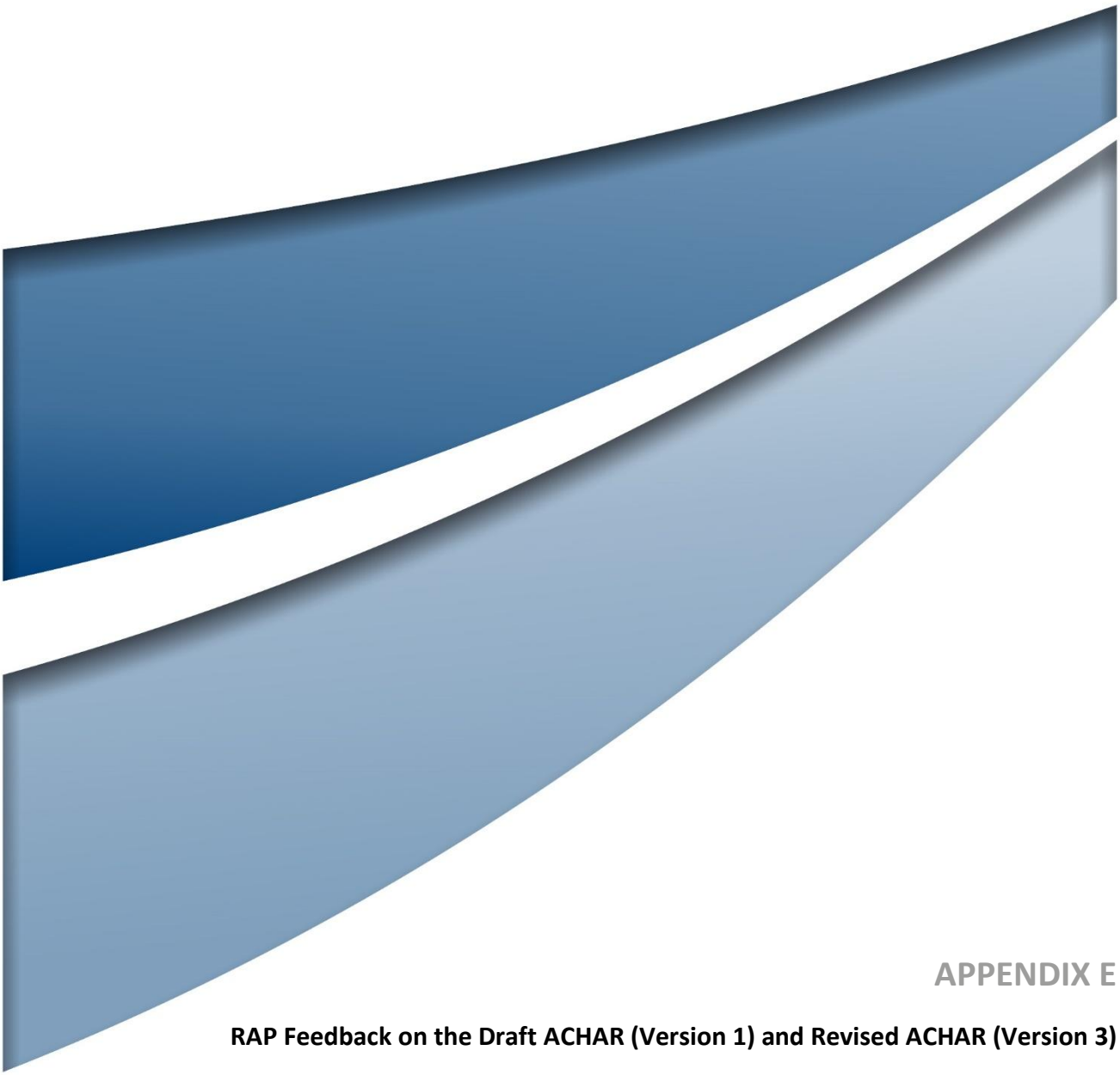
Bullawah-Site_Complex2_2023 (331116.9, 6146509) – Artefact scatter comprising approximately 10+ objects observed comprising quartz and silcrete objects in an exposed portion of a dune ridge. A single hearth identified in fair condition.

Bullawah-Site_Complex3_2023 (340648.8, 6136179) – Low density artefact scatter comprising approximately 10+ objects in tree line west of a small dam. Five (5) quartz flakes and two (2) silcrete flakes. Three (3) hearths identified in fair condition.

Bullawah-Site_Complex4_2023 (342555.4, 6134809) – Artefact scatter with nine (9) remnant hearths in fair to poor condition.

Bullawah-Site_Complex5_2023 (335762.2, 6142771) – Small artefact scatter comprising 5+ objects and three (3) hearths in fair condition on the edge of a deflated dune ridge.

Bullawah-Site_Complex6_2023 (340941.2, 6140658) – Artefact scatter comprising 30+ objects and hearth/s.



APPENDIX E

RAP Feedback on the Draft ACHAR (Version 1) and Revised ACHAR (Version 3)

From: [redacted]
To: Luke Wolfe
Cc: [redacted]
Subject: Re: Aboriginal Cultural Heritage Assessment report - Bullawah Wind Farm Project
Date: Tuesday, 25 June 2024 6:27:44 PM
Attachments: image001.png

*This message originated from outside of Umwelt - **BE CAUTIOUS** opening any link or attachment.*
Hey Luke,

Thanks for the email and we hope you and your family are well, sorry for the delay

[redacted] have reviewed the 22199-R17 Aboriginal Cultural Heritage Assessment Draft -V2. The assessment has identified so many elements of the area through the history of Aboriginal Heritage of the proposed area. It captivates the underlying formation of the geology, waterways, topographical landscapes through time and land formations. Basically, a timeline of occupation and their cultural practises on the country, hence artefacts, mounds, hearths, waterways. The proposed area with so many Aboriginal sites is very significant. The cultural protocols being acknowledged in the assessment is respectful, to the Aboriginal Raps, and neighbours who are documented in the assessment. The process that has been adopted for future works , such as cultural awareness, gives an appreciation to all involved.
[redacted] found that reading the assessment gave a clearer insight of history of what process can be applied, in preserving cultural identity to the proposed area. It was interesting and [redacted] supported the Draft Assessment.

Yours In Culture,

[redacted]

From: Luke Wolfe <lwolfe@umwelt.com.au>
Sent: Tuesday, 25 June 2024 12:59 PM
To: [redacted]
Subject: FW: Aboriginal Cultural Heritage Assessment report - Bullawah Wind Farm Project

Hi [redacted], Bullawah report attached for your review. Sorry for the last minute, if you're able to look this arvo we'd really appreciate it.

thanks

Luke Wolfe
Principal Archaeologist

m. [redacted]
w. **www.umwelt.com.au**
Galumada-Blue Mountains (Darug and Gundungurra Country)

Umwelt Banner

I acknowledge the First Peoples as the Traditional Custodians of this land, waters and sky. I pay respects to them, their cultures and their Elders, past, present and emerging.

From: Luke Wolfe
Sent: Wednesday, May 29, 2024 4:56 PM
To: [redacted]
Subject: FW: Aboriginal Cultural Heritage Assessment report - Bullawah Wind Farm Project

Hi [redacted],

Hope you, your mum and the family are well. Umwelt, on behalf of Bullawah Wind Farm Pty Ltd (BWF), is pleased to provide you both with the attached Draft Aboriginal Cultural Heritage Assessment report for the Bullawah Wind Farm Project (the Project). We kindly ask that you review the report and get back to us with any feedback you may have, particularly in regards to the proposed recommendations and management measures. Additionally, if you would like to raise any sensitive cultural matters or concerns pertaining to the Project, please feel free to give me a call to discuss. Thanks you for your continued involvement in the Project and we look forward to hearing from you.

Kind regards,

Luke Wolfe
Principal Archaeologist

m. [redacted]
w. **www.umwelt.com.au**
Galumada-Blue Mountains (Darug and Gundungurra Country)

Umwelt Banner

I acknowledge the First Peoples as the Traditional Custodians of this land, waters and sky. I pay respects to them, their cultures and their Elders, past, present and emerging.

From: [redacted]
To: Aidan O"Mahony
Cc: Michael Peters; [redacted]
Subject: Re: Bullawah Wind farm - Addendum ACHAR Update
Date: Tuesday, 29 July 2025 1:45:50 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.png
image006.png
image007.png
image008.png

Hi Aidan,

Thank you for granting the extension.

[redacted] has thoroughly reviewed the Bullawah Wind Farm - Addendum ACHAR. We found the report to be very detailed, with comprehensive coverage of the cultural pathways, surveys, and test excavations. It was clear that a great deal of respect and consideration was given throughout the process.

[redacted] acknowledges and appreciates all the efforts and processes mentioned in the report. We also want to extend our gratitude to Luke, Brent, and the team for their dedicated work in making this project a culturally safe space and for their supportive engagement. I've cc'd [redacted] within this email.
Looking forward working with Umwelt soon. Must admit it took me 3 hours to read this, sorry for the delay.

Yours In Culture,

[redacted]

From: Aidan O'Mahony <Aidan.OMahony@baywa-re.com>
Sent: Monday, July 28, 2025 8:47:23 pm
To: [redacted]
Cc: Michael Peters <Michael.Peters@baywa-re.com>
Subject: RE: Bullawah Wind farm - Addendum ACHAR Update

Hi [redacted]

Following up on our conversation, any issues or comments on the revised ACHAR, please let me know. Happy for you to get back to us by COB 29th of July on the updated ACHAR. Ignore my out of office and happy to take a call.

APPENDIX F

Test Excavation Log

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BAS-15 Transect 1	TP1	336574.8	6139570.14	0-20	Red. Clayey SAND. Dry. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-15 Transect 1	TP2	336576.15	6139548.73	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Very strong. No roots.		
BAS-15 Transect 1	TP3	336576.2	6139539.44	0-20	Red brown. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 1	TP4	336578.49	6139530.1	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Very strong.		
BAS-15 Transect 1	TP5	336577.68	6139519.3	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 1	TP6	336577.99	6139510.21	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Firm.		
BAS-15 Transect 1	TP7	336577.36	6139497.64	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-15 Transect 1	TP8	336577.03	6139489.26	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 1	TP9	336577.43	6139478.24	0-25	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				25+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 1	TP10	336577.59	6139466.87	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
BAS-15 Transect 2	TP1	336629.41	6139575.25	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Very strong. No roots.		
BAS-15 Transect 2	TP2	336626.78	6139562.06	0-20	Brown. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots.	Flat	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				20+	Brown. Medium CLAY. Dry. Very strong. No roots.		
BAS-15 Transect 2	TP3	336629.67	6139551.25	0-20	Red brown. Clayey SAND. Dry. Rigid.	Flat	No
				20+	Red brown. Medium CLAY. Rigid.		
BAS-15 Transect 2	TP4	336628.55	6139541.63	0-20	Red brown. Clayey SAND. Dry. Very strong. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-15 Transect 2	TP5	336628.67	6139532.54	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Very strong. No roots.		
BAS-15 Transect 2	TP6	336628.36	6139521.59	0-20	Red brown. Clayey SAND. Dry. Rigid. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-15 Transect 2	TP7	336628.97	6139510.9	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 2	TP8	336629.92	6139502.05	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Very strong. No roots.		
BAS-15 Transect 2	TP9	336628.51	6139490.84	0-24	Red brown. Clayey SAND. Dry. Rigid.	Flat	No
				24+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-15 Transect 2	TP10	336627.94	6139481.41	0-25	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				25+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP1	336686.57	6139432.47	0-30	Brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP2	336692.84	6139426.57	0-30	Brown. Clayey SAND. Dry. Rigid. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BAS-15 Transect 3	TP3	336699.51	6139419.51	0-30	Brown. Clayey SAND. Dry. Rigid. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP4	336708.23	6139412.49	0-30	Brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP5	336715.16	6139407.24	0-30	Brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP6	336722.29	6139399.96	0-30	Brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP7	336729.89	6139390.52	0-30	Brown. Clayey SAND. Dry. Rigid. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP8	336736.47	6139384.53	0-30	Brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP9	336744.53	6139378.63	0-30	Brown. Clayey SAND. Dry. Rigid. Few (1-10) fine (1-2 mm) roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-15 Transect 3	TP10	336750.27	6139371.91	0-30	Brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				30+	Brown. Medium CLAY. Dry. Rigid.		
BAS-4 Transect 1	TP1	335305.94	6142838.13	0-18	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots.	Dune	No
				18-22+	Red orange. Medium CLAY. Dry. Very Strong.		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BAS-4 Transect 1	TP2	335296.81	6142841.5	0-15	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots.	Dune	No
				15-19+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP3	335286.44	6142844.35	0-23	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				23-33+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP4	335277.5	6142846.33	0-10	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				10-15+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP5	335268.5	6142845.18	0-23	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				23-26+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP6	335260.06	6142848.33	0-15	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				15-20+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP7	335247.81	6142850.93	0-10	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				10-17+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP8	335236.69	6142851.7	0-10	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots.	Dune	No
				10-15+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 1	TP9	335229.15	6142856.02	0-13	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots.	Dune	No
				13-18+	Red orange. Medium CLAY. Dry. Very Strong.		
BAS-4 Transect 2	TP1	335173.32	6142854.62	0-20	Orange brown. Other. Dry. No roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Rigid. No roots.		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BAS-4 Transect 2	TP2	335166.13	6142859.88	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-4 Transect 2	TP3	335154.37	6142862.46	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-4 Transect 2	TP4	335146.89	6142860.26	0-20	Red brown. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-4 Transect 2	TP5	335134.15	6142861.07	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry.		
BAS-4 Transect 2	TP6	335126.1	6142863.82	0-20	Red brown. Clayey SAND. Dry. Rigid. No roots	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-4 Transect 2	TP7	335116.99	6142863.15	0-20	Red brown. Clayey SAND. Dry. Rigid.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-4 Transect 2	TP8	335105.27	6142867.03	0-20	Orange brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
				20+	Orange brown. Medium CLAY. Dry. Rigid. No roots.		
BAS-4 Transect 2	TP9	335094.82	6142862.36	0-20	Red brown. Other. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BAS-4 Transect 2	TP10	335087.43	6142872.27	0-20	Red brown. Other. Dry. Rigid. No roots.	Flat	No
				20+	Red brown. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 1	TP1	335932.43	6142689.47	0-23	Red brown. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Flat	No
				23-25+	Red brown. Medium CLAY. Dry. Very strong.		
BSC-5 Transect 1	TP2	335941.82	6142693.29	0-15	Brown. Clayey SAND. Moderately moist. Firm. No roots. GRADUAL (5-10 cm) boundary.	Flat	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				15-20+	Red brown. Medium CLAY. Dry. Rigid. No roots.		
BSC-5 Transect 1	TP3	335950.94	6142695.26	0-20	Red brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. GRADUAL (5-10 cm) boundary.	Flat	No
				20-30+	Red orange. Medium CLAY. Dry. Rigid. No roots.		
BSC-5 Transect 1	TP4	335958.38	6142694.08	0-15+	Red brown. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Flat	No
BSC-5 Transect 1	TP5	335969.58	6142692.09	0-15	Red orange. Clayey SAND. Very strong. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				15-19+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 1	TP6	335980.35	6142692.94	0-20	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				20-25+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 1	TP7	335989.1	6142693.82	0-15	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				15-20+	Red orange. Medium CLAY. Dry. Rigid. Few (1-10) fine (1-2 mm) roots.		
BSC-5 Transect 1	TP8	336001.14	6142691.31	0-19	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				19-23+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 1	TP10	336023.37	6142688.66	0-20	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots.	Dune	No
				20-25+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 2	TP1	335801.51	6142711.94	0-12	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	Yes
				12-30	Red orange, Clayey SAND. Dry. Firm.		
				30-37+	Pale orange. Medium CLAY. Dry. Very strong.		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BSC-5 Transect 2	TP2	335792.95	6142716.31	0-12	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				12-43	Red orange. Clayey SAND. Dry. Firm.		
				43-45+	Pale red orange. Medium CLAY. Dry. Very strong.		
BSC-5 Transect 2	TP3	335782.62	6142718.06	0-10	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	Yes
				10-40	Red orange. Clayey SAND. Dry. Firm. Mottled carbonate layer including root casts 20-40 cm depth. DIFFUSE (>10 cm) boundary.		
				40-45+	Pale red orange. Medium CLAY. Dry. Very strong.		
BSC-5 Transect 2	TP4	335772.22	6142721.05	0-10	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				10-35	Red orange. Clayey SAND. Dry. Firm. Mottled carbonate layer 20-35 cm depth. DIFFUSE (>10 cm) boundary.		
				35-42+	Orange brown. Medium CLAY. Dry. Firm.		
BSC-5 Transect 2	TP5	335763.1	6142724.23	0-14	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				14-50	Red orange. Clayey SAND. Dry. Firm. Mottled carbonate layer 30-50 cm depth. DIFFUSE (>10 cm) boundary.		
				50-54+	Red orange. Medium CLAY. Dry. Firm.		
BSC-5 Transect 2	TP6	335753.6	6142723.93	0-9	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Flat	No
				9-35	Red orange. Clayey SAND. Dry. Firm. No roots. Mottled carbonate layer. DIFFUSE (>10 cm) boundary.		
				35-42+	Orange brown. Medium CLAY. Dry. Firm.		
BSC-5 Transect 2	TP7	335744.46	6142723.27	0-20	Red orange. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				20-25+	Orange brown. Medium CLAY. Dry. Very strong.		
BSC-5 Transect 2	TP8	335733.15	6142725.94	0-20	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Dune	No
				20-23+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 2	TP9	335722.95	6142727.54	0-20	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots.	Dune	No
				20-24+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-5 Transect 2	TP10	335716.27	6142731.92	0-15	Orange brown. Clayey SAND. Dry. Very strong. Few (1-10) very fine (<1 mm) roots.	Flat	No
				15+	Orange brown. Medium CLAY. Dry. Rigid.		
BSC-5 Transect 3	TP1	335608	6142760.81	0-20	Red orange. SAND. Dry. Weak. Few (1-10) fine (1-2 mm) roots.	Dune	No
				20-30	Red. Other. Dry. Firm. DIFFUSE (>10 cm) boundary.		
				30-40+	Light red orange. CLAY. Dry. Firm.		
BSC-5 Transect 3	TP2	335599.31	6142765.36	0-22	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				22-45	Pale orange grey. Clayey SAND. Dry. Firm.		
				45-52+	Orange brown. Medium CLAY. Dry. Firm.		
BSC-5 Transect 3	TP3	335587.1	6142767.26	0-17	Red orange. SAND. Dry. Weak. Few (1-10) very fine (<1 mm) roots.	Dune	No
				17-40	Red orange. Clayey SAND. Dry. Firm. Few (2-10%) medium gravel (6-20 mm) layer approx. 35-40 cm depth. DIFFUSE (>10 cm) boundary.		
				40-48+	Brown. Medium CLAY.		
BSC-5 Transect 3	TP4	335576.94	6142769.89	0-7	Red orange. SAND. Dry. Weak. Few (1-10) fine (1-2 mm) roots.	Dune	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				7-33	Red orange. Clayey SAND. Dry. Firm. DIFFUSE (>10 cm) boundary.		
				33-42+	Pale Red orange. Medium CLAY. Dry. Firm.		
BSC-5 Transect 3	TP6	335554.88	6142773.55	0-10	Red orange. Clayey SAND. Dry. Firm. DIFFUSE (>10 cm) boundary.	Dune	No
				10-15+	Red orange. Medium CLAY. Dry. Firm.		
BSC-5 Transect 3	TP7	335546.49	6142774.72	0-4	Red orange. SAND. Weak. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				4-22+	Red orange. Clayey SAND. Dry. Firm. DIFFUSE (>10 cm) boundary.		
BSC-5 Transect 3	TP8	335536.61	6142778.13	0-15	Red orange. SAND. Dry. Weak. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				15-20	Pale red. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.		
				20-25+	Red orange. Medium CLAY. Dry. Very Strong.		
BSC-5 Transect 3	TP10	335518.66	6142784.71	0-10	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				10-15+	Red orange. Medium CLAY. Dry. Very Strong.		
BSC-5 Transect 5	TP5	335565.17	6142770.38	0-5	Red orange. SAND. Weak. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				5-20	Red orange. Clayey SAND. Dry. Firm. DIFFUSE (>10 cm) boundary.		
				20-25+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 1	TP1	340753.95	6140753.41	0-12	Red. Clayey SAND. Dry. Firm. No roots. CLEAR (2-5 cm) boundary.	Upper dune slope	Yes
				12-20+	Red. Medium CLAY. Dry. Very strong. No roots.		

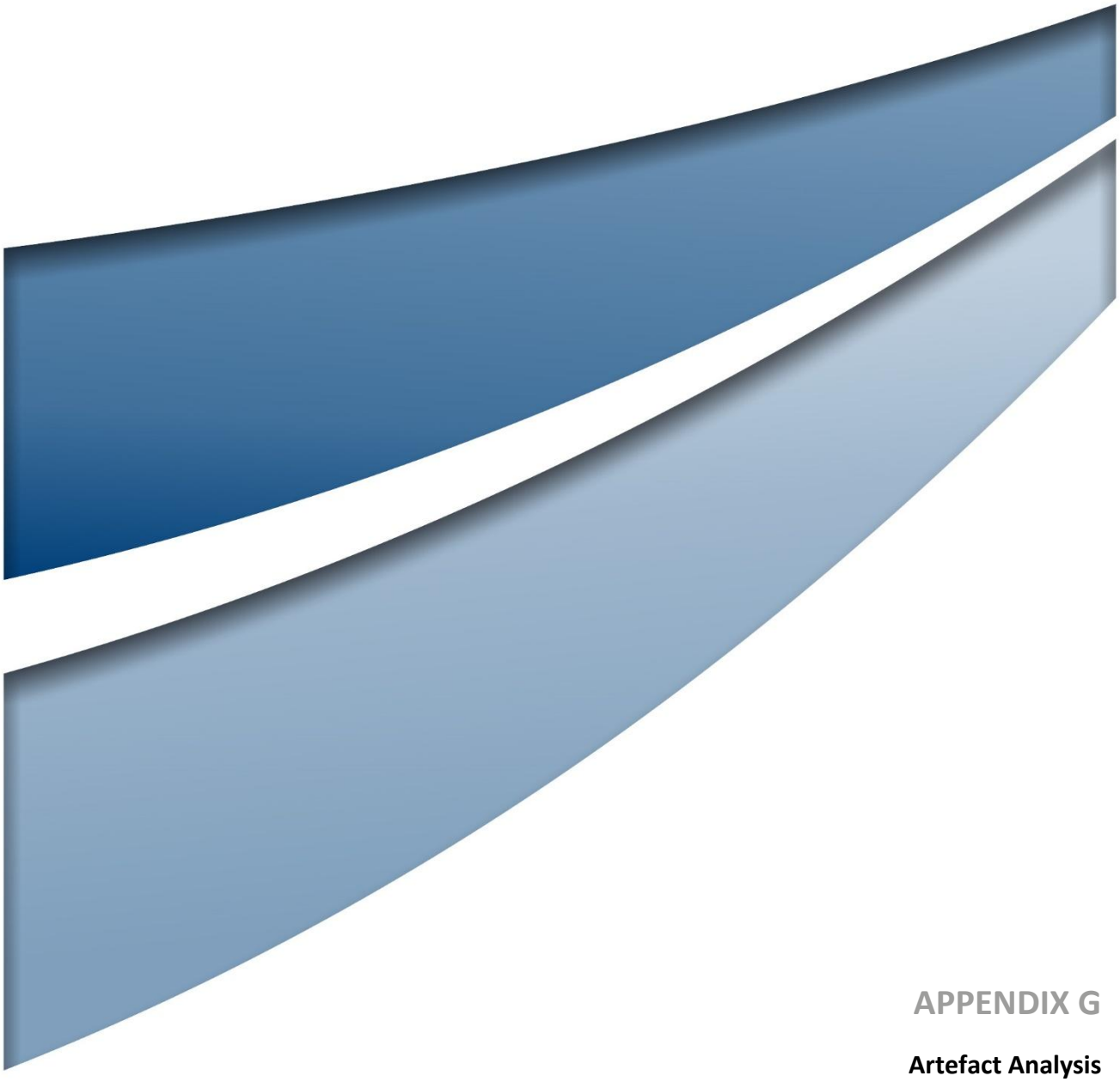
Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BSC-6 Transect 1	TP2	340744.9	6140748.36	0-15	Red. Clayey SAND. Dry. Firm. No roots. CLEAR (2-5 cm) boundary.	Dune	Yes
				15-20+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 1	TP3	340735.52	6140742.03	0-12	Red. Clayey SAND. Dry. Firm. No roots. CLEAR (2-5 cm) boundary.	Flat	Yes
				12-20+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 1	TP4	340725.46	6140735.84	0-6	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. CLEAR (2-5 cm) boundary.	Flat	No
				6-14+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 1	TP5	340718.49	6140729.46	0-12	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. CLEAR (2-5 cm) boundary.	Flat	No
				12+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 1	TP6	340711.62	6140723.84	0-10+	Red. Medium CLAY. Dry. Very strong. No roots.	Flat	No
BSC-6 Transect 2	TP1	340821.38	6140682.01	0-8	Red orange. Other. Dry. Very strong. Common (10-25) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Flat	No
				8-25+	Red orange. Medium CLAY. Dry. Rigid..		
BSC-6 Transect 2	TP2	340813.39	6140683.07	0-20	Red orange. Other. Dry. Firm. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.	Flat	Yes
				20-30+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 2	TP3	340804.65	6140688.24	0-10+	Red. Medium CLAY. Dry. Very strong. No roots.	Flat	No
BSC-6 Transect 3	TP1	340994.54	6140641.21	0-13+	Red. Medium CLAY. Dry. Very strong. No roots.	Flat	No
BSC-6 Transect 3	TP2	340991.22	6140630.09	0-15	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. CLEAR (2-5 cm) boundary.	Dune	Yes
				15-16+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 3	TP3	340987.12	6140619.72	0-8	Red. Clayey SAND. Dry. Firm. Very fine (<1 mm) roots. ABRUPT (0.5-2 cm) boundary.	Dune	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				8-22+	Red. Medium CLAY. Dry. Very strong. No roots. Slight increase in grain size between 5-12 cm depth.		
BSC-6 Transect 3	TP4	340986.72	6140611.68	0-18	Red orange. Other. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				18-20+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 3	TP4	340988.31	6140469.41	0-35	Red orange. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	Yes
				35-42+	Pale orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP5	340984.89	6140600.13	0-18	Red orange. Other. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	Yes
				18-20+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP6	340984.09	6140591.22	0-19	Red orange. Other. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				19-20+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP7	340982.84	6140579.41	0-28	Red orange. Other. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				28-30+	Red orange. Medium CLAY. Dry. Very strong		
BSC-6 Transect 3	TP8	340980.28	6140571.77	0-19	Red orange. Other. Dry. Very strong. Common (10-25) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	Yes
				19-20+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 3	TP9	340962.65	6140551.43	0-15+	Red. Medium CLAY. Dry. Firm. No roots. Wash material into 'wetland' flat.	Flat	Yes
BSC-6 Transect 3	TP10	340956.92	6140543.89	0-28	Red orange. Other. Dry. Firm. Few (1-10) very fine (<1 mm) roots. CLEAR (2-5 cm) boundary.	Dune	No
				28-30+	Red. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP11	340947.37	6140539.04	0-25	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. ABRUPT (0.5-2 cm) boundary).	Dune	No

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				25+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 3	TP12	340941.06	6140530.1	0-25	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				25-28+	Red. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP13	340935.21	6140521.74	0-21	Red. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. CLEAR (2-5 cm) boundary.	Dune	No
				21+	Red. Medium CLAY. Dry. Very strong. No roots.		
BSC-6 Transect 3	TP14	340928.29	6140513.97	0-20	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				20-23+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP15	340922.6	6140504.95	0-18	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				18-20+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 3	TP16	340915.08	6140496.07	0-12	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				12-15+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 4	TP1	341008.81	6140491.67	0-18	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	Yes
				18-20+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 4	TP2	341004.02	6140490.07	0-2	Red orange. SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	Yes
				2-38	Pale orange. Clayey SAND. Dry. Firm.		
				38-40+	Pale orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 4	TP3	341005.77	6140485.06	0-10	Red orange. SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	Yes
				10-48	Pale orange. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. DIFFUSE (>10 cm) boundary.		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
				48-50+	Pale yellow grey. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 4	TP5	340980.35	6140465.2	0-20	Red orange. Clayey SAND. Dry. Firm. Very strong. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				20-24+	Pale orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 5	TP1	341020.8	6140480.38	0-25	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots.	Dune	No
				25-28+	Pale orange. Medium CLAY. Dry. Very strong		
BSC-6 Transect 5	TP2	341019.82	6140465.64	0-20	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				20-24+	Pale orange. Medium CLAY. Dry. Very strong		
BSC-6 Transect 5	TP3	341016.28	6140455.64	0-25	Red orange. Clayey SAND. Dry. Firm. Common (10-25) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				25-32+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 5	TP4	341014.99	6140445.04	0-30	Red orange. Clayey SAND. Dry. Firm. Common (10-25) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				30-35+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 5	TP5	341014.09	6140433.18	0-20	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				20-26+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 5	TP6	341011.84	6140422.63	0-25	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. DIFFUSE (>10 cm) boundary.	Dune	No
				25-31+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 5	TP7	341012.64	6140409.84	0-10	Red orange. Clayey SAND. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				10-15+	Red orange. Medium CLAY. Dry. Very strong		

Area/ Transect	Test Pit ID	Centroid coordinates		Depth (cm)	Observed Stratigraphy	Landform	Aboriginal Objects?
		GDAE	GDAN				
BSC-6 Transect 5	TP8	341013.24	6140399.46	0-12	Red orange. Dry. Firm. Few (1-10) fine (1-2 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				12-17+	Red orange. Medium CLAY. Dry. Very strong.		
BSC-6 Transect 5	TP9	341015.03	6140387.54	0-30	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots.	Dune	No
				30-32+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 6	TP1	341118.48	6140456.21	0-30	Red orange. Clayey SAND. Dry. Very strong. Few (1-10) fine (1-2 mm) roots.	Dune	Yes
				30-32+	Red orange. Medium CLAY. Dry. Rigid.		
BSC-6 Transect 6	TP2	341120.76	6140451.14	0-35	Red orange. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	Yes
				35-45+	Orange. Medium CLAY. Dry. Rigid. No roots. GRADUAL (5-10 cm) boundary.		
BSC-6 Transect 6	TP3	341123.03	6140442.43	0-45	Red orange. Clayey SAND. Dry. Firm. Few (1-10) very fine (<1 mm) roots. GRADUAL (5-10 cm) boundary.	Dune	No
				45-50+	Orange yellow. Medium CLAY. Dry. Rigid. Few (1-10) roots. GRADUAL (5-10 cm) boundary.		



APPENDIX G

Artefact Analysis

Record No	Excavation Area	Transect No.	Test Pit	Depth	Tech. Type	Raw material	Cortex	Weight (g)	MLD (mm)	Flk. length (mm)	Flk. width (mm)	Flk. thk. (mm)	Plat. Type	Overhang	Plat. thk. (mm)	Dorsal Cortex	Termination
1	BSC-6	1	1	10-20	Complete Flake	Quartz	None	0.1		9.24	5.19	1.73	Flaked	Yes	1.63	None	Feather
2	BSC-6	1	2	0-10	Misc. Retouched	Silcrete	None	0.4									
3	BSC-6	2	2	20-30	Angular Fragment	Quartz	None	0.3	10.22								
4	BSC-6	1	3	10-20	Core	Quartz	None	2.5	18.40								
5	BSC-6	3	2	0-10	Angular Fragment	Chert	None	13.2									
6	BSC-6	3	4	0-10	Angular Fragment	Chert	None	0.7	14.53								
7	BSC-6	3	4	10-20	Complete Flake	Silcrete	None	0.2		9.34	8.91	1.52	Natural	No	1.16	None	Hinge
8	BSC-6	3	5	0-10	Angular Fragment	Volcanic	None	0.3	10.81								
9	BSC-6	3	5	0-10	Complete Flake	Quartz	None	0.3		10.17	11.06	2.56	Flaked	No	1.86	None	Feather
10	BSC-6	3	8	10-20	Angular Fragment	Silcrete	None	1.0	14.19								
11	BSC-6	3	8	10-20	Angular Fragment	Silcrete	None	1.9	29.29								
12	BSC-6	3	8	10-20	Angular Fragment	Silcrete	None	0.4	14.07								
13	BSC-6	3	8	10-20	Complete Flake	Silcrete	None	1.2		26.65	12.36	2.88	Natural	No	1.18	None	Axial
14	BSC-6	3	8	10-20	Complete Flake	Silcrete	None	2.4		31.36	13	7.27	Crushed	No		None	Feather
15	BSC-6	3	8	10-20	Proximal Flake	Silcrete	None	1.8	16.45				Flaked	yes	6.38	None	
16	BSC-6	3	8	10-20	Angular Fragment	Silcrete	None	1.2	15.51								Axial
17	BSC-6	3	8	10-20	Misc. Retouched	Silcrete	None	7.1									
18	BSC-6	3	8	10-20	Angular Fragment	Silcrete	None	0.1	11.89								
19	BSC-6	3	9	10-20	Proximal Flake	Quartz	None	0.2	8.98				crushed	no			
20	BSC-6	3	9	0-10	Complete Flake	Silcrete	None	1.0		18.08	10.69	6.47	Crushed	Yes		none	Axial
21	BSC-6	4	1	0-10	Angular Fragment	Quartz	None	0.3	15.93								
22	BSC-6	4	1	0-10	Angular Fragment	Quartzite	None	0.3	13.52								
23	BSC-6	4	2	10-20	Complete Flake	Petrified Wood	None	0.3		9.68	11.66	2.29	Natural	Yes	1.76	None	Feather
24	BSC-6	4	4	0-10	Angular Fragment	Silcrete	None	1.2	16.41								
25	BSC-6	6	1	0-10	Angular Fragment	Volcanic	None	0.5	14.14								
26	BSC-6	6	1	30-40	Angular Fragment	Quartz	None	0.3	9.02								
27	BSC-6	6	1	30-40	Angular Fragment	Quartz	None	1.6	15.48								
28	BSC-6	6	2	10-20	Ground Implement	Sandstone	None	9.1	42.63								
29	BSC-6	6	2	20-30	Core	Quartz	None	1.7									
30	BSC-5	2	1	0-10	Angular Fragment	Quartz	None	2.6	21.67								
31	BSC-5	2	3	0-10	Complete Flake	Silcrete	None	0.4		15.67	10.51	3.51	Flaked	No	1.73	None	Feather

Abbreviations

Flk – Flake
MLD – Maximum linear dimension
Plat – Platform
Thk – Thickness.

Umwelt (Australia) Pty Limited

T| 1300 793 267 E| info@umwelt.com.au www.umwelt.com.au