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Victoria to New South Wales Interconnector West (VNI West) (NSW)

Technical paper 2a – Aboriginal Cultural Heritage Assessment Report











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Technical Paper 2 - Aboriginal Cultural Heritage Assessment Report

July 2025

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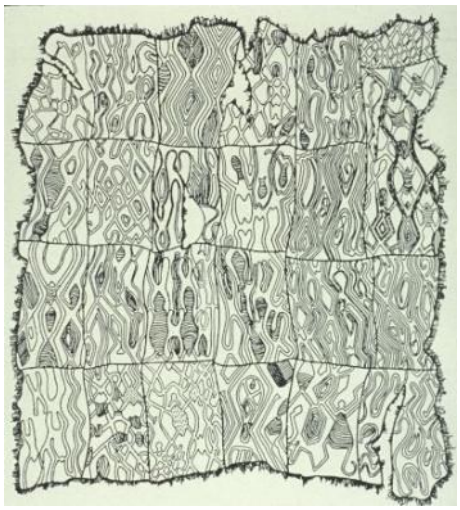
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NOHC acknowledges Australia's Aboriginal and Torres Strait Islander people, their many diverse communities across our nation and their rich culture. We pay respect to their Elders past and present. We acknowledge Aboriginal and Torres Strait Islander peoples as Australia's first peoples and as the Traditional Owners and custodians of the land and water across the Australian landscape and seascape. We recognise and value the ongoing contribution of Aboriginal people to Australian life and how their contribution continues to enrich our society. In our daily work we recognise, cherish, celebrate and defend the evidence of Aboriginal and Torres Strait Islander peoples rich and complex history and prehistory which extends back from the present day into a deep and distant past. We understand that this archaeological evidence has meaning to the descendants of those who created it. Through our research and conservation efforts we strive to unlock hidden meanings from these traces of the past and to make that knowledge available to current and future generations of Aboriginal and Torres Strait Islander people.

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EXECUTIVE SUMMARY

Project overview

Transgrid and Transmission Company Victoria (TCV) are jointly developing a new electrical connection between NSW and Victoria called the Victoria to NSW Interconnector West project (VNI West). Transgrid is responsible for seeking the required planning approval and delivering the NSW component of VNI West (referred to as 'the project' or 'VNI West (NSW)') in the Riverina Region of NSW.

The project would provide the NSW 500 kV double circuit overhead transmission line component of the connection between the NSW/Victorian border near Murrabit and the future Dinawan substation (currently being constructed as part of the EnergyConnect (NSW – Eastern section) project). The project would also include replacement of around nine kilometres of an existing overhead single circuit 330 kV transmission line (Line 51) with a double circuit 330 kV transmission line generally between Ivydale Road (south of the existing Wagga substation) and the future Gugaa 500 kV substation, Livingstone Gully Road (which is subject to separate planning approval under the HumeLink project (SSI-36656827)). The project would also include an expansion of the future Dinawan substation and connection works at both the existing Wagga 330 kV substation and the future Gugaa 500 kV substation, Livingstone Gully Road.

This Aboriginal Cultural Heritage Assessment Report (ACHAR) assesses the potential impacts to Aboriginal cultural heritage values and sites within the Aboriginal heritage project footprint from the construction and operation of the project and has been prepared to support and inform the Environmental Impact Statement (EIS) for the project.

The impacts have been assessed in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning, Housing and Infrastructure (DPHI) and against the relevant legislation and guidelines as they apply to Aboriginal cultural heritage.

Legislative and policy context

Relevant key legislation to this assessment includes the *National Parks and Wildlife Act 1974* and *Aboriginal Land Rights Act 1983*. As the project is a Critical State Significant Infrastructure project, an Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974* is not required.

Methodology

This report has been developed in accordance with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010a).
- Aboriginal cultural heritage consultation requirements for proponents (DECCW 2010b).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage (OEH) 2011).
- Archaeological sensitivity modelling using landscape information (soils, vegetation, location of creeks and rivers) and AHIMS site data were used to predict areas within the project footprint of high, moderate and low archaeological sensitivity.
- Pedestrian survey was undertaken by NOHC archaeologists and RAPs within the project footprint and new sites were recorded and AHIMS sites were reassessed.
- Archaeological test excavations were undertaken on some of the newly recorded PADs and these aimed to assess the extent of in situ topsoil, understand recent environmental history and its impacts, understand its overall archaeological potential and scientific significance, and determine its spatial boundaries.

Existing environment

NSW/Victorian border to Dinawan substation component

- There are 12 Aboriginal site records listed on AHIMS within the NSW/Victorian border to Dinawan substation component of the project footprint

- The complete project footprint in this component covers approximately 61,436,700 square metres with approximately 66 per cent subject to pedestrian survey by NOHC archaeologists and RAPs. Furthermore, archaeologists and RAPs have surveyed approximately 78 per cent of the transmission line corridor and approximately 26 per cent of access tracks, compounds and other areas.
- A total of 172 new Aboriginal sites and PADs were recorded in the project footprint the majority are hearths and heat retainers (49 per cent). The next most common site is isolated finds (25 per cent). Modified trees were the third most common site (9 per cent), followed by artefact scatters (7 per cent). Rare site types are earth mounds (3 per cent of site types), artefacts associated with hearths/heat retainers (2 per cent), shell middens which were in all instances associated with hearths/heat retainers (1 per cent), earth mounds associated with hearths/heat retainers (2 per cent), earth mounds associated with hearths/heat retainers and artefacts (1 per cent), a hearth/heat retainer associated with shell and an artefact (1 per cent) and a cultural resources site (less than 1 per cent).
- Sites were located in areas of high, moderate and low sensitivity as identified by archaeological sensitivity modelling.
- Archaeological test excavation was undertaken on 14 PADs (52 per cent of total) all of them located in landscapes used primarily for livestock grazing and in areas of largely undisturbed land. Eight were contained in landscapes predicted to be of high sensitivity by archaeological sensitivity modelling. The mean distance to water was 174 metres.
- The PADs were associated with a total of 86 surface finds recorded during field survey or located on the surface at the time of excavation. Only about 13 per cent of test pits contained archaeologically sensitive (A Horizon) soils and only four test pits (approximately 2 per cent) contained Aboriginal objects which included three stone flakes and a small sample of mussel shell fragments.

Network augmentation works component

- Within Network augmentation works component, there are seven Aboriginal site records listed on AHIMS including a scarred tree immediately adjacent to the project footprint. They include sites recorded by NOHC for PEC and HumeLink. In addition, during the post approval works for HumeLink an additional two artefact scatters have been identified.
- The total area of the Network Augmentation works has the been the subject of field survey.
- A total of four new Aboriginal sites and PADs were recorded in the project footprint.
- Sites were located in areas of high and moderate sensitivity as identified by archaeological sensitivity modelling.

Cultural Values Assessment

The Cultural Values Assessment (CVA) is informed by desktop research and field consultation with a number of Aboriginal Elders, knowledge-holders and/or organisations identified as relevant to the project footprint. Ethnohistorical records indicate that the broader project study area is characterised by a variety of traditions, items of Aboriginal history and other social and cultural values. No intangible cultural values were identified within the project footprint during the pre-fieldwork desktop review. Consultation with Elders and knowledge-holders identified several areas of cultural value within and in the vicinity of the project footprint and mitigation measures have been identified.

Scientific significance of Aboriginal objects and PADs

- Eighty-seven newly recorded sites and two excavated PADs in the NSW/Victorian border to Dinawan substation component exhibit moderate-high scientific significance with the remainder being of low scientific significance.
- Two newly recorded sites in the network augmentation works component exhibit moderate scientific significance with the remainder being of low scientific significance.

Assessment of potential impacts

Construction impacts

A total of 194 Aboriginal sites are within the project footprint, including 26 PADs. Of these (excluding PADs) sixty-three are artefact occurrences, four are earth mounds, seventy-five are hearths/heat

retainers, sixteen are modified trees, two shell middens, one cultural resource site and seven are mixed sites that have several attributes. There are 56 sites identified as being of high archaeological significance, 13 of moderate to high, 47 of moderate, and 79 of low archaeological significance. These may be directly or indirectly impacted by the project. Direct and indirect impacts for the purposes of this assessment have been defined as follows:

- Total direct harm or disturbance, where direct impacts would occur to all surface and/or subsurface features at an item. This would generally result a total loss of heritage value at a site. An example of a direct impact for the project is the installation of transmission towers. For example, sites located in early works areas, within the construction area of the transmission line structures, within the Dinawan substation are likely to be directly impacted.
- Partial direct harm or disturbance, where direct impacts would occur to only some of the surface and/or subsurface features at an item. Partial direct harm generally results partial loss of value at a site. An example of a partial direct harm would be where part of a site is impacted due to the installation of an access track or transmission line infrastructure.
- Potential direct harm or disturbance (total or partial), where direct impacts are occurring adjacent to sites, or where vegetation clearance/maintenance requires the use of heavy machinery to be active near sites. Such impacts would likely be inadvertent.
- Indirect impacts, including to the views to and from heritage items. Indirect impacts could include impacts from vegetation clearance and visual impacts to cultural values and views.

Of the 194 sites and PADs, one is adjacent to a construction compound, eight are within a construction compound, 25 are within the project footprint within a proposed access track and 160 are within the transmission line portion of the project footprint.

Operational impacts

Activities that occur during operation that may have an impact on Aboriginal heritage items may include:

- vegetation clearing/trimming within the transmission line easement, and access along road/tracks
- maintenance of the access tracks
- maintenance of the transmission line structure and line including heavy machinery placement
- maintenance of stormwater drainage systems.

Operational impacts may occur to sites that will remain in the transmission line corridor that have not been salvaged or impacted by construction. Operational impacts may be direct or indirect, for example any ground disturbing activities have the potential to directly harm Aboriginal objects and tree trimming may directly harm scarred trees. Works in the vicinity of Aboriginal sites may have indirect impacts such as from burying of Aboriginal artefacts from silt run-off.

Management and mitigation

The following recommendations are made:

- The Aboriginal community consultation process for this project will continue until completion of construction.
- The finalisation of the project design and construction methodology, and associated final disturbance areas, will be developed to avoid harm to sites of moderate or above Aboriginal heritage significance as far as practicable. For sites and PADs in temporary compounds greater effort will be placed on avoiding these sites from impact from temporary works.
- Additional assessment will occur in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010b) for areas where ground disturbing activities are required in locations outside of the previously assessed area.
- All portions of artefact scatters and isolated finds of moderate or high archaeological significance that will be directly impacted will require surface collection and/or movement prior to construction commencement in those areas.
- The locations of known Aboriginal heritage sites within and adjacent to the project footprint and the relevant protocols to avoid and manage any potential harm to the items will be communicated through the Heritage Management Plan to all relevant construction workers prior to construction commencing in that area.

- Cultural heritage awareness training will be carried out for all construction workers working on the project prior to the construction workers participating in construction activities.
- If at any time during construction any unanticipated Aboriginal objects or human remains are discovered, they will be managed in accordance with an unexpected finds protocol that is aligned with the protocol in Appendix 8.
- The long-term management of salvaged archaeological materials will be determined in consultation with Registered Aboriginal Parties (RAPs). A care and control methodology are presented in Appendix 9.
- Sites of heritage significance that would remain in-situ within the transmission line easement, at substation locations and along access tracks, will be mapped and recorded within GIS systems managed by Transgrid.

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GLOSSARY AND DEFINITIONS

Term	Definition
Aboriginal object	Defined in the NPW Act as "any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains".
Aboriginal place	An area of land that is or was of special significance with respect to Aboriginal culture and is declared to be an Aboriginal place under section 84 of the NPW Act.
Aboriginal resource and gathering	An Aboriginal site feature related to everyday activities such as food gathering, hunting, or collection and manufacture of materials and goods for use or trade (OEH 2012:8).
Aboriginal site	An Aboriginal object or Aboriginal place associated with past or contemporary Aboriginal occupation of NSW.
Aboriginal heritage impact permit (AHIP)	An AHIP is the statutory instrument issued by DPHI under section 90 of the NPW Act to manage harm or potential harm to Aboriginal objects and places (OEH 2017:1).
AHIMS	Aboriginal Heritage Information Management System – a database of known Aboriginal site records in NSW and a repository of Aboriginal heritage survey, assessment and investigation reports.
AHIMS search area	The area of the AHIMS database search included the project footprint plus a one kilometre buffer either side from of the project footprint.
Archaeological site	A place or location with material traces or evidence of Aboriginal land use. The boundaries of an archaeological site may be defined by the spatial extent of visible Aboriginal objects, or direct evidence of their location; obvious physical boundaries where present; or identification by the Aboriginal community based on cultural information (DECCW 2010a:14).
Artefact	Objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating evidence of use of the area by Aboriginal people (OEH 2012:8). Stone artefacts are the most common type of Aboriginal object and are usually the only remains left at the locations where Aboriginal people lived in the past (DECCW 2010a:28).
Artefact scatter	A formerly used site type consisting of two or more stone artefacts situated in proximity to each other. Typically, this category did not include isolated finds. The use of the term 'scatter' was intended to be descriptive and did not infer the original human behaviour which formed the site. Now referred to as an 'artefact' site feature (see Artefact).

Term	Definition
Background discard/scatter	There is no single concept for background discard or 'scatter', and therefore no formal definition. Commonly agreed is that background discard of artefacts occurs in the absence of 'focussed' activity involving the production and/or discard of stone artefacts in a particular location. An example of unfocussed activity is occasional discard of isolated artefacts during travel along a route or pathway. Examples of 'focussed' activities are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. Definitions of background scatter comprising only qualitative criteria do not specify the numbers (quantity) or density (artefacts/m^2) of artefacts required to differentiate activity areas from background discard.
Burials	A traditional or contemporary (post-contact) burial of an Aboriginal person, which may occur outside designated cemeteries and may not be marked (OEH 2012:8). Aboriginal ancestral remains are most frequently found in middens, sand dunes, lunettes, bordering dunes and other sandy or soft sedimentary soils (DECCW 2010a:34).
Critical SSI	Critical State Significant Infrastructure
CVA	Cultural Values Assessment
DPHI	(NSW) Department of Planning, Housing and Infrastructure
NSW DCCEEW	(NSW) Department of Climate Change, Energy, the Environment and Water
ESC	Effective Survey Coverage
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
Grinding grooves	Grooves in a rock surface resulting from manufacture of stone tools such as ground edge hatchets and spears, may also include rounded depressions resulting from grinding of seeds and grains (OEH 2012:9).
GSE	Ground Surface Exposure is different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals' (DECCW 2010b, p. 37)
GSV	Ground Surface Visibility is the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stony ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals' (DECCW 2010b, p. 39)
Interconnector	An electricity interconnector is a connection that allows power to flow in both directions between regions in the National Electricity Market (NEM), providing access to a larger number of electricity generators and greater ability to meet varying demand where and when it is needed most.

Term	Definition
Isolated find	A formerly used site type defined as a single stone artefact, not located within a rock shelter, which occurs without any associated evidence of Aboriginal occupation. Isolated finds may represent single discard events, be constituent components of background scatter, or be indicative of a larger obscured, remnant or disturbed site. Now referred to as an 'artefact' site feature (see Artefact).
LES	Local Environment Study
Lithic assemblage	A collection of whole and fragmentary stone artefacts and manuports obtained from an Aboriginal site, either by collecting items scattered on the present ground surface (see Artefact scatter) or recovered during controlled archaeological excavation.
Modified tree	Trees which show the marks of modification as a result of cutting of bark from the trunk for use in the production of shields, canoes, boomerangs, burial shrouds, for medicinal purposes, foot holds etc, or alternately intentional carving of the heartwood of the tree to form a permanent marker to indicate ceremonial use/significance of a nearby area. These carvings may also act as territorial or burial markers (OEH 2012:9).
NOHC	Navin Officer Heritage Consultants
NPW Act	National Parks and Wildlife Act 1974 (NSW)
Open camp site	A formerly used site type defined as a stone artefact scatter, not located within a rock shelter, containing two or more artefacts. The term 'open camp site' was based on ethnographic modelling suggesting that most artefact occurrences resulted from activities at camp sites. However, in order to separate the site description from the interpretation, both open camp sites and isolated finds are now referred to as 'artefact' sites (see Artefact).
OEH	The former NSW Office of Environment and Heritage, now NSW DCCEEW.
Potential archaeological deposit (PAD)	An area where Aboriginal objects may occur below the ground surface (OEH 2012:9).
Project footprint (the)	Refers to the generally 200 m wide corridor area that may be directly impacted by the project including all proposed infrastructure elements (including the proposed transmission line corridor, substation site works and other ancillary works) as well as locations for proposed construction elements such as temporary worker accommodation facilities, construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices.
Project transmission line corridor	A generally 200 m wide corridor along the length of the transmission line within which the transmission line, structures and easement would be located (sub set of the project footprint).
RAPs	Registered Aboriginal Parties
Shell	An accumulation or deposit of shellfish from beach, estuarine, lacustrine or riverine species resulting from Aboriginal gathering and consumption. Usually found in deposits previously referred to as shell middens. Must be found in association with other objects like stone tools, fish bones, charcoal, fireplaces/hearths, and burials. Will vary greatly in size and components (OEH 2012:10).

Term	Definition
Study Area	The Aboriginal heritage study area is the project footprint and is referred to as the 'project footprint' throughout this document.
SU	survey unit
the project	NSW component of VNI West, the project which this report assesses
Transgrid (or 'the proponent')	The manager and operator of the high voltage electricity transmission network in NSW and the Australian Capital Territory with connections to Victoria and Queensland. Transgrid manages the network that is the backbone of the NEM, which enables energy trading between Australia's three largest states along the east coast.
Transmission line easement	The area surrounding and including the transmission lines that allows access, construction and maintenance work to take place. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets. The easements for the new 500 kV transmission line between the NSW/Victorian border and the future Dinawan substation would typically be 70 m wide. However, transposition locations would require wider easements up to 110 m wide. The replacement of the 330 kV transmission line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road would occur within the existing 60 m wide easement.
Transmission line alignment	The location of the transmission line structures along the middle of the transmission line easement.
Transmission line structure	A free standing steel tower structure to support the transmission line cables. Structures can consist of two types of supporting steel lattice structures being: a suspension structure and strain structure (also known as tension structure).
Transposition	Transposition is the periodic swapping of positions of the conductors of a transmission line to improve transmission voltage balance.
VNI West	An interconnector of about 480 km between the power grids of NSW and Victoria. Specifically, VNI West would connect the EnergyConnect (NSW – Eastern section) project (at the future Dinawan substation in NSW) with the Western Renewables Link proposal (at Bulgana in Victoria) via a new substation near Kerang (in Victoria).

Term	Definition
VNI West (NSW) ('the project')	The NSW component of VNI West includes: • a new 500 kV transmission line connection between the NSW/Victorian border and Transgrid's Dinawan substation (currently under construction as part of the EnergyConnect (NSW – Eastern section) project) • replacement of a section of existing single circuit 330 kV transmission line to a double circuit 330 kV line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road (subject to separate planning approval as part of the HumeLink project) • expansion of the future Dinawan 330 kV substation to include a new 500 kV switchyard and two new 330 kV bays • connection and transmission line diversion works at both the existing Wagga 330 kV substation and the future Gugaa 500 kV substation, Livingstone Gully Road to connect the new transmission line infrastructure • ancillary activities to support construction and operation of the project.

1 INTRODUCTION

This chapter provides an overview and background to the NSW component of the Victoria to NSW Interconnector West (VNI West) project, including a summary of the project and the purpose and structure of this technical paper.

1.1. Project context and overview

Transgrid and Transmission Company Victoria (TCV) are jointly developing a new electrical connection between NSW and Victoria called the Victoria to NSW Interconnector West project (VNI West). VNI West would form a second transmission link between NSW and Victoria to harness clean, low-cost electricity from Renewable Energy Zones (REZ) in both states and improve the reliability and security of electricity supply. VNI West is a priority project for the Australian Energy Market Operator (AEMO), and the Commonwealth and NSW and Victorian governments.

VNI West proposes the construction, operation and ongoing maintenance of a high voltage, 500 kilovolt (kV) double circuit overhead transmission line that would link the high voltage electricity grids in NSW and Victoria. Specifically, VNI West would connect the Western Renewables Link proposal at Bulgana in Victoria with the EnergyConnect (NSW – Eastern section) project (SSI-9172452) at the future Dinawan substation in NSW (currently in construction). The connection would be made via a new substation near Kerang in Victoria (refer to Figure 1-1).

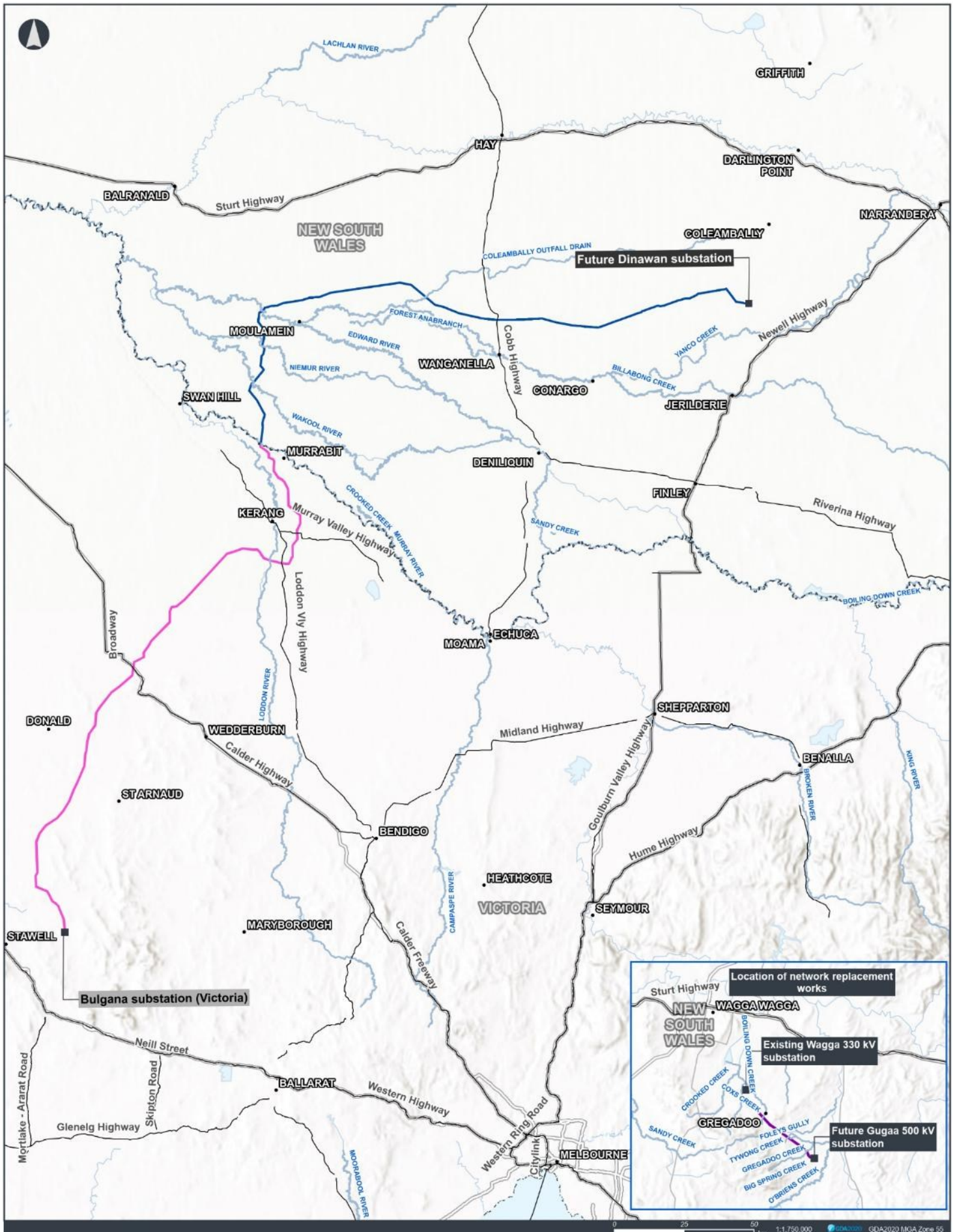
Transgrid (the proponent) is responsible for seeking the required planning approval and delivering the NSW component of VNI West (referred to as 'the project' or 'VNI West (NSW)') in the Riverina Region of NSW and would provide the 500 kV transmission line component of the connection for the VNI West project. The project between the NSW/Victorian border near Murrabit (Victoria) and the future Dinawan substation (the 330 V component of which is currently being constructed as part of the EnergyConnect (NSW – Eastern section) project). The project would also include replacement of around nine kilometres of an existing single circuit 330 kV transmission line (Line 51) with a double circuit 330 kV transmission line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road (the substation component of which is subject to separate planning approval as part of the HumeLink project (SSI-36656827)). The project would also include an expansion of the future Dinawan substation and substation connection works at both the existing Wagga 330 kV substation and the future Gugaa 500 kV substation, Livingstone Gully Road.

TCV, in association with the AEMO Victoria, is responsible for seeking the required planning approval and the delivery of the Victorian component of the VNI West project (VNI West (Victoria)), from the crossing point on the NSW/Victorian border to a connection with the Western Renewables Link near Bulgana, via a new proposed substation near Kerang. The Victorian component is subject to a separate planning and environmental approvals under the applicable Victorian State and Commonwealth jurisdictional requirements.

1.1.1 Project objectives

The primary objective of VNI West is to reduce the cost of providing secure electricity transmission between NSW and Victoria in the near term and facilitate the longer-term transition of the energy sector across the National Electricity Market (NEM) to low emission energy generation sources. More specifically, the project aims to:

- provide reliable and affordable electricity to customers
- improve energy security of the south western transmission network, enable greater sharing of energy between NSW and Victoria and help to unlock the potential capacity of proposed REZs in the region
- support the national transition to a lower carbon emission energy system by enabling more renewable energy generation to enter the market, supporting Australia's emissions reduction targets
- support the development of a greater mix of renewable energy in the NEM.



WSP

VNI West (NSW)

Figure 1.1
Overview of VNI West

Legend

- Project transmission line corridor (NSW/Victorian border to Dinawan substation)
- Network replacement between the existing Wagga 330 kV substation and future Gugaa 500 kV substation
- Victorian project transmission line corridor (subject to separate assessment)
- NSW/Victorian border
- Substation
- Watercourse
- Roads



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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

1.2 The project

Transgrid is seeking approval under Division 5.2, Part 5 of the *Environmental Planning and* Assessment *Act 1979* (the EP&A Act) to construct and operate the project. The project was declared as Critical State Significant Infrastructure (Critical SSI) under Section 5.13 of the EP&A Act on 19 June 2024.

The project was also declared a 'controlled action' on 4 September 2024 (EPBC Act 2024/09871) by the (Commonwealth) Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) and as such also requires a separate approval under the (Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As a result of the need for Commonwealth approval, the project will be subject to the bilateral assessment process that has been established between the Australian and NSW governments.

1.2.1 Key features of the project

The key elements of the project would be located within the project footprint and would include infrastructure such as the transmission lines and transmission line structures, the 500 kV expansion component of the future Dinawan substation and some additional ancillary features.

The overall scope of the project includes the following key components:

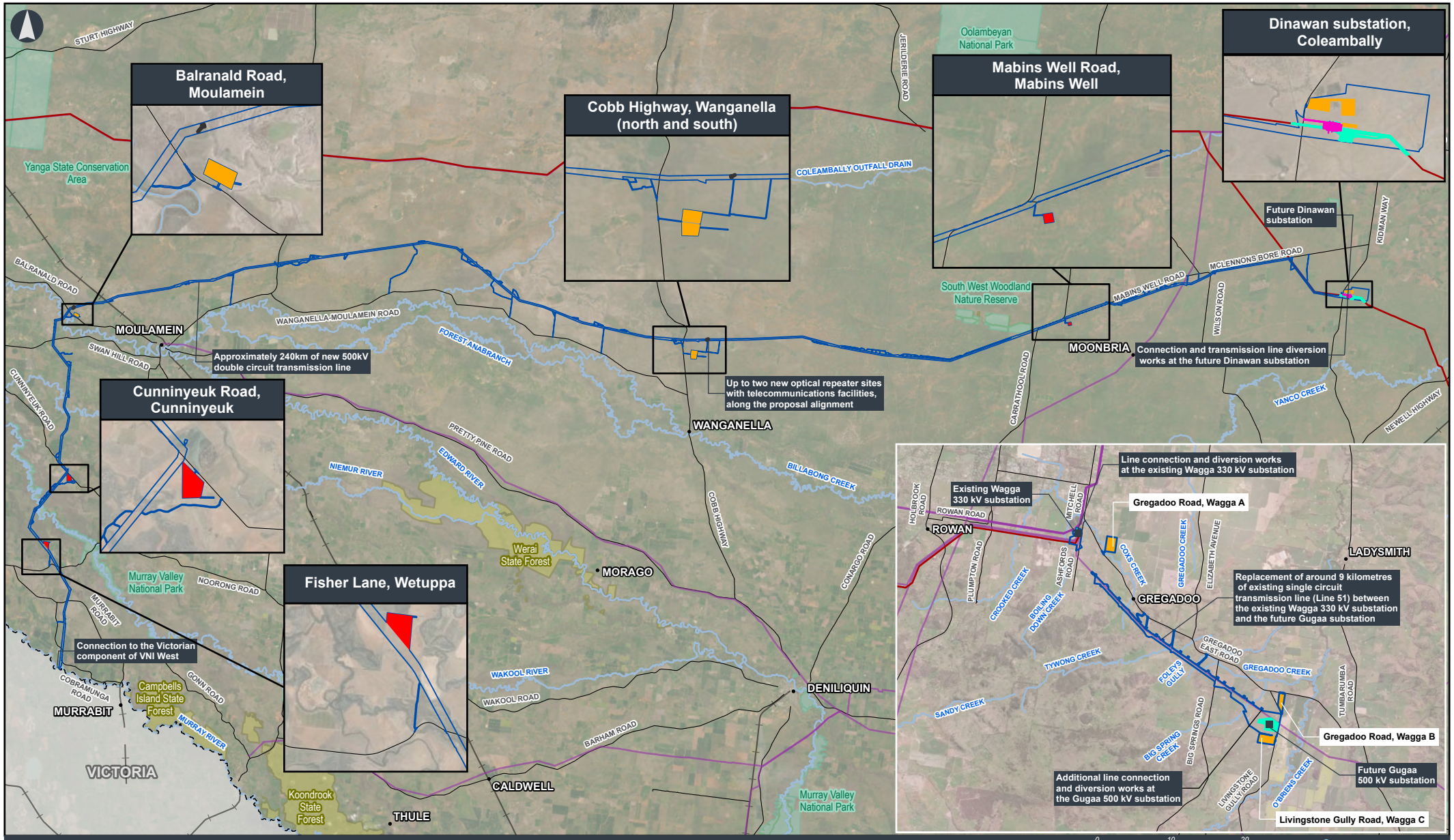
- transmission line works comprising:
  - a new 500 kV double circuit overhead transmission line around 240 kilometres in length between the NSW/Victoria border near Murrabit, and the future Dinawan substation replacement of around nine kilometres of an existing 330 kV single circuit overhead transmission line (Line 51), generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road , with a new 330 kV double circuit overhead transmission line. The new transmission line structures for this section of the project would be up to around 56 metres in height
- substation works comprising:
  - connection and line diversion works at the future Dinawan substation to allow for connection of the proposed 500 kV switchyard
  - expansion of the future Dinawan substation to include a new 500 kV switchyard and two new 330 kV transformer bays
- connection and line diversion work at the existing Wagga 330 kV substation and at the future Gugaa 500 kV substation, Livingstone Gully Road to allow for connection to the newly replaced Line 51
- ancillary activities comprising:
  - new and upgraded temporary and permanent access tracks
  - construction of utilities infrastructure and power supply
  - installation and operation of two telecommunication facilities (optical repeater sites) along the transmission line between the NSW/Victorian border and future Dinawan substation including connections to the local power supply
  - temporary facilities required for construction of the project including construction compounds, temporary worker accommodation facilities, laydown and staging areas, stockpiling areas, concrete batching plants, brake and winch sites, site offices, parking areas, and power supplies.

All components of the project would be located within the project footprint shown in Figure 1-2. The project footprint is the area that has been assessed in this EIS as being directly affected by the construction, operation and maintenance of the project.

The 500 kV transmission line between the NSW/Victorian border and the future Dinawan substation would be located within an easement approximately 70 metres wide except at two transposition locations (where the conductors of a transmission line swap positions to improve transmission voltage balance) requiring a wider 110 metre easement for around one kilometre in length.

The section of the transmission line to be replaced generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road would be contained within the existing 60 metre easement. These easements would provide a right of access to construct, operate and maintain the transmission lines and other operational assets associated with these lines.

A detailed description of the project features and construction methods is further described in Chapter 3 (Project description) of the main EIS document.



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VNI West (NSW)

Figure 1.2
Overview of the VNI West (NSW) Project

Legend

- Rail line
- Main road
- Named waterway
- EnergyConnect (NSW - Eastern section) project (under construction)
- Existing transmission line
- Dinawan substation works - proposed 500 kV
- Dinawan substation works - existing 330 kV
- Substation
- National park
- State forest
- Project footprint
- NSW/Victorian border
- Combined temporary worker accommodation facility
- Construction compound
- Telecommunication facility

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

1.2.2 Construction

1.2.2.1 Key construction work

Key construction work for the project would typically include (but not be limited to):

- pre-construction minor works which would include:
  - installation of mitigation measures, including but not limited to erosion and sediment controls, temporary exclusion fencing and monitoring equipment
  - property acquisition adjustment work including installation of property fencing, barricades and gates
- site establishment works, which may include (but not be limited to):
  - establishment of combined temporary worker accommodation facilities and construction compounds, including excavations, surface preparation, access roads and utility connections
  - vegetation clearing
  - road and intersection improvement works (where required)
  - establishment of access tracks and watercourse crossings
  - relocating, adjusting or protecting utilities
- construction of the proposed transmission lines, which would include (but not be limited to):
  - earthwork (including establishment of construction pads) and the construction of footings and foundations for each transmission line structure
  - erection of the new transmission line structures using crane(s) and/or helicopter(s), noting, where cranes are proposed, is assumed that the final height of the cranes would extend around 20 metres above the respective transmission line structure heights
  - stringing of the conductors and overhead earth wires and optical ground wire (utilising either ground-based and/or helicopter/drone stringing construction methods)
  - installation of earthing conductors
  - testing and commissioning of the transmission lines
- works to replace around nine kilometres of Line 51 generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road which would include (but not be limited to):
  - demolition of existing transmission line structures and footings and removal of waste materials
  - erection of the new transmission line structures
  - stringing of the conductors and overhead earth wires and optical ground wire
  - testing and commissioning of the new transmission lines
- expansion of the future Dinawan substation, which would include (but not be limited to):
  - civil construction works including earthworks
  - slab construction for the new 500 kV switchyard and 330 kV transformer bays
  - electrical fit out with new substation equipment
  - testing and commissioning of the new substation equipment
- utility service connections to telecommunication facilities (optical repeater sites) and construction compounds/temporary worker accommodation facilities, and adjustments of existing utilities that intersect the transmission line corridor (as required)
- connection and transmission line diversion works at the existing Wagga 330 kV substation and future Gugaa 500 kV substation, Livingstone Gully Road.

Prior to energisation of the infrastructure, a series of pre-commissioning activities would be conducted. This would include testing the new transmission lines and additional substation infrastructure.

A detailed description of construction work for the project is further outlined in Chapter 3 (Project description) of the main EIS document.

1.2.2.2 Construction program

Subject to NSW and Commonwealth planning approvals and potential construction staging, the project is expected to commence in late 2026 (site establishment works phase). Once construction has commenced, the project is estimated to take around two years to complete. Initial operation is anticipated to commence by early 2029, and at full capacity by late 2029. Site decommissioning and remediation would extend up to around six months beyond the initial commissioning (operational) phase, with estimated completion by the end of 2029.

The final construction program would be confirmed as part of the finalisation of the project development following approval of the project.

1.2.2.3 Indicative duration of transmission line structure construction

Construction at each transmission line structure would be intermittent and construction activities would not occur for the full duration at any one location. Figure 1-3 presents an indicative duration of construction activities associated with the transmission line structures. These durations could vary and breaks between activities may be shorter, which may lead to longer inactive periods in subsequent stages of construction at an individual transmission line structure. Duration of any particular construction activity, and respite periods, may vary for a number of reasons including (but not limited to), multiple work fronts, resource and engineering constraints, works sequencing, and location.

These activities would also have multiple work fronts, therefore (for example) foundation works or structure erection would be occurring in several locations, along the transmission line easement, at the same time.

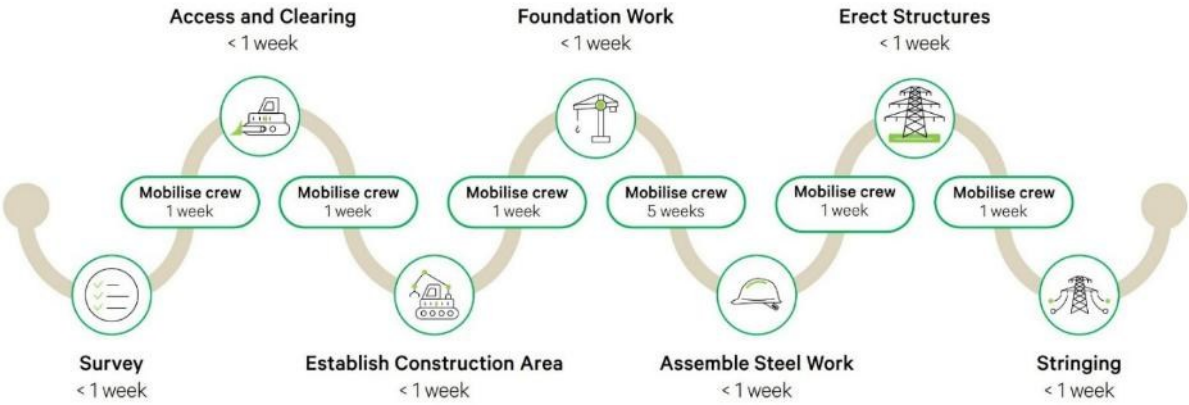


Figure 1-3 Indicative duration and sequence of construction activities for transmission line structures

1.2.3 Operation

Once operational, the new infrastructure would be inspected by field staff and contractors on a regular basis, with other operational activities occurring in the event of an emergency (as required). Likely maintenance activities would include:

- regular inspection (ground and aerial) and maintenance of transmission lines and structures, including annual fly overs and routine ground inspections on an approximate six-yearly cycle
- vegetation clearing/trimming within the transmission line easement, and access along road/tracks
- inspection and maintenance of the future Dinawan substation including:
    - routine substation infrastructure inspection (such as transformers, electrical plant and equipment and fire detection systems) throughout the year

- routine/planned substation maintenance of equipment, property and switchyard areas on a scheduled basis
- ad hoc fault and emergency works for repair of any damaged infrastructure (for example through a weather event or other failure of infrastructure)
- maintenance of asset protection zones (as required)

- inspection and maintenance of other ancillary infrastructure including the telecommunication facilities and associated asset protection zones
- stormwater drainage maintenance.

It is expected that these activities would only require light vehicles and/or small to medium plant (depending on the work required).

1.3 Purpose of this technical report

The purpose of this technical report is to identify and assess the potential impacts of the project in relation to Aboriginal cultural heritage values and sites within the project footprint, assess the harm the project may cause, and outline management recommendations for actions to avoid, minimise or mitigate the impact. It responds directly to the project's Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure (DPHI) on 22 May 2025 (refer to Section 1.3.1).

This Aboriginal Cultural Heritage Assessment Report (ACHAR) documents the results of archaeological and cultural values investigations undertaken to identify the extent and significance of any physical remains and intangible values of past Aboriginal visitation, use and occupation within the project footprint.

The objectives of the ACHAR are to:

- undertake Aboriginal community consultation
- review the landscape context of the project to assist in predicting the ways in which Aboriginal people have used the project footprint in the past
- undertake a literature and database review in order to place Aboriginal occupation of the landscape into a local and regional context.
- complete and document field investigations
- assess the heritage values and significance of the project footprint to identify the range of values that are present and assess them against relevant criteria, in order to define why a place is important and inform future planning and management
- assess the impacts of the project on Aboriginal cultural values
- identify mitigation measures to manage potential Aboriginal heritage impacts of the project.

1.3.1 Secretary's Environmental Assessment Requirements

This technical paper addresses the SEARs relevant to the ACHAR and Cultural Values Assessment (CVA). The SEARs do not state that a CVA is required. However, the CVA contributes to the broader Aboriginal heritage requirements that are sought in the project SEARs. The requirements specific to this assessment and where these aspects are addressed in this technical report are outlined in Table 1-1.

1.3.2 Related technical papers

This technical paper is linked to the assessments completed in Technical Paper 2A, Cultural Values Assessment.

Table 1-1 Secretary's Environmental Assessment Requirements – Aboriginal heritage

Ref.	Secretary's environmental assessment requirements	Where addressed in the paper
Key Issues – Heritage	an assessment of the impact to Aboriginal heritage (cultural and archaeological), including test excavations, 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)	This ACHAR has been written to comply 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)
	evidence of adequate consultation with Aboriginal parties in determining and assessing impacts, having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010)	Chapter 4
	if the test excavations do not conform with the Code of Practice, then the excavations may only be carried out with the written endorsement of Heritage NSW following consultation with the Registered Aboriginal Parties	Section 3.2.3.2. Test excavations carried out as part of the ACHAR were in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010)

1.4 Structure of this report

The structure and content of this report is as follows:

- Chapter 1 – outlines the background and need for the project, and the purpose of this report (this chapter)
- Chapter 2 – outlines the statutory requirements relevant to the project footprint with regard to Aboriginal cultural heritage
- Chapter 3 – describes the assessment methodology for the ACHAR
- Chapter 4 – summarises the Aboriginal community consultation undertaken for the ACHAR
- Chapter 5 – provides a description of the environmental and landscape context for the project footprint
- Chapter 6 – overviews linguistic information and summarises the ethnographic history of the Aboriginal nations of the project footprint
- Chapter 7 – discusses the data currently available on Aboriginal objects and places in the region, and the information this provides on past Aboriginal habitation and land use

- Chapter 8 – outlines the results of the archaeological field investigation undertaken as part of this assessment and identifies the nature and extent of Aboriginal objects and places, and areas of archaeological potential, within the project footprint
- Chapter 9 – summarises the cultural values assessment that has been completed for this project
- Chapter 10 – describes the cultural heritage values and assess the significance of Aboriginal objects and places in the project footprint
- Chapter 11 – assesses the impacts of the project on Aboriginal cultural heritage values
- Chapter 12 – assesses the cumulative impacts of the project and other projects in the region
- Chapter 13 – identifies the management recommendations to avoid and minimise harm, and mitigate any heritage impacts, based on legislative requirements, the results of the archaeological investigation, and the views and recommendations of Registered Aboriginal Parties (RAPs)
- Chapter 14 – provides the conclusions for the ACHAR
- Appendix 1 – details of Aboriginal community consultations
- Appendix 2 – Extensive searches on the Aboriginal Heritage Information Management System (AHIMS) database
- Appendix 3 – a description of each of the new sites recorded
- Appendix 4 – Potential Archaeological Deposit (PAD) section profiles and sediment descriptions
- Appendix 5 – Field recordings excluded from the site list due to insufficient scientific support
- Appendix 6 – Impact figures
- Appendix 7 – Plan for the further investigation and management of newly identified sites during the constructions works phase and Unexpected finds protocols
- Appendix 8 – Methodologies for further works

2 STATUTORY AND POLICY CONTEXT

The following chapter outlines the Commonwealth and State legislation that provides the framework for the preparation of this report, including liaising with the local Aboriginal communities, identifying and assessing archaeological and cultural values, and determining impacts of the project on those values.

Aboriginal cultural heritage in NSW is protected by Commonwealth and State legislation, and associated regulations and guidelines.

2.1 Commonwealth

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's national environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places – defined in the EPBC Act as matters of national environmental significance (MNES). It establishes:

- the National Heritage List – a list of Indigenous, historic and natural places of outstanding significance to the nation, and
- the Commonwealth Heritage List – a list of Indigenous, historic and natural heritage places owned or controlled by the Australian Government.

The EPBC Act also establishes requirements for environmental approval of activities that will have a significant impact on a declared World Heritage property, which is a heritage place of outstanding universal value included in the World Heritage List established by UNESCO and recognised under the 1972 World Heritage Convention.

There are no heritage items within the project footprint that are on the World Heritage, National Heritage, or Commonwealth Heritage Lists. Therefore, there will be no significant heritage impact as defined under the EPBC Act and the project will not require a referral for heritage values under this Act.

The project has been referred under the EPBC Act to the Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) for biodiversity matters and the project has been determined to be a controlled action. It will require Commonwealth assessment and approval under the EPBC Act.

2.1.2 Native Title Act

The Commonwealth *Native Title Act 1993* (Cth) provides the legislative framework to:

- recognise and protect native title
- establish ways in which future dealings affecting native title may proceed and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title
- establish a mechanism for determining claims to native title
- provide for, or permit, the validation of past acts invalidated because of the existence of native title.

The NSW *Native Title Act 1994* was introduced to make sure the laws of NSW are consistent with the Commonwealth's *Native Title Act 1993* on future dealings. It validates past and intermediate acts that may have been invalidated because of the existence of native title.

The National Native Title Tribunal has a number of functions under the *Native Title Act 1993*, including maintaining the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements (ILUA) and mediating native title claims.

An ILUA is a voluntary agreement between native title parties and other people or bodies about the use and management of areas of land and/or waters. An ILUA can be made over areas where:

- native title has been determined to exist in at least part of the area
- a native title claim has been made
- no native title claim has been made.

While registered, ILUAs bind all native title holders to the terms of the agreement. ILUAs also operate as a contract between the parties.

No Native Title claims have been registered within the project footprint.

2.1.3 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act* 1984 (ATSIHP Act) provides for the preservation and protection of places, areas and objects of particular significance to Indigenous Australians. The stated purpose of the ATSIHP Act is the "preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginal peoples in accordance with Aboriginal tradition."

The ATSIHP Act can prevail over state and territory laws in situations where a state or territory has approved an activity, but the Commonwealth Minister prevents the activity from occurring by making a declaration to protect an area or object. However, the Minister can only make such a decision after receiving a legally valid application under the ATSIHP Act and, in the case of long-term protection, after considering a report on the matter. Before making a declaration to protect an area or object in a state or territory, the Commonwealth Minister must consult the appropriate Minister of that state or territory.

No declarations relevant to the project footprint have been made under the ATSIHP Act.

2.2 State

2.2.1 Environmental Planning and Assessment Act 1979

As identified in Section 1.2, the project is Critical SSI and in subject to Division 5.2, Part 5 of the *Environmental Planning and* Assessment *Act 1979* (the EP&A Act). Under section 5.23 of the EP&A Act, a permit under section 90 of the *National Parks and Wildlife Act 1974* (NPW Act) is not required for an approved SSI. While a permit is not required, the SEARs issued for the project require the identification, assessment and mitigation of potential heritage impacts of the project in accordance with the specified guidelines.

2.2.2 National Parks and Wildlife Act 1974

Part 6 of the NPW Act provides protection for Aboriginal cultural heritage in New South Wales, including Aboriginal objects and declared Aboriginal places.

An **Aboriginal object** is defined as:

[…] any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains.

An **Aboriginal place** is any area of land in New South Wales declared by the Minister for the Environment to be of special significance to Aboriginal culture.

It is an offence under section 86(4) of the NPW Act to harm (destroy, deface, or damage) or desecrate an Aboriginal object or place. The definition of harm includes moving an Aboriginal object from the land on which it is situated. Where harm cannot be avoided, an Aboriginal heritage impact permit (AHIP)

issued by the New South Wales (NSW) Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) under s.90 of the NPW Act will be required.

As the project has been declared Critical SSI no AHIP will be required (refer to section 2.2.1) and the requirement for assessment of cultural heritage values are managed under the EP&A Act.

The AHIMS was also established to collate information on known Aboriginal objects, sites and places. The AHIMS is a database kept by NSW DCCEEW which contains information about Aboriginal objects and places in NSW, including site records and cultural heritage assessment reports. If an Aboriginal object is found that is not already recorded on the AHIMS database, it is a requirement under section 89A of the Act to notify NSW DCCEEW of the object's location.

2.2.3 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* establishes Local Aboriginal Land Councils (LALCs) at State and local levels and these bodies have a statutory obligation under the Act to:

- take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law
- promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

These requirements recognise and acknowledge the statutory role and responsibilities of the NSW Aboriginal Land Council (NSW ALC) and LALCs.

The project footprint extends across the boundaries of the Cummergunja, Deniliquin, Griffith, Wamba Wamba and Wagga Wagga LALCs.

2.2.4 Guidelines

This report has been developed in accordance with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (Department of Environment, Climate Change and Water [DECCW] 2010a). This code of practice provides information on the minimum standards for an archaeological investigation undertaken in NSW. The archaeological survey, test excavations and data collection completed for this project was completed in accordance with this code. This is discussed further in Chapter 3 and Chapter 8.
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010b). This guideline sets out the requirements to consult with Aboriginal people who hold knowledge about the significance of Aboriginal cultural heritage relevant to a proposed project. How this guideline has been applied is discussed further in Chapter 4.
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage [OEH] 2011). This sets out the process to follow when investigating and assessment whether Aboriginal cultural heritage values and objects are present and sets out the requirements for an CHAR. How this guideline has been applied is discussed further in Chapter 3 of this ACHAR.

3 METHODOLOGY

This chapter provides an overview of the methods and activities implemented to develop and inform this report.

3.1 Overview

This report has been developed in accordance with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010a)
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010b)
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage (OEH) 2011).

As such, the key requirements of this report are:

- to conduct a search of the AHIMS database
- to review the landscape context of the project footprint, with specific consideration to its implications for past Aboriginal land use
- to review relevant archaeological and ethnohistoric information for the region surrounding the project footprint
- to prepare a predictive model for the Aboriginal archaeological record of the project footprint
- to undertake an archaeological field investigation including detailed survey of the project footprint
- 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 project footprint
- to provide Registered Aboriginal Parties (RAPs) with information about the scope of the proposed works and Aboriginal heritage assessment process
- to facilitate the process where RAPs can:
    - contribute culturally appropriate intangible information
    - provide information that will enable the cultural significance of Aboriginal objects and/or places within the project footprint to be determined
    - have input into the development of cultural heritage management options
- to prepare an ACHAR with input from registered RAPs
- to prepare a Cultural Values Assessment Report (CVAR).

3.1.1 Aboriginal cultural heritage study area

The Aboriginal cultural heritage study area is the project footprint (refer to Figure 3-1) and is referred to as the ‘project footprint’ throughout this document. The project footprint refers generally to the 200 metre corridor area that may be directly impacted by the project including all proposed infrastructure elements (including the proposed transmission line corridor, substation site works and other ancillary works) as well as locations for proposed construction elements such as temporary worker accommodation facilities, construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices.

The desktop assessment included a border area to inform the predictive model and regional overview The area of the AHIMS database search included the project footprint plus a one kilometre buffer either side (AHIMS search area). The project footprint in the Aboriginal cultural heritage context consists of two key components, which have been described separately below given the geographical separation of these components.

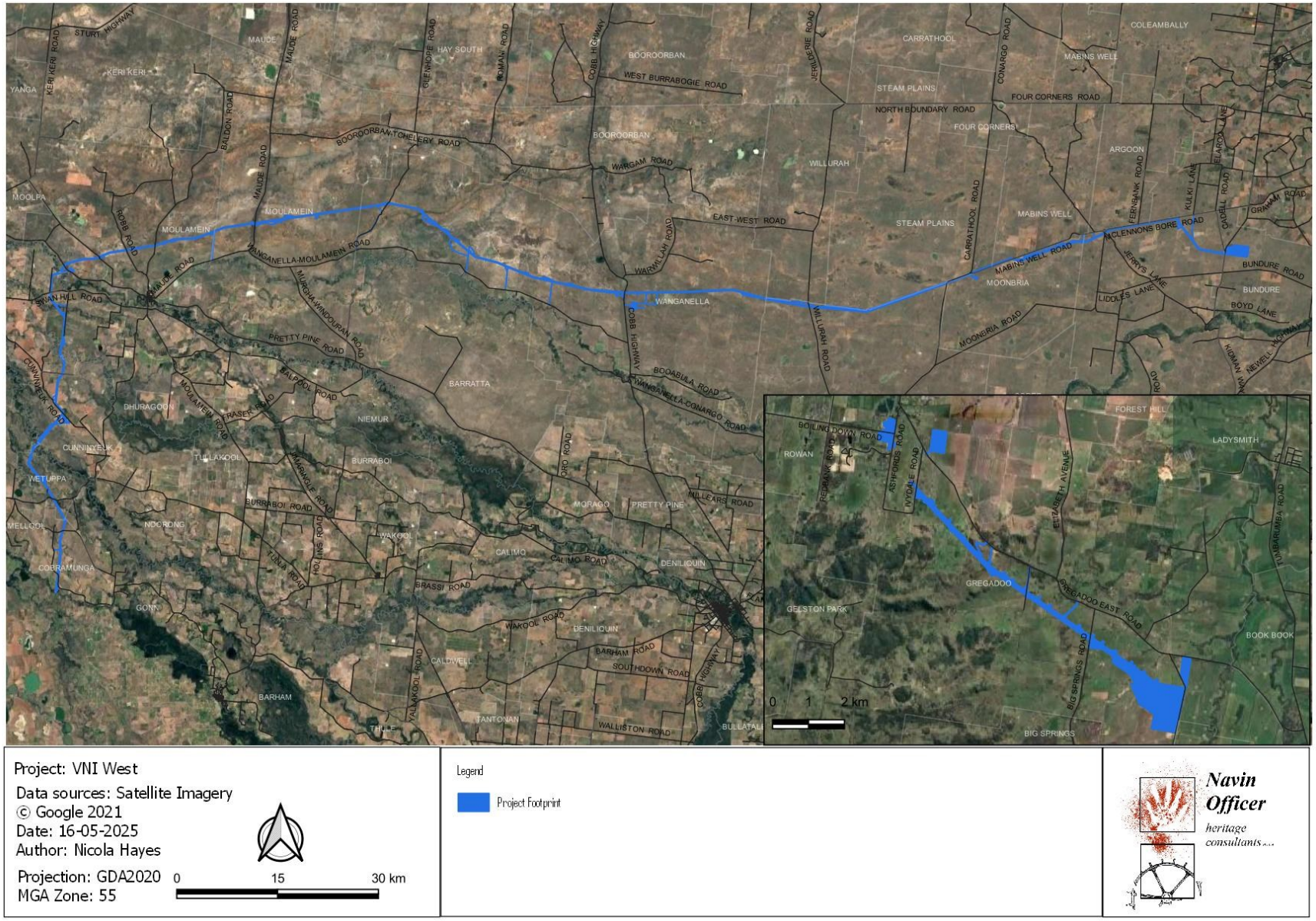


Figure 3-1 Aboriginal Heritage project footprint

3.1.1.1 NSW/Victorian border to Dinawan substation

The NSW/Victorian border to Dinawan substation component is approximately 240 kilometres long and spans three local government areas including:

- Edward River (western end)
- Murray River (central section)
- Murrumbidgee (eastern end).

It covers four LALCs, comprising the:

- Cummeragunja LALC
- Deniliquin LALC
- Griffith LALC
- Wamba Wamba LALC.

Most of the project footprint for this component of the project is typically flat. The main land use consists of various types of primary production, including grazing, irrigated horticulture and irrigated cropping of rice, cotton, sunflower and corn. The project footprint for this component crosses the Wakool River, Niemur River and Edward River (also known as Kolety), and the Murray River into Victoria. It also crosses several named creeks including the Delta, Coleambally, Bullockhide, Merran, Larrys and Cunninyeuk.

3.1.1.2 Network augmentation works

The network augmentation works component is approximately nine kilometres long. It is located within the Wagga Wagga local government area and the Wagga Wagga LALC area. The project footprint for this component consists of low rolling hills and is used primarily for grazing and runs parallel to an existing transmission line. It will also be located alongside the approved HumeLink project.

To support the network augmentation works, the project may re-use the Lockhart combined temporary worker accommodation facility and construction compound that has been established by the approved EnergyConnect (NSW – Eastern section). As the use of the project would not change the footprint at this site, this Aboriginal cultural heritage assessment has not considered this site further.

3.2 Key tasks

3.2.1 Literature and database review

A range of historical and archaeological data was reviewed for the project. The review considered a broad spatial context for the project footprint and drew upon previous research included in the published scientific, ethnographic and historical literature, previous investigations in the region undertaken by NOHC, and reports held in the AHIMS. As the project footprint has received minimal research attention, either in the scientific literature or in heritage assessments, the review took into consideration studies undertaken in a regional context to help inform the local context. The sheer size and relative uniformity of landscape types (i.e. vegetation communities, geology and soils) and the use of vast size of the landscapes used for economic activities by Aboriginal communities in the past makes this wider context appropriate. This review was used to develop a predictive model of past landscape use by Aboriginal people and to help identify landscape features and areas with a higher likelihood of containing Aboriginal objects and sites. This model was tested through pedestrian survey undertaken by NOHC archaeologists in the project footprint (refer to Chapter 3.2.3).

An AHIMS extensive search of the AHIMS search area was undertaken on 2 April 2025. AHIMS is maintained by NSW DECCEEW and associated files and the catalogue of archaeological reports. Sources of historical information included regional and local histories, and heritage studies. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

This literature and data review was used to determine if known sites are located within the project footprint, facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context.

3.2.2 Development of archaeological sensitivity predictive models

3.2.2.1 NSW/Victorian border to Dinawan substation

A preliminary Aboriginal archaeological sensitivity model has been developed for the project footprint. This model is based on a review of previously recorded AHIMS sites, an assessment of topographic contours and slope, a review of previous archaeological investigations within and near the project footprint and the hydrology along the project footprint.

The project footprint for this component of the project was split into two areas of interest (AOI) based on overall average landscape.

- One AOI was the riverine landscape which encompassed a 10 kilometre buffer around the Edward River and all areas south to the Murray River (Riverina AOI).
- The other AOI was the Hay Plain soil type (Hay AOI).

Vegetation type and proximity to water sources were used as variables in this model. 1058 AHIMS sites within the AOIs and surrounding similar landscapes were compared with these parameters to see how close sites were to sources of water and what types of soil and vegetation they were typically associated with.

Major sources of water were classified as named bodies of water “creeks, lakes, lagoons” wet swamps, and streams classified as Strahler order 3 and above. Based on these results the land in the project footprint was reclassified into landscapes of high, medium and low likelihood to contain Aboriginal cultural heritage sites (see Figure 3-1). The breakdown of likelihood is as follows:

- High – higher concentrations of sites found in these types of landscape
- Medium – lower concentrations of sites found in these types of landscape, and
- Low – extremely few to no sites found in these types of landscape.

It was determined that 75 per cent of sites are likely to be found within 500 metres of a major water source with most sites identified within 200 metres of major water sources. A 50 metre and a 100 metre buffers were created around existing AHIMS sites.

The AHIMS data was also used to classify vegetation and soil types that are more or less likely to be associated with recorded sites (Table 3-1). The breakdown of parameters by sensitivity class are as follows:

- High
    - Indicative soil (soil types with a higher probability of containing sites)
    - Indicative vegetation (vegetation types with a higher probability of containing sites)
    - 200 metre buffer around hydrology except in areas of non-indicative soil and non-indicative vegetation
    - 50 metre buffer around existing AHIMS sites
- Moderate
    - 500 metre buffer around hydrology
    - Moderately indicative soils and moderately indicative vegetation (soil and vegetation types with a moderate probability of containing sites)
    - 100 metre buffer around existing AHIMS sites
- Low
    - all remaining areas

Vegetation and soil type sensitivity

The archaeological sensitivity model was produced using the NSW State Vegetation Type dataset, (edition C2.0.M2.1) produced by the NSW government (NSW DCCEEW 2020), and the Australian Soil Classification (ASC) soil type map of NSW produced by the NSW government (NSW DCCEEW 2012). Table 3-1 details the vegetation and soil types mapped across the project footprint and their archaeological sensitivity as determined by the sensitivity model. Those determined to have high sensitivity were most likely to have Aboriginal sites associated with them, and those determined to be of low sensitivity were least likely to have Aboriginal site associated with them. As detailed below this determination was checked post survey using the site locations recorded during the field surveys to confirm the determination.

Table 3-1 Vegetation and soil types sensitivity by area of interest

PCTID	PCTName	Sensitivity
Vegetation types by archaeological sensitivity		
10	River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
19	Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	High
28	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	High
166	Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	High
7	River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	Moderate
9	River Red Gum - wallaby grass tall woodland wetland on the outer River Red Gum zone mainly in the Riverina Bioregion	Moderate
13	Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate
16	Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate
24	Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Moderate
44	Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Moderate
46	Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Moderate
47	Swamp grassland wetland of the Riverine Plain	Moderate
53	Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	Moderate
157	Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Moderate
160	Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate
164	Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate
2	River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW	Low
11	River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low
12	Shallow marsh wetland of regularly flooded depressions on floodplains mainly in the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low

PCTID	PCTName	Sensitivity
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low
26	Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Low
45	Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Low
159	Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	Low
216	Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Low
Vegetation types by archaeological sensitivity		
7	River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	High
10	River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
11	River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
12	Shallow marsh wetland of regularly flooded depressions on floodplains mainly in the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
13	Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	High
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	High
2	River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW	Moderate
46	Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Moderate
16	Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low
19	Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	Low
28	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Low
44	Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Low
160	Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Low
164	Cotton Bush open shrubland of the semi-arid (warm) zone	Low
216	Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Low
Soil types by archaeological sensitivity (both Hay and Riverina AOI)		
	Rudosols	High
	Vertosols	Moderate
	Calcarosols	Low

Note: Some of the vegetation type names listed below have been combined into broader categories in Table 5-4

The sensitivity model is used a tool to help assess the archaeological potential of the project footprint and has been verified and refined throughout the assessment. It is best able to predict habitation sites (such as artefact scatters, earth mounds, hearths etc.) but not sites of cultural value. In other words,

sites found in areas of high sensitivity are not assumed to be of higher cultural significance than sites found in areas of moderate or low sensitivity.

Following the results of field surveys the archaeological sensitivity model was updated. It was found that recorded sites occurred in areas predicted by the model to be of high and low archaeological sensitivity.

These results highlight the complexities of archaeological sensitivity modelling. The project landscape contains palaeochannels and associated sediments of considerable geological antiquity (dating of these channels across the project footprint is mostly Late Pleistocene: Banerjee et al. 2002) as well as areas subject to extensive impact from activities such as grazing and cropping. The updated sensitivity model assumes that the present landscape is indicative of past conditions and human settlement patterns as it is not possible to model hydrological, soil and vegetation changes over the past 50,000 years or more in the region.

3.2.2.2 Network augmentation works predictive model

As the landscape and Aboriginal site preservation processes are different in this part of the project footprint a different model is required. The predictive model applied for this component of the project is the model that was developed as part of the HumeLink ACHAR (NOHC, 2024). The landscape parameters for the final model for predicting archaeological sensitivity were refined through numerous model iterations using the continuously updated archaeological data.

The archaeological surface sensitivity parameters are as follows:

- High sensitivity:
  - areas of low slope (0-6 degrees) within 350 metres of an order 2 stream or higher.
  - areas of low slope within 100 metres of an archaeological site.
- Moderate sensitivity:
  - areas of moderate slope (6.01-11 degrees) within 350 metres of an order 2 stream or higher.
  - areas of low slope (0-6 degrees) between 350 and 500 metres of an order 2 stream or higher.
  - areas of moderate slope within 100 metres of an archaeological site.
- Low sensitivity:
  - all other areas.

The subsurface archaeological sensitivity model parameters are as follows:

- High sensitivity:
  - areas of low slope within 200 metres of an order 3 stream or higher.
  - areas of low slope within 400 metres of an order 4 stream or higher.
- Moderate sensitivity:
  - areas of low slope within 650 metres of an order 3 stream or higher.
  - areas of moderate slope within 200 metres of an order 3 stream or higher.
  - areas of low slope within 450 metres of an order 4 stream or higher.
- Low sensitivity:
  - all other areas.

3.2.3 Field investigations

The purpose of the field investigations was to:

- Verify the nature, location, and extent of any known Aboriginal sites within the project footprint.
- Identify and record any new Aboriginal sites or landforms with archaeological potential observed; and
- Document the conditions encountered (survey units, landforms, general soil information, ground surface exposures, and vegetation) to assess the effectiveness of the survey.

The field investigation was also used to enable RAPs to visit the project footprint and to discuss the management of Aboriginal sites and cultural heritage values across the project footprint.

Field survey was undertaken within the project footprint as follows:

- For the NSW/Victorian border to Dinawan substation component, survey occurred in land holdings as they became accessible (i.e. based on the land holder granting access for the survey to occur). Survey was undertaken within the transmission line corridor as well as locations for proposed construction elements such as temporary worker accommodation facilities, construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices.
- For the network augmentation works component, survey was undertaken for the combined temporary worker accommodation facility and construction compound sites only as the majority of the project footprint have been assessed by the HumeLink project (NOHC 2024).
- Previously unidentified archaeological sites, cultural sites identified by the RAPs and PADs were recorded.
- Existing AHIMS sites were revisited.
- A test excavation program of identified PADs was undertaken.

A pedestrian survey of the project footprint was undertaken by NOHC staff and RAPs between May 2024 and March 2025. The project footprint was surveyed by individual land holdings according to the schedule provided in Table 3-2. Details of Aboriginal objects were recorded using a digital form on mobile devices using ARC GIS FieldMaps and recording location, site dimensions, ground surface visibility and exposure, and details of any Aboriginal objects observed including type, raw materials and size dimensions.

Land access was provided in phases due to external factors such as weather and land conditions, landholder availability, and lambing, shearing and ram sale activities etc. Surveys included representatives from the relevant RAP organisations:

- Cummeragunja LALC.
- Griffith LALC.
- Deniliquin LALC.
- Southern West YIRDYURI Clans Land, Water and Sky Country Aboriginal Corporation.
- Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation.
- Wakool Indigenous Corporation.
- Girragirra Murun Aboriginal Corporation.
- Uncle Ronald Golding, Aboriginal Elder, Hay.

The project footprint was examined for areas of ground exposure sufficient to reveal Aboriginal objects, landscape features that may indicate the presence of Aboriginal objects, and evidence of disturbance by previous activities. Archaeological potential was assessed, and PADs were recorded for future test excavations.

Table 3-2 Survey schedule for the project footprint by Transgrid land holding number

Land holding	Status	Survey dates	NOHC team members
NSW/Victoria border to the Dinawan substation			
20	Private holding	06/05/2024	Darren Curnoe, Kiara Jodwolski-Tan
339	Private holding	06/05/2024-07/05/2024	Darren Curnoe, Kiara Jodwolski-Tan
32	Private holding	07/05/2024-08/05/2024	Darren Curnoe, Kiara Jodwolski-Tan
375	Private holding	09/05/2024-10/05/2024	Darren Curnoe, Kiara Jodwolski-Tan
32	Private holding	13/05/2024	Darren Curnoe, Christian Keyes
375	Private holding	14/05/2024	Darren Curnoe, Christian Keyes
54	Private holding	14/05/2024	Darren Curnoe, Christian Keyes
351	Travelling stock route	14/05/2024	Darren Curnoe, Christian Keyes
353	Private holding	14/05/2024	Darren Curnoe, Christian Keyes
401	Private holding	15/05/2024-16/05/2024	Darren Curnoe, Christian Keyes
439	Private holding	17/05/2024	Darren Curnoe, Christian Keyes
387	Private holding	17/05/2024	Darren Curnoe, Christian Keyes
223	Private holding	20/05/2024	Ben Sybert, Bryce Campbell
258	Private holding	20/05/2024-21/05/2024	Ben Sybert, Bryce Campbell
246	Crown land	21/05/2024	Ben Sybert, Bryce Campbell
8	Private holding	19/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
341	Private holding	19/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
342	Private holding	19/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
343	Private holding	20/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
377	Private holding	20/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
350	Private holding	21/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp

Land holding	Status	Survey dates	NOHC team members
351	Private holding	21/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
354	Private holding	22/08/2024	Jasmine Fenyvesi, Bryce Campbell, Lachlan Sharp
8 (resurveyed)	Private holding	28/10/2024	Darren Curnoe, Christian Keyes
16 (resurveyed)	Private holding	29/10/2024	Darren Curnoe, Christian Keyes
339 (resurveyed)	Private holding	29/10/2024	Darren Curnoe, Christian Keyes
44	Private holding	30/10/2024	Darren Curnoe, Christian Keyes
32 (non-Aboriginal site)	Private holding	30/10/2024	Darren Curnoe, Christian Keyes, Lachlan Sharp
360	Private holding	31/10/2024 &	Darren Curnoe, Christian Keyes
387	Private holding	1/11/2024	Darren Curnoe, Christian Keyes
388	Private holding	1/11/2024	Darren Curnoe, Christian Keyes
374	NSW State	1/11/2024	Darren Curnoe, Christian Keyes
401 (resurveyed)	Private holding	4/11/2024	Darren Curnoe, Lachlan Sharp
246 (resurveyed)	Private holding	5/11/2024	Darren Curnoe, Lachlan Sharp
253 (partially resurveyed)	Private holding	5/11/2024	Darren Curnoe, Lachlan Sharp
258	Private holding	5/11/2024	Darren Curnoe, Lachlan Sharp
353	Private holding	6/11/2024	Darren Curnoe, Lachlan Sharp
360	Private holding	6/11/2024	Darren Curnoe, Lachlan Sharp
204	Private holding	7/11/2024	Darren Curnoe, Lachlan Sharp
214	Private holding	7 & 8/11/2024	Darren Curnoe, Lachlan Sharp
307	Private holding	29 & 30/01/2025	Darren Curnoe, Christian Keyes
283	Private holding	31/01/2025	Darren Curnoe, Christian Keyes
217	Private holding	1/02/2025	Darren Curnoe, Christian Keyes

Land holding	Status	Survey dates	NOHC team members
223 (resurveyed)	Private holding	1/02/2025	Darren Curnoe, Christian Keyes
439	NSW State Forest	3/02/2025	Darren Curnoe, Christian Keyes
201	Private holding	3/02/2025	Darren Curnoe, Christian Keyes
41	Private holding	4/02/2025	Darren Curnoe, Christian Keyes
32 (“Zara”)	Private holding	5/02/2025	Darren Curnoe, Christian Keyes
54	Travelling stock route	5/02/2025	Darren Curnoe, Christian Keyes
32	Private holding	6/02/2025	Darren Curnoe, Christian Keyes
13	Private holding	6/03/2025	Miles Robson, Matt Finlayson
351	Private holding	6/03/2025	Lachlan Sharp, Alisdair Bryant
Network augmentation works			
N/A	Project compound areas	25/02/2025	Nicola Hayes, Elaine Dickens

3.2.3.1 Test excavation

A PAD is any location where the potential for subsurface archaeological material is considered to be moderate or high relative to the surrounding landscape. The potential for subsurface objects to be present was assessed using criteria developed from the results of previous surveys and excavations relevant to the region. The boundaries of the recorded PADs were defined by the extent of landform elements known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential was recorded as a PAD. Where one or more surface artefacts occurred on a sedimentary deposit, a PAD was identified where there was insufficient evidence to assess the nature and content of the underlying deposit due to poor ground surface visibility.

Test excavations aimed to collect information about the nature, extent and archaeological significance of sub-surface Aboriginal objects recorded during field survey. The following test excavation methodology was developed in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b). As the code precludes excavations within 50 metre of an earth mound, test excavations were not undertaken at earth mound sites or at PADs within 50 metre of earth mounds.

The following method was used to sample each PAD:

- test pits were placed at intervals along a primary transect through the PAD, with additional transects placed parallel or perpendicular to the primary transect for larger PADs
- hand tools were used for excavation
- excavated sediments were sieved, and test pits were backfilled immediately after each test pit was completed
- detailed recording of each test pit was undertaken, including photographs, descriptions of the soil profile, any disturbance and/or features, as well as depth of excavation and he numbers of artefacts and inclusions present

3.2.4 Cultural Values Assessment

An assessment of the potential impacts to Aboriginal intangible cultural values from the construction and operation of the project has been undertaken and a CVAR prepared (Technical Paper 2A, EMM 2025) to support and inform the project EIS. A summary of the CVAR is outlined in chapter 9 of this report.

3.3 Personnel

Aboriginal organisations represented in the field investigations were:

- Cummeragunja LALC
- Griffith LALC
- Deniliquin LALC
- Southern West YIRDYURI Clans Land, Water and Sky Country Aboriginal Corporation
- Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation
- Wakool Indigenous Corporation
- Girragirra Murun Aboriginal Corporation
- Uncle Ronald Golding, Aboriginal Elder, Hay.

Contributors to the collection of information for this report from NOHC are:

- Darren Curnoe, Christian Keyes, Jasmine Fenyvesi, Ben Sybert, Bryce Campbell, Lachlan Sharp, Miles Robson, Alisdair Bryant, Matt Finlayson and Kiara Jodwolski-Tan

This report was prepared by Nicola Hayes, Darren Curnoe and Christian Keyes.

3.4 Limitations

3.4.1 Land access restrictions

As identified in Section 3.2.3, access to the project footprint was limited at some locations as a result of landowner restrictions and these areas were not physically surveyed for this assessment. Section 13.4 outlines the process to mitigate impacts on unknown heritage items in the areas not subject to survey during this assessment (see also mitigation measure AH3).

3.4.2 Restricted information

Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain. No information provided by Aboriginal stakeholders in this report has been specifically identified as requiring access restrictions due to its cultural sensitivity. No information in this report has been classified as confidential.

4 CONSULTATION PROCESS

The consultation undertaken for this ACHAR were in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b). The aim of undertaking the consultation is to understand the cultural heritage values present in the project footprint, and the views and concerns of Aboriginal people about the project.

The requirements specify four stages of consultation:

- Stage 1 – Notification of project and registration of interest
- Stage 2 – Presentation of information about the project
- Stage 3 – Gathering information about cultural significance
- Stage 4 – Review of draft cultural heritage assessment report

The actions for each stage of consultation are summarised below with further details provided in Appendix 1.

4.1 Consultation undertaken for the project

4.1.1 Stage 1

Relevant organisations were contacted with a request to provide information about potential Aboriginal stakeholders who may have an interest in the project footprint and hold knowledge relevant to determining the cultural significance of Aboriginal objects and places. A public notice containing a brief project overview and inviting expressions of interest from the Aboriginal community was also placed in local newspapers.

Aboriginal people on the lists of potential stakeholders provided the relevant organisations were notified of the project and invited to register an interest in being involved in consultation. Table 4-1 summarises Stage 1 of the consultation.

Table 4-1 Summary of Stage 1 Aboriginal cultural heritage consultation

Stage	Action	Date commenced	Date completed	Details
1	Notification of the project was sent to: - Cummeragunja LALC - Deniliquin LALC - Wamba Wamba LALC - Griffith LALC - Wagga Wagga LALC - Murrumbidgee Council - Edward River Council - Murray River Council - Wagga Wagga City Council - Local Land Services - Heritage NSW - Native Title Services Corporation Ltd (NTSCorp)	6/11-13/12/2023	20/12/2023	Forty-four Aboriginal people and organisations were identified as potential stakeholders.

Stage	Action	Date commenced	Date completed	Details
	- National Native Title Tribunal (NNTT) - Office of the Registrar Aboriginal Land Rights Act 1983 (ORALRA)			
	Local newspaper advertisements: - Deniliquin Pastoral Times - Koondrook and Barham Bridge - Finley Southern Riverina News - Swan Hill Guardian - Hay Riverine Grazier	11/1/2020	31/1/2020	
	NNTT Register Search	6/11/2023		There is one former native title claim in the project footprint- Claim VC2021/001 however this claim was not accepted for registration. The project footprint does not intersect any determined Native Title claims or ILUAs.
	Registration of interest of Aboriginal stakeholders and organisations	20/12/2023	29/2/2024	Registrations of interest on the project were received from 50 Aboriginal people and organisations.

Registrations of interest were received from the following groups and individuals (and are the RAPs for this project) (refer to Table 4-2).

Table 4-2 Registered Aboriginal Parties

Individual Name	Organisation
Uncle Ron Galway (Barapa Barapa)	N/A
Uncle Neville Whyman (Barapa Barapa)	N/A
Wayne Webster (Barapa Barapa)	N/A
Auntie Dawn Smith (Barapa Barapa)	N/A
Nicholas Smith (Barapa Barapa)	Son of Auntie Dawn
Shanice Whyman Gazzara (Barapa Barapa)	N/A
Nathan (Barapa Barapa)	N/A
Uncle Howard Galway (Barapa Barapa)	N/A

Individual Name	Organisation
Glen Galway (Barapa Barapa)	N/A
Auntie Joy Galway	N/A
Max Cooper (Barapa Barapa)	N/A
Uncle Ross Stewart OAM (Wamba Wemba)	N/A
Uncle Kenny Stewart (Wamba Wemba)	N/A
Nick Stewart (Wamba Wemba)	N/A
Aunty Hazel Atkinson (Wamba Wemba)	N/A
Auntie Rose Kirby (Wamba Wemba)	N/A
Auntie Karen Kirby (Wamba Wemba)	N/A
Haydon Love	Cummeragunja LALC
Jeanette Crew	Yarkuwa Indigenous Knowledge Centre
Rose Dunn	Deniliquin Local Aboriginal Land Council
Patricia Winch	Pappin Family Aboriginal Corporation
Gary Pappin	Wakool Indigenous Corporation
John Winch	Kulin Environments -Girragirra Murun Aboriginal Corporation
Will Carter	Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation
David Crew	Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation
Nicholas Smith Junior	N/A
	Wamba Wamba LALC
Steven Young	Griffith LALC
Will Carter	N/A
Ray Woods	N/A
Ray Moon	Wingarra Wilay
Mr Bruce Crowe and his two sons, Mitchell and Brandon	Bidya Marra Consultancy
Dening Charles	N/A
Mary Pappin	Pappin Family Aboriginal Corporation
Mark Saddler	Bundyi Aboriginal Cultural Knowledge
Robert Young	Konanggo Aboriginal Cultural Heritage Services
Robert Carroll	Miyagan Culture & Heritage

Individual Name	Organisation
Ali Maher	A&K Cultural Heritage
Thomas Dahlstrom	Thomas Dahlstrom Offers ACH value by using 3D Laser and Drone technology
Robert Hampton	Waagan Waagan Project Group
Yalmambirra	N/A
Dean Bell; Merekai Bell	Yurwang Gundana Consultancy Cultural Heritage Services.
Sonione Wakabut Rogers	Sonione Wakabut Rogers
Robert Williams	MAH
Will Carter	Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation
Emma Muller	Mailyan Horizon
James Ingram	Bidya Marra Consultancy
Lorraine Lyons	Wagga Wagga LALC
Cheryl Penrith	Traditional Owner
	Riverina Murray Regional Alliance
	Jeithi Jerilderie Aboriginal Corporation
Dot Whyman	Warrabinya Cultural heritage and assessment
	Ngruum-Bang
	Sandhills Artefacts
	Aunty Mary Atkinson
	Yukai Cultural Heritage Services
	Douglas Heritage Services

4.1.2 Stages 2 and 3

Information about the scope of the project and the cultural heritage assessment methodology, including the predictive model developed for the project, was presented to the RAPs. This was provided through written correspondence and was discussed with stakeholders during a visit to the project footprint.

All RAPs were invited to provide cultural information concerning Aboriginal objects and places within the project footprint and contribute to the assessment of Aboriginal cultural heritage significance and development of management recommendations. These may include identification of options for avoidance, minimisation and mitigation of impacts on cultural heritage, and priorities for conservation and protection. RAPs were also invited to provide feedback on the cultural heritage assessment methodology and the predictive model developed for the project. Table 4-3 summarises Stage 2 of the consultation.

Table 4-3 Summary of Stage 2 Aboriginal cultural heritage consultation

Stage	Action	Date commenced	Date completed	Details
2	Information about the project sent to RAPs	8/2/2024	8/3/2024	The assessment methodology and request for information about cultural significance was sent to RAPs.
	Aboriginal Focus Group (AFG) meetings	10-11/4/2024		Meetings with three groups who responded to the Stage 1 consultation were undertaken at three different locations across the project footprint. Updates on the project and Aboriginal cultural heritage survey participation and methodology were discussed. See Appendix 1 for minutes of this meeting

4.1.3 Field participation

The Aboriginal organisations represented during the various field survey and subsurface test excavation events were:

- Cummeragunja LALC
- Griffith LALC
- Deniliquin LALC
- Southern West YIRDYURI Clans Land, Water and Sky Country Aboriginal Corporation
- Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation
- Wakool Indigenous Corporation
- Girragirra Murun Aboriginal Corporation
- Uncle Ronald Golding, Aboriginal Elder, Hay.

4.1.4 Stage 4 – review of draft cultural heritage assessment report

The draft cultural heritage assessment report was made available for the RAPs to review and provide comments. The report was finalised after the proponent's responses to each submission were provided and documented. The report was sent on 19 May 2025 with responses due by 16 June 2025.

In addition, Aboriginal Focus Groups meetings were held between 3 and 5 June 2025, the minutes for these meetings are included in Appendix 1.

4.1.5 Submissions from Registered Aboriginal Parties

One submission on the draft report was received, see Table 4-4

Table 4-4 Responses from RAPs

RAP Name	Comment	Response
Thomas Dahlstrom	Nicola I would like to discuss this further with Heritage NSW. We have people from that community running engagement programs around my community. I believe the Wiradjuri community are one not multiple like you think or make others think. This needs to be sorted asap.	Response noted, no change made. Wiradjuri peoples have been included in the consultation for this project.

4.2 Additional Ongoing Consultation

In addition to the meeting the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b), Aboriginal stakeholder groups have been consulted with as part of the project's ongoing Community Consultative Group activities and targeted meetings including Aboriginal Focus Groups (AFGs) have been held.

Transgrid will continue to engage with community and stakeholders on Aboriginal heritage through the detailed design, construction and operation of the project.

4.3 Cultural Values Assessment

The CVA for this project undertook consultation with Elders and knowledge-holders identified as relevant to the project footprint, see Technical Paper 2A for the CVA.

4.4 Consultation with Heritage NSW

The following meetings have occurred with Heritage NSW to introduce the project, seek any feedback on the methodology for the assessment and provide progress updates:

- 15 February 2024.
- 1 May 2024.
- 5 December 2024.
- 18 March 2025.

Further detail of engagement outcomes with NSW Government agencies is provided in Chapter 5 (Stakeholder and community engagement) of the EIS.

5 ENVIRONMENTAL CONTEXT

A review of the landscape can assist in predicting the ways in which Aboriginal people may have used the landscape containing the project footprint in the past. It establishes a context for the distribution of the material traces of past Aboriginal occupation by identifying natural resources and landscape features that may have been focal points for activities and settlement. In addition, the identification of site formation history and post-depositional processes can assist in determining if Aboriginal objects are likely to be preserved below the ground surface today, and if potential archaeological deposits are likely to be relatively intact or disturbed. The environmental context of the project footprint is summarised below.

5.1 NSW/Victorian border to Dinawan substation

5.1.1 Biogeographic region

Biogeographic regions (or 'bioregions') are land areas characterised by broad, landscape-scale, natural features and environmental processes that influence the functions of entire ecosystems (Sahukar et al. 2003). They are recognised on units of scale which capture the large geophysical patterns in landscapes across NSW linked to fauna and flora assemblages and processes operating at the ecosystem scale (Sahukar et al. 2003). The processes determining the composition of the various bioregions across NSW include the underlying geology, landforms and soils, climate, hydrology, floral and faunal communities, and human occupation and alteration of the environment which has a history in the semi-arid zone of southern NSW dating back at least 50,000 years (Fitzsimmons et al. 2014).

The NSW/Victorian border to Dinawan substation component of the project footprint lies within the Riverina Bioregion as defined by Sahukar et al. (2003). The Riverina Bioregion contains five subregions which have been defined from landscape differences, and two of them are encountered in this component of the project footprint: the Murrumbidgee subregion and Murray Fans subregion. A description of the Riverina Bioregion and these subregions is provided below (refer to Table 5-1).

5.1.2 Geology, landforms and soils

Understanding the geology, landforms and soil of a landscape plays an important role in archaeological studies. Landforms allow for predictions to be made about suitable areas for human habitation and the likely presence of Aboriginal sites and objects. Information about the soil provides understanding of how landscapes and sites have formed, were used by people in the past, and have changed over time. They also offer insights into the age of landscapes as well as the stratigraphic horizons (i.e. subsurface profiles and units) contained within an archaeological site.

Further details of the geology and landforms for the NSW/Victorian border to Dinawan substation component of the project footprint is provided in Table 5-2. The surface geology comprises Quaternary alluvial deposits, clays of the Shepparton Formation and Cenozoic sand dunes (refer to Figure 5-1). Landforms are dominated by long term by ancient stream channels and modern rivers, creeks and their anabranches. The hydrology including its history are described below (refer to section 5.1.4).

Soil types have distinct morphological and topological characteristics which result in specific archaeological potential. As they are defined by a combination of soils, topography, vegetation and weathering conditions, soils are essentially terrain units which provide a useful way to summarise archaeological potential and exposure. The project footprint extends across just three soil types (refer to Table 5-3), as defined within the Great Soil Group (GSG) Soil Type Map of NSW (Department of Planning, Industry, and Environment 2021) and classified within the Australian Soil Classification (ASC) (Isbell 2020). The ASC is a multi-category scheme with classes defined by diagnostic horizons or materials and their arrangement in vertical sequence as seen in an exposed soil profile.

The soils present in this component of the project footprint are described in Table 5-3 and their distributions is shown in Figure 5-2. Aboriginal objects may especially occur in vertosols and rudosols as confirmed by archaeological sensitivity modelling by NOHC.

Table 5-1 Bioregion and subregions within the project footprint – NSW/Victorian border to Dinawan substation

Bioregion	Subregions
Riverina The bioregion is located within the south-central portion of NSW and stretches from south of Ivanhoe to the Victorian border, and from Narrandera in the east to west of Balranald, and along the Murray River from west of Albury to the South Australian border (Sahukar et al. 2003). It covers more than 7 million hectares or 8.86% of the land area of NSW and includes the major towns of Hay, Coleambally, Deniliquin and Leeton, Mossgiel, Hillston, Booligal, and Wentworth. It is dominated by a continually dry semi-arid climate with hot summers and cool winters (Eardley 1999). Highest rainfall occurs in May and September and summer rain is typically associated with thunderstorms (Eardley 1999). The bioregion is prone to drought with major multi-year droughts recorded in 1895–1903, 1938–1946, 2001–2009, and 2017–2019 (BOM 2024). The bioregion is characterised by extensive low relief riverine floodplains dominated by the Murray and Murrumbidgee Rivers and their tributaries, the Lachlan and Goulburn Rivers. The upper catchment area landscape is a series of overlapping, low gradient, alluvial fans. The lower tract of these river landscapes is a floodplain with overflow lakes. The river channels, floodplains, backplains, swamps, lakes and lunettes all Quaternary age with the modern river systems of the Riverina Bioregion being in place by the beginning of the Holocene (Page et al. 2009). Modern river channels consist mostly of sandy soils and more saline heavy grey and brown clays towards the outer perimeter of the floodplains on higher, infrequently flooded, terraces. The sandy soils form levees, old channels, dunes, and lunettes.	Murrumbidgee The Murrumbidgee subregion is characterised by extensive coarse deposits, source bordering dunes and sand dunes created by ancient rivers. **The project footprint is partially within this subregion.** Murray Fans The Murray Fans subregion exhibits a series of fans developed from sediment carried down from the Snowy Mountains by the Murray River. **The project footprint is partially within this subregion.**

Table 5-2 Geology and landforms – NSW/Victorian border to Dinawan substation

Aspect	Detail
Geology	Basement rocks in the Riverina Bioregion are the early Palaeozoic sediments and granites of the Lachlan Fold belt, but almost no outcrops exist in the bioregion. These have provided the parent materials for the soils which have developed in the project footprint, determining their mineralogical, composition, texture, and stratification. As soil and water salinity increase downstream on the Murrumbidgee River, saline clays become evident on lake floors. Alluvial sediments become deeper and older in the western half of the basin, reaching a maximum thickness of up to 500 metres. Lake beds are generally covered by grey cracking clays, with the eastern margins of most lakes exhibiting well-formed sandy beaches and crescent-shaped dunes or lunettes up to 25 metres high. The latter are composed of fine cemented quartz sand with some layers of pelleted clay. Older, abandoned lakes are also widespread.
Landforms	The southern Riverina Bioregion comprises a complex pattern of sediments, soils and micro-topography with an altitude of less than 100 metres above sea level. The evolution of the landscape in the region has been controlled over the long term by ancient stream channels that, other than having a westerly flow direction, bear little relationship to current drainage systems (Page et al. 2009). The ancient drainage network comprised a distributary and, at times, anabranching system of waxing and waning channels with complex subsurface stratigraphy (Page et al. 2009). The landforms of the Riverina Bioregion have largely been determined by the Murray and Murrumbidgee Rivers and their tributaries as well as the impacts of aeolian erosion. Discharge from past and present streams control patterns of sediment deposition, soils, landscapes and vegetation (Sahukar et al. 2003). Evidence of changed Quaternary environments and human history is preserved across the landscape of the project footprint in the form of patterns of prior streams, lake beds and lunettes some of which are more 130,000 years old (Page et al. 2009). Modern river channels in the Riverina Bioregion consist mostly of sandy soils with more saline heavy grey and brown clays found towards the outer perimeter of the floodplains on the higher infrequently flooded terraces (Eardley 1999). Sandy soils form levees, old channels, dunes, and lunettes. The red-brown and grey clays in the bioregion support grassland communities that are nationally significant. The calcareous sandy soils which tend to be a feature of adjacent bioregions are also present in the bioregion and play a role in supporting Mallee communities (Semple 1990; Eardley 1999)

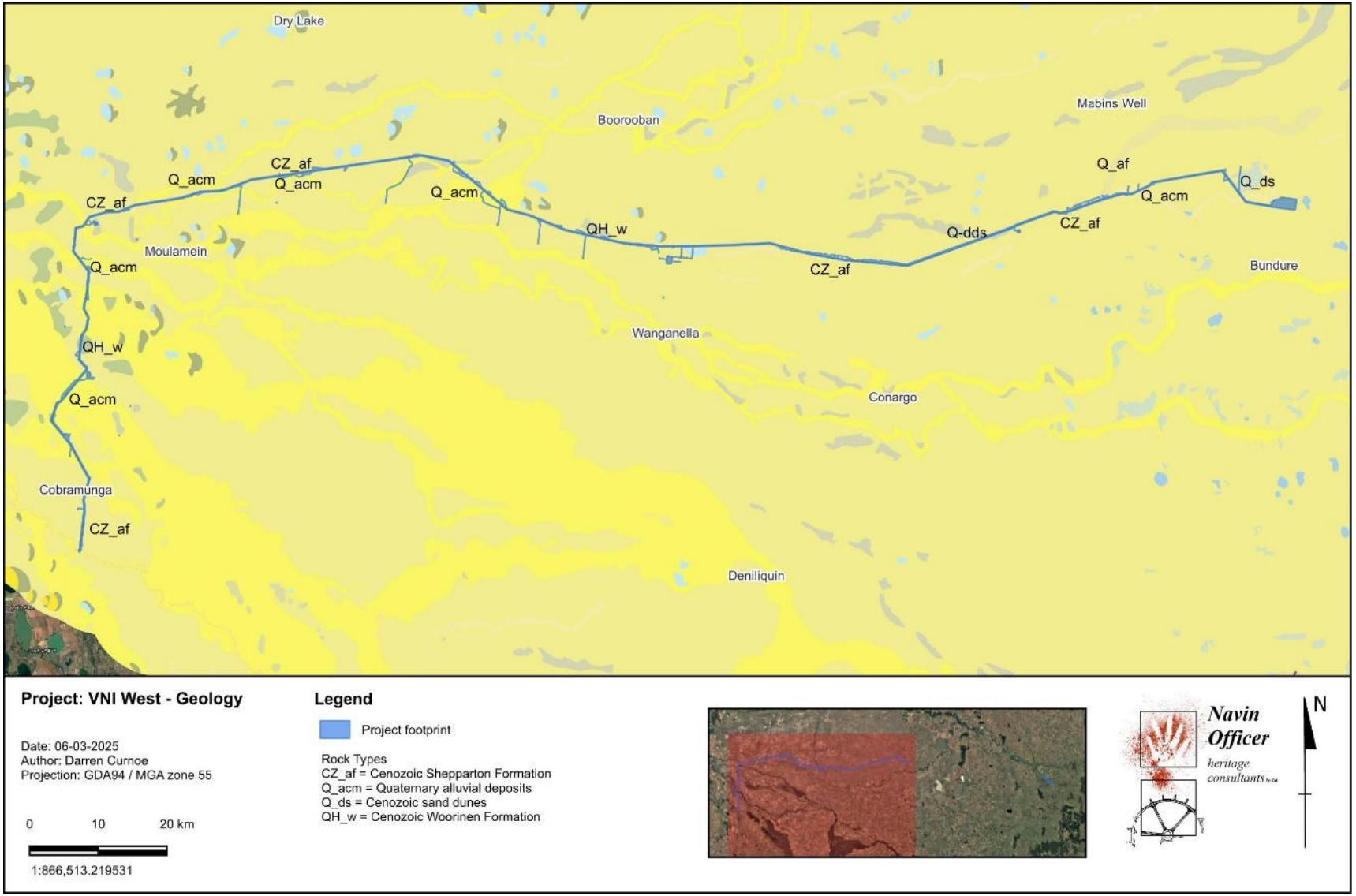


Figure 5-1 Simplified geology for the region surrounding the project footprint - NSW/Victorian border to Dinawan substation

Table 5-3 Soil types present in the project footprint – NSW/Victorian border to Dinawan substation

Soil Type	Description
Calcarosols (CA)	Soils formed from calcareous aeolian sediments. Clay content increases with depth but with minimal contrast between surface/topsoils and subsoils. Often highly calcareous through the profile and containing abundant lime as nodules or hard blocks.
Rudosols (RU)	Young soils which have had little time to pedologically modify parent rocks or sediments and therefore contain negligible pedologic organisation. These soils are apedal or only weakly structured in the A1 horizon and show no pedological colour changes apart from the darkening of an A1 horizon. There is little to no texture or colour change with depth unless stratified or buried soils are present. In arid areas, rudosols will form under a variety of processes (i.e. dust accretion, biological surface crusts, reduced leaching and more active wind and water erosion under sparse vegetation cover). These are associated with Quaternary alluvial deposits and comprise recent mud, silt, sand, and gravel deposited by river systems.
Vertosols (VE)	Clay soils with shrink-swell properties that exhibit strong cracking when dry and at depth have slickensides and/or lenticular peds. Vertosols are characterised by high erodibility due to their low infiltration rates when wet and are especially vulnerable to high intensity rainfall. Problems of water entry are usually related to agricultural practice such as tillage and adverse soil physical conditions at least partly induced by high sodium in upper layers. Vertosols are the dominant soil type in the landscape across this component of the project footprint. They are mostly associated with poorly consolidated clay, silt, sand and gravel of the Cenozoic Shepparton Formation. These clay dominated soils are highly prone to erosion and are often highly degraded due to overgrazing and land clearing, with both wind and water erosion having removed up to 10 centimetres of topsoil across a wide area. It is noteworthy that soils in the Shepparton Formation located closest to the original watercourse (stream/river) are sandier and become more clayey as they move away from this watercourse.

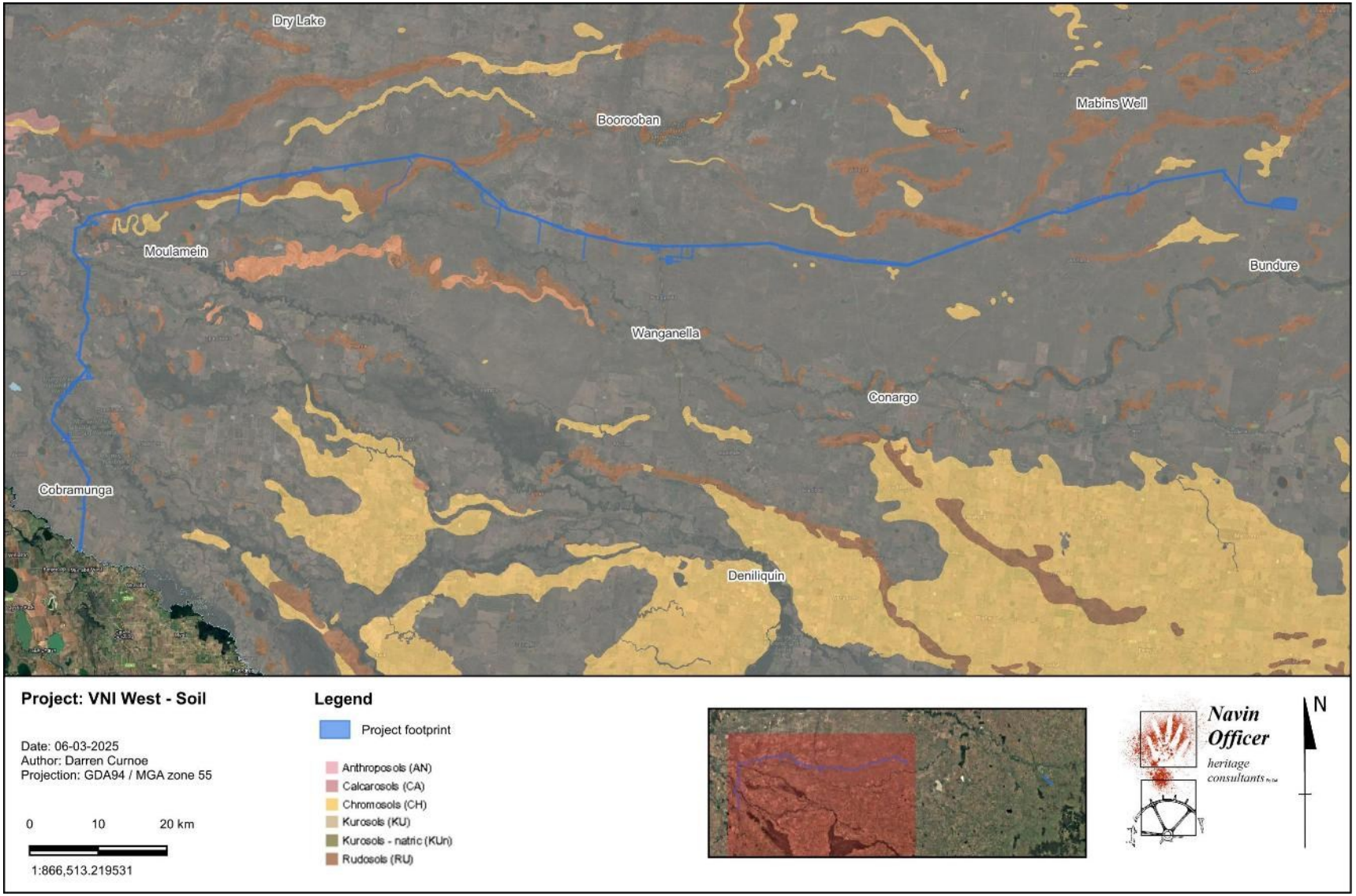


Figure 5-2 Soil types present in region surrounding the the project footprint – NSW/Victorian border to Dinawan substation

5.1.3 Flora and fauna

Aboriginal people would have used a wide variety of vegetation communities across the southern part of the Riverina Bioregion for a range of cultural and economic activities. These include the gathering of plant materials for food, medicine, aromatics, hunting and fishing poisons, glues, waterproofing, resins, and the manufacture of material objects such as string/rope, weapons, tools, art and jewelry, musical instruments, and shelters (Murrumbidgee Catchment Management Authority 2008). Different vegetation communities were also used as the location for camping sites, hunting areas, migration corridors, possible horticultural activities, and for ceremonies.

Certain types of activities would have been confined to specific vegetation types, for example, in the Riverina Bioregion tree scars are typically found on black box trees close to wetlands, creeks or rivers, whereas hearths are often found in areas with open woodlands containing black box, river red gum or cypress pine. On the other hand, while isolated artefacts are found in a wide variety of vegetation communities, artefact scatters in the Riverina Bioregion are most often observed in open shrublands or woodlands near to wetlands, swamps, lakes, creeks or rivers.

From the NSW/Victorian border to the Dinawan substation, the project footprint passes through 14 vegetation communities, classified in accordance with the NSW Vegetation Type Map (DECCW 2020). These are provided in Table 5-4 where they are listed from south to north, from the Victorian border and west-east across to the Dinawan substation.

Overall, the vegetation of the project footprint is dominated by semi-arid woodlands and arid shrubland with smaller areas of grasslands, freshwater wetlands and saline wetlands. Modern river channels support river red gum (*Eucalyptus camaldulensis*) and river cooba (*Acacia stenophylla*) communities. At these locations, with their sandy soils, the river red gum understorey generally comprises herbaceous perennial, annual and post-flooding ephemeral species that alter with topography and flooding characteristics (Eardley 1999). Nearby, on the higher more saline heavy grey and brown clays towards the outer perimeter of the floodplains, black box (*Eucalyptus largiflorens*) woodlands dominate with an understorey of salt-tolerant grasses, saltbushes and daisies (Eardley 1999). On the highest, rarely flooded terraces, yellow box (*Eucalyptus melliodora*) communities occur along with cypress pine and grey box (*Eucalyptus microcarpa*) (Eardley 1999).

Away from the rivers, most plains are treeless and comprise saltbush shrubland composed of old man saltbush (*Atriplex nummularia*), bladder saltbush (*Atriplex vesicaria*), cotton bush (*Maireana aphylla*) and native grasslands (*Danthonia* spp. and *Stipa* spp.) (Eardley 1999). A formerly extensive community of myall (*Acacia pendula*) shrubland and old man saltbush on the backplains has almost vanished.

Sandy soils on levees, palaeochannels, dunes and lunettes contain stands of white cypress pine (*Callitris glaucophylla*), sometimes with mallee and bluebush (*Maireana* sp.). Lake beds may be bare or covered by clumped lignum (*Muehlenbeckia cunninghamii*) with a fringe of black box. Beside the smaller rivers and creeks, shrublands of lignum (*Muehlenbeckia florulenta*) and nitre goosefoot (*Chenopodium nitrariaceum*) dominate the flats and low-lying swamps (Eardley 1999).

Swamps have wide margins of river red gum, black box and, depending on water depth, may also support the common reed (*Phragmites australis*), cumbungi (*Typha* sp.), grasses and floating water plants. As soil and water salinity increase downstream and saline clays become evident on lake floors, salt-tolerant species such as samphire (*Arthrocnemum* sp.) become common. The Riverina Bioregion grassland communities occurring on red-brown and grey clays are nationally significant because the lowland grasslands of southeastern Australia are significantly threatened and poorly conserved (Eardley 1999).

In areas with remnant native vegetation especially including box trees there is the high potential for mature trees possessing evidence of Aboriginal cultural modification (scarring and carving). Surviving scarred trees are generally older than 65 years of age but uncommon due to the cumulative impacts of natural growth and decay, bushfires, historical land clearance and forest management practices (Long 2005, p. 56). The types of cultural modification present on such trees may include scars from bark removal, resource extraction holes, and carvings made for ceremonial purposes (Long 2005, p. 22-29).

Table 5-4 NSW Vegetation Formation Types present in the project footprint – NSW/Victorian border to the Dinawan substation

Name	Class	Form
River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)
Forb-rich Speargrass - Windmill Grass – White Top grassland of the Riverina Bioregion	Riverine Plains Grasslands	Grasslands
Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)
Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee floodplains	Riverine Sandhill Woodlands	Semi-arid Woodlands (Shrubby sub-formation)
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Inland Floodplain Shrublands	Freshwater wetlands
Black Box open woodland wetland with chenopod understory mainly on the outer floodplain in south-western NSW (mainly Riverina and Murray Dalring Depression Bioregion)	Inland Floodplain Woodlands	Semi-arid Woodlands (Grassy sub-formation)
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Riverine Sandhill Woodlands	Seni-arid Woodlands (Shrubby sub-formation)
Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	Inland Saline Lakes	Saline Wetlands
Cotton Bush open shrubland of the semi-arid (warm) zone	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)
Bladder Saltbush shrubland on alluvial plains in the semi-arid	Riverine Chenopod Shrublands	Arid Shrublands (Chenopod sub-formation)

Name	Class	Form
(warm) zone including Riverina Bioregion		
Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Riverine Plain Grasslands	Grasslands
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Woodlands	Semi-arid Woodlands (Grassy sub-formation)
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Riverine Plain Grasslands	Grasslands

For example, Figure 5-3 shows scarring associated with bark removal on a black box tree located in a Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone community in the eastern component of the project footprint.



Figure 5-3 Example of a likely modified tree in the eastern end of project footprint

5.1.4 Hydrology

The Riverina Bioregion has a mostly semi-arid climate with hot summers and cool to cold winters. Rainfall occurs mostly in autumn and spring and increases during winter towards the south. Annual rainfall ranges between 300 and 450 millimetres, decreasing from east to west across the region. The extreme eastern and southeastern edges of the region are temperate rather than semi-arid. In most years plant growth is limited by the lack of moisture, the cooler months being the dominant period of plant growth (Pardoe and Martin 2011).

In the semi-arid zone of NSW, water availability is the most important influence over the range of resources available and the suitability of an area for Aboriginal occupation. This means the location of water resources in the landscape, both permanent and ephemeral, is a major determinant in predicting the presence of Aboriginal sites and objects. This is brought to the fore, for example, in the *Due Diligence Code of Conduct for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a) which requires proposed activities within 200 metres of waters to assume the likely existence of Aboriginal objects in the landscape. In this context, 'waters' means 'the whole or any part of: any river, stream, lake, lagoon, swamp, wetlands, natural watercourse, tidal waters (including the sea)' (DECCW 2010a p. 12).

The hydrogeology of the southern Riverina Bioregion is especially important given that the rivers and major creeks of the area are highly interconnected. During times of heavy rainfall, its non-perennial creeks, lakes and wetlands receive flood waters from the rivers making them important resources in the lives of Aboriginal communities. In the past, they also provided corridors for Aboriginal people moving around the plains providing vital supplies such as food resources and subsurface groundwater as provided by springs during dry periods.

Geologists have studied the evolution of the river channels of the Riverina and noted that dramatic changes have occurred in river flows and lake levels over the last 60,000 years. This period began shortly before Aboriginal settlement of the semi-arid zone of NSW documented about 50,000 years at Lake Mungo (Fitzsimmons et al. 2014) and before 45,000 years ago at Lake Menindee (Cupper and Duncan 2006). These changes are strongly relevant to the landscape containing the project footprint and are briefly summarised below (refer to Table 5-5).

After 60,000 years ago, or coincident with the beginning of the Last Glacial Period, there was an increase in fluvial activity in the watercourses of the Riverina. Large and deep freshwater lakes existed, as did much larger rivers and creeks with greater discharges than today. Their lateral migration led to the various large palaeochannels of the Murray and Murrumbidgee Rivers and creeks seen in the landscape of the project footprint today. These dramatic changes in waterflow and river and creek location provided the climatic and palaeohydrological backdrop to the settlement of the Riverina by Aboriginal people.

From around 24,000 years ago until 12,000 years ago, or the commencement of the Last Glacial Maximum to the end of the Pleistocene epoch, aridity increased leading to lower lake levels including periods of lakes drying out. This would have had a dramatic impact on Aboriginal settlement away from the major rivers with fewer resources available in the landscape as a result.

Aside from the modern drainage systems which were established during the Holocene, four Pleistocene creek systems have been the main determinants of the hydrology of the southern Riverina over the long-term: the Gum Creek, Yanco Creek, Kerarbury Creek and Coleambally Creek systems (refer to Table 5-5 and Figure 5-4)). The palaeochannels and dry lakes of these systems are the non-perennial creeks and swamps contained within the eastern part of the project footprint.

The Gum Creek flows west after branching from the Murrumbidgee River near Darlington Point, rejoining the Murrumbidgee at a location east of Hay. As it meanders south and west across the Hay Plain it connects with and feeds numerous creeks and palaeochannels which flow south and west eventually connecting with The Forest Creek, Coleambally Creek and Edward River and their many smaller non-perennial creeks. It also connects via a network of smaller creeks to the Yanco Creek system. Geological dating of quartz grains sampled at various sites along the Gum Creek system typically centre on the range 33,800–24,700 years ago (Hesse et al. 2018). However, the Gum Creek

system itself predates this age range and was characterised by increased fluvial activity (discharge) perhaps as far back as 41,000 years ago (Page et al. 2009).

The formation of the Yanco Creek system is inferred to have occurred approximately 22,500 years ago (Hesse et al. 2018). This system was characterised by a large amount of fluvial activity until 18,000 years ago with discharges up to 4.4 times that seen today in the Murrumbidgee River. Yanco Creek today meanders southwest from the Murrumbidgee River from west of Narrandera and flows into the Edward River (refer to Figure 5-4). It connects to, or has in the past, with numerous perennial and non-perennial creeks across the Riverina including Delta Creek, Billabong Creek, Forest Anabranch, Gum Creek, Columbo Creek, Turn Back Jimmy Creek, Sheep Wash Creek and Swampy Creek, among others. The Yanco Creek floodplains are extensive and at places exceed 1.3 kilometres wide where they are inhabited today by box woodlands and serve as testimony to its size during the Pleistocene.

Table 5-5 Major changes in the rivers and lakes of the southern area of the Riverina Bioregion over the last 60,000 years*

Period	Conditions
60,000-24,000 years ago	Increased fluvial activity across much of inland lakes with deep fresh water. After 35,000 years ago, rivers in Riverine Plain formed, migrating laterally, and with larger discharges than present.
24,000-12,000 years ago	Increasing aridity with lower lake levels, including complete drying, between 25,000 and 20,000 years ago. Short periods of fresh water followed by dry lakes. Many smaller creeks show increased fluvial activity (discharges) from 41,000-19,000 years ago.
12,000 years ago until today	Modern Murray River morphology established 10,000-7,000 years ago, Murrumbidgee about 9,000 years ago.

*Summarised from Page et al. (2009), Mueller et al. (2018), Kemp et al. (2017) and Kemp and Pietsch (2023)

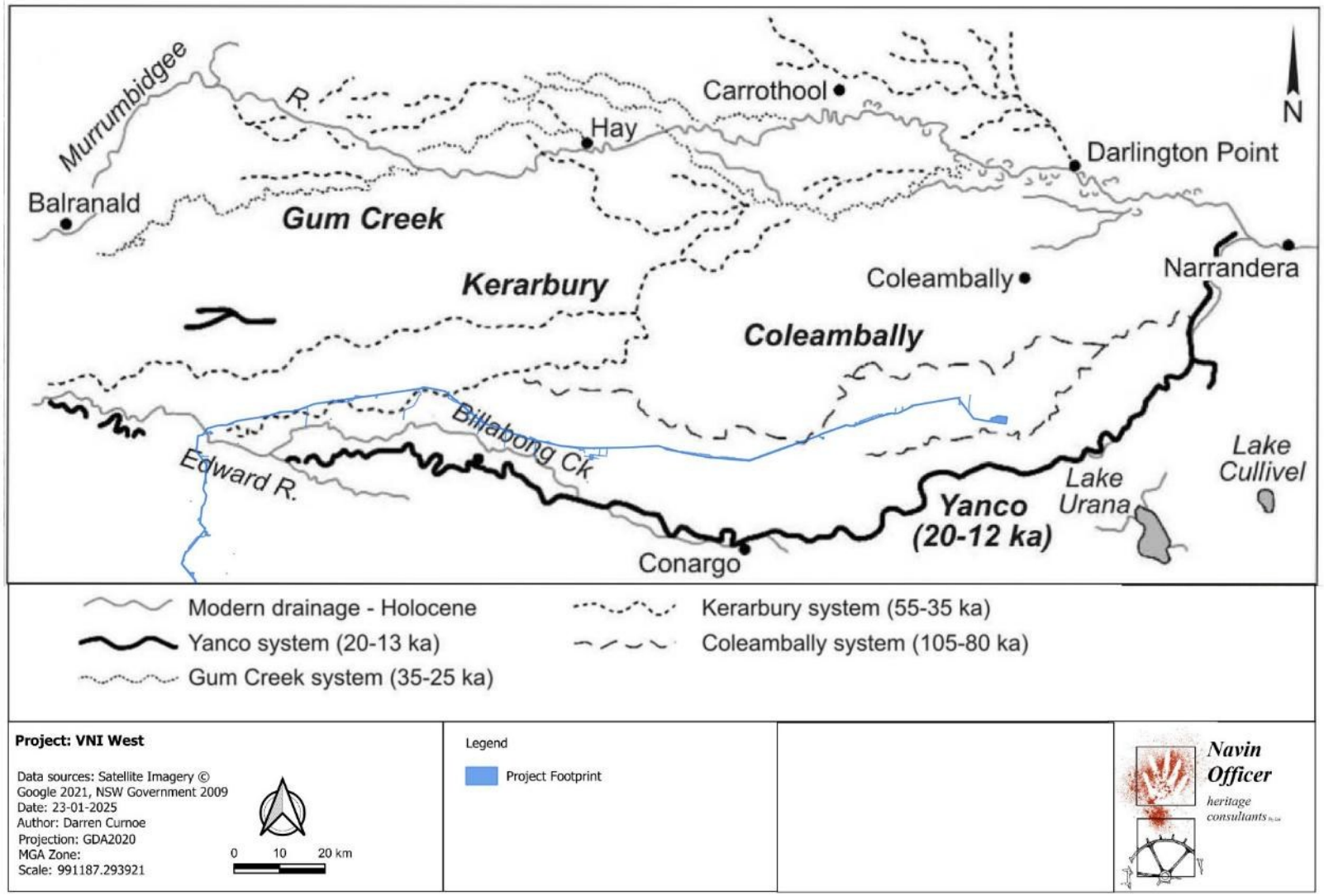


Figure 5-4 The four creek systems which dominate the hydrological history of the southern part of the Riverina Bioregion indicating the project footprint - NSW/Victorian border to Dinawan substation (NB: ka=thousands of year ago; Source: Page et al. 2009)

Sand deposits from the Kerarbury Creek system have provided quartz dates of 59,800-35,000 years ago (Page et al., 2009; Hesse et al. 2018). This system, today comprising largely palaeochannels, also begins near Darlington Point and winds its way across the central part of the southern Riverina to the Edward River, Billabong Creek and Yanco Creek (refer to Figure 5-4). Branches also connect with the Murrumbidgee River near Hay. Noteworthy is that fact that in the past, the Upper Waddi Arm of Kerarbury system was on average 817 metres wide, or 12 times the width of the nearby modern Murrumbidgee River, with a discharge 263 times the contemporary river (Hesse et al. 2018). This is just one example of the remarkable amounts of water and sediment which were transported across the southern Riverina during various phases of the Pleistocene. They would have provided a vastly different landscape and resources for Aboriginal people than has been present since the beginning of the Holocene, around 11,500 years ago and this might be reflected in the archaeological record of the area containing the project footprint.

Putting all this together helps to form a picture of a highly dynamic landscape characterised by significant changes in the location of the rivers, creeks and swamps, and the amount and flow of water and sediments they contained. This has major implications for the occupation and use of the area by Aboriginal communities in the past as well as the archaeological record which is likely to be present in parts of the project footprint:

- any archaeological record present in the project footprint could potentially span a considerable period of time, back at least 35,000 years, and possibly earlier
- Aboriginal sites and objects are most likely to be clumped in areas where sedimentary records associated with the various rivers, creeks, palaeochannels and swamps are found today
- through time, the archaeological record will be patchy, rather than continuous, and is likely to follow climatic/hydrological cycles with periods of intensive human occupation associated with favourable climates followed by abandonment of the region in the face of deteriorating climate and absent creek water flows
- locations away from major rivers, including open camps, hearths and artefact scatters near non-perennial creeks and palaeochannels, are potentially of Pleistocene age.

Water flows have changed dramatically since the arrival of European settlers from the early 1800s due to the construction of dams and weirs, and the location and flows of modern rivers are misleading when attempting to infer their history. Major dams on the Murrumbidgee River, including at Burrinjuck and Blowering, have reduced flows by close to 50 per cent, and weirs at Yanco, Jerilderie, Hay and Maude regulate natural flows. Further south, Aboriginal objects are likely to exist along the Edward, Wakool, and Neimur Rivers and their tributaries as the major dams of the area built since European settlement are all located on the Murray River itself.

The western component of the project footprint, from the NSW/Victorian border to west of Moulamein, contains the majority of the rivers and creeks, with a total of 14 named watercourses (refer to Table 5-6). The Murray and Wakool rivers are in the lower part of the western component of the project footprint (refer to Figure 5-5), along with the non-perennial Bullock Hide Creek and perennial Merran Creek. The Wakool River winds north through the middle part of the western section, with the perennial Coobool Creek, Larrys Creek and Wakool River all crossing through the project footprint here (refer to Figure 5-6). Moving north, the upper part of the western component of the project footprint contains the perennial Jaffrey and Yarrein creeks, non-perennial Wyam, Magpie, Cunninyeuk and Dean Man's creeks, and the Niemur River mid-way and the Edward River/Kolety in the north (refer to Figure 5-7).

In comparison, the eastern component of the project footprint contains just four named watercourses, all of them being non-perennial creeks (refer to Table 5-7). These are Berambong Creek (refer to Figure 5-8), Coleambally Creek/ Coleambally Outfall Drain (also referred to as the West Coleambally Channel) and Carroonboon Creek (Figure 5-9), and the 107 kilometre long Delta Creek which spans more than a third of the length of the project footprint in its eastern most part (Figure 5-10).

Table 5-6 Named natural watercourses in the western component of the project footprint

Name	Type
Murray River	Perennial
Bullock Hide Creek	Non-perennial
Merran Creek	Perennial
Coobool Creek	Perennial
Larrys Creek	Perennial
Wakool River	Perennial
Jaffrey Creek	Perennial
Wyam Creek	Non-perennial
Magpie Creek	Non-perennial
Cunninyeuk Creek	Perennial
Niemur River	Perennial
Dead Man's Creek	Non-perennial
Yarrein Creek	Perennial
Edward River/Kolety	Perennial

Table 5-7 The four named watercourses within the eastern component of the project footprint

Name	Type
Berambong Creek	Non-perennial
Coleambally Creek	Non-perennial
Carroonboon Creek	Non-perennial
Delta Creek	Non-perennial

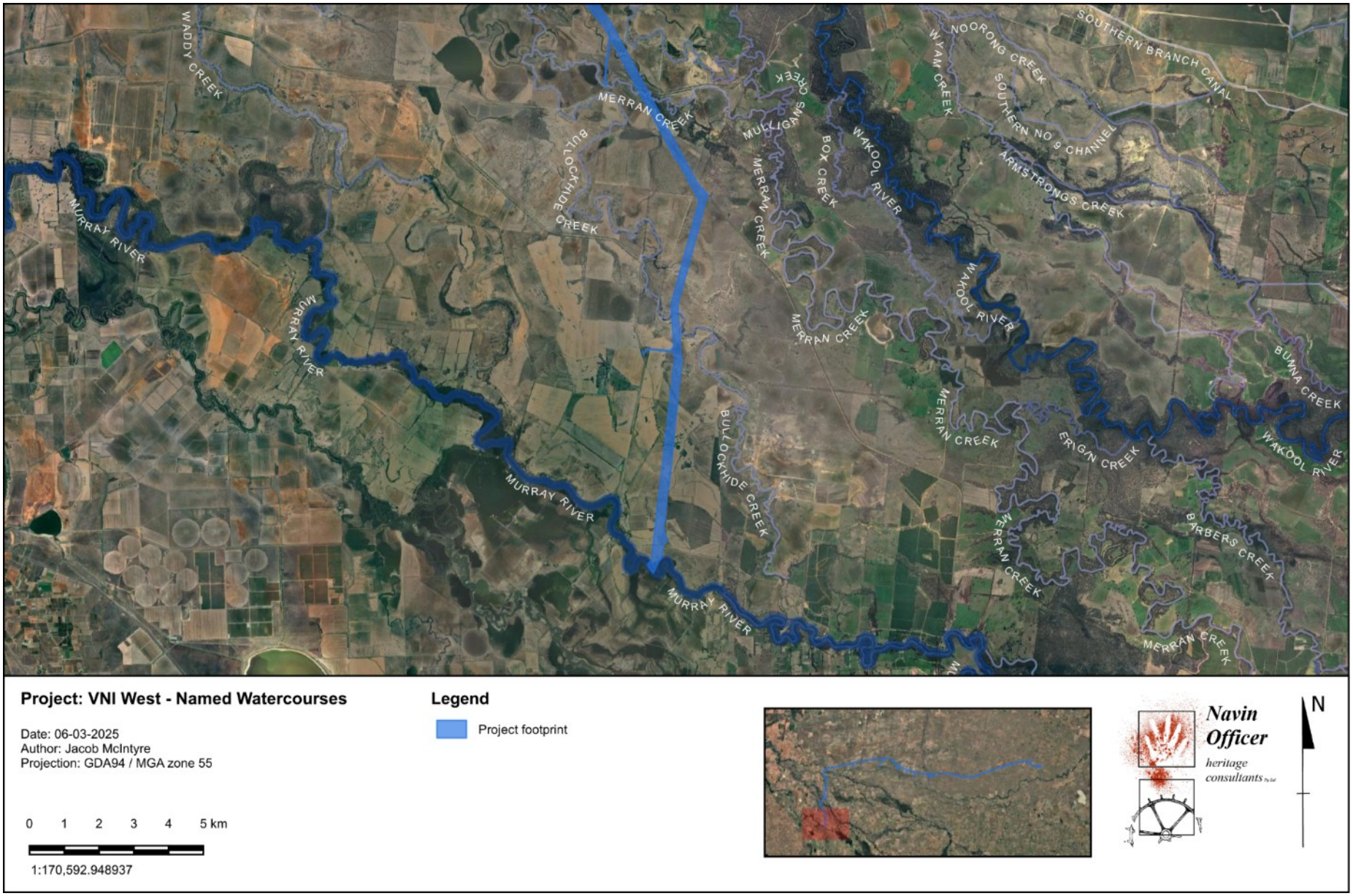


Figure 5-5 Named watercourses in the lower-part of the western component of the project footprint – NSW/Victorian border to the Dinawan substation



Figure 5-6 Named watercourses in the central part of the western component of the project footprint - NSW/Victorian border to the Dinawan substation

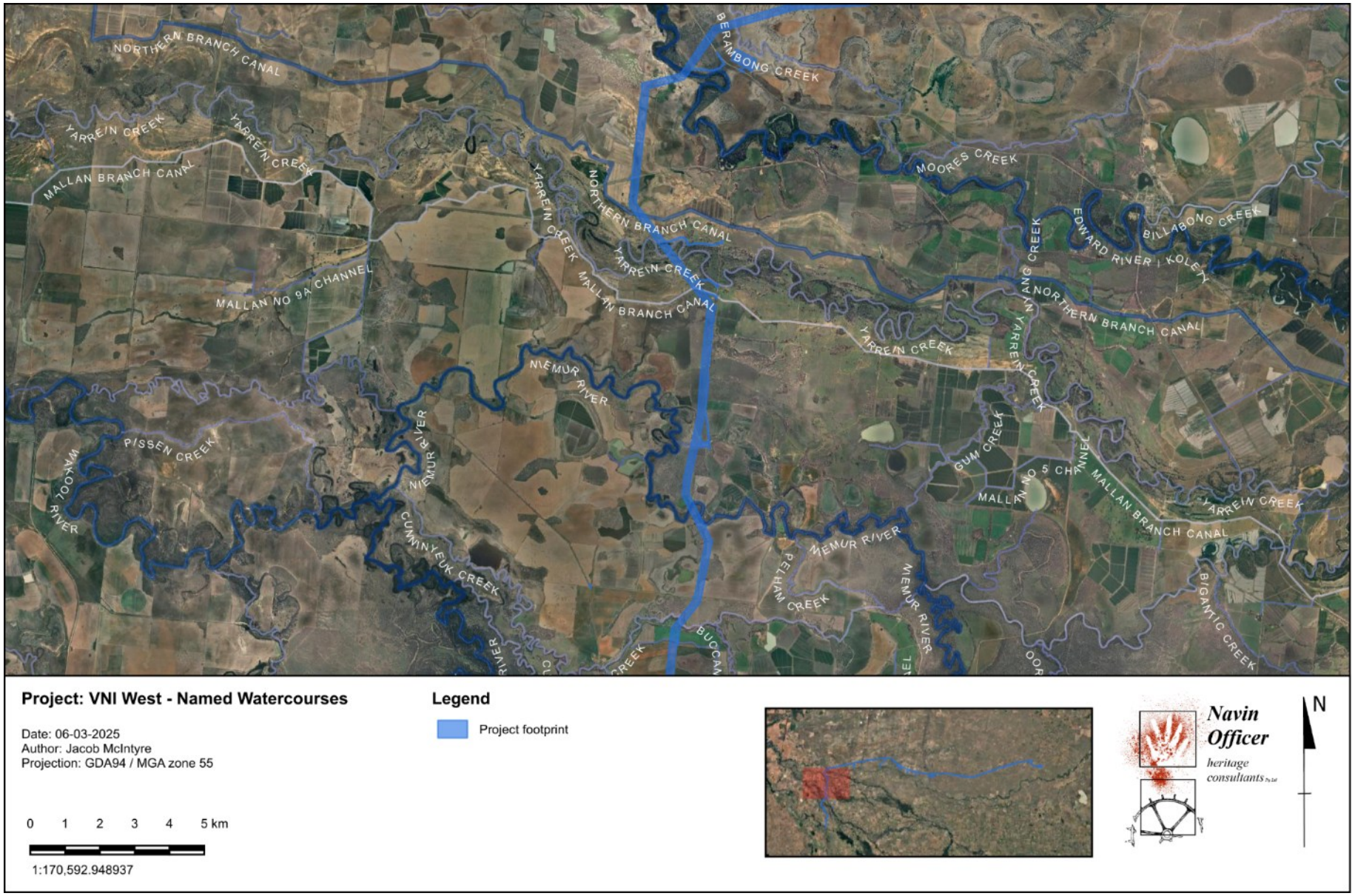


Figure 5-7 Named watercourses in the upper part of the western component of the project footprint – NSW/Victorian border to the Dinawan substation

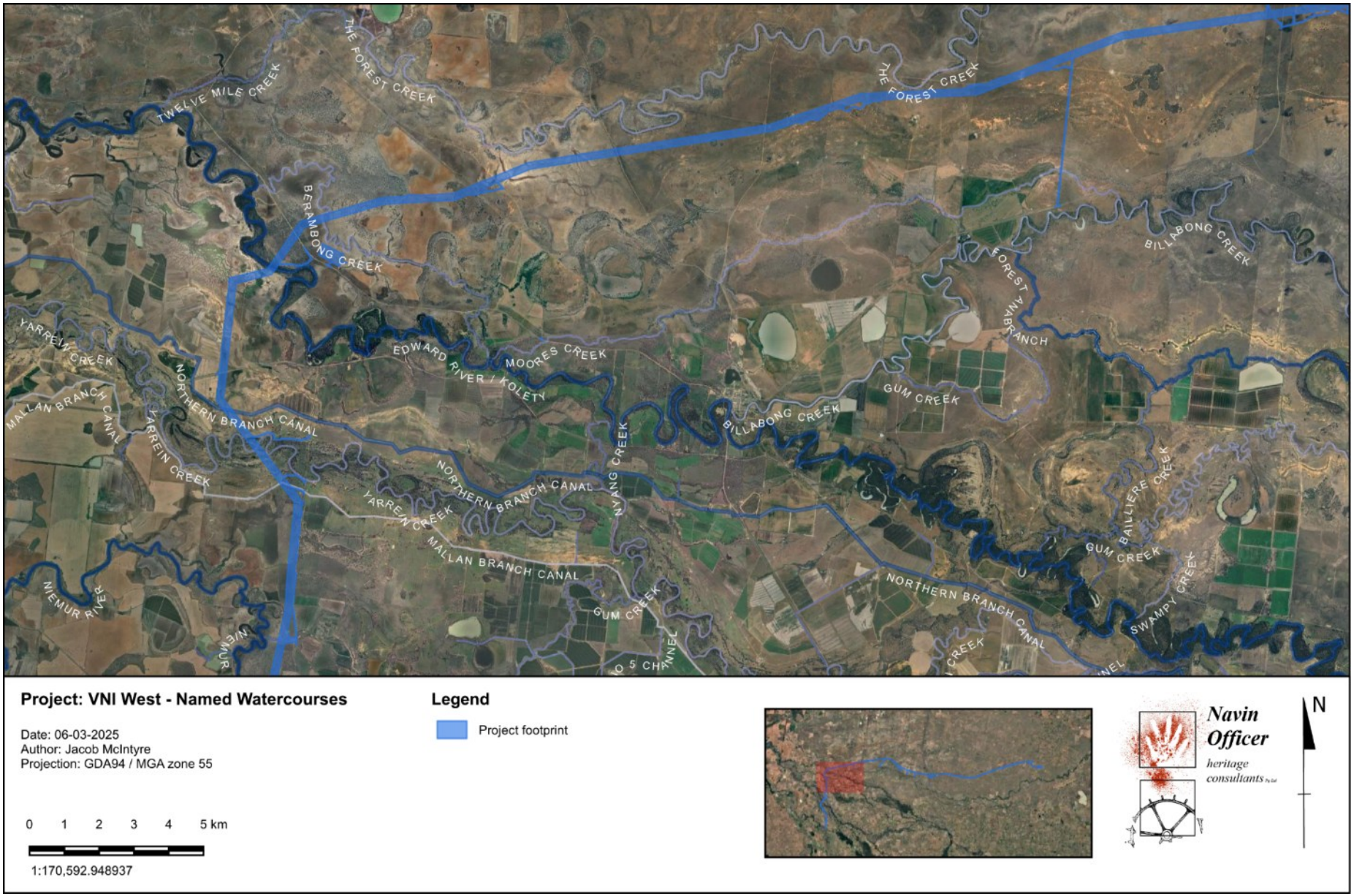


Figure 5-8 Named watercourses in the project footprint north of Moulamein – NSW/Victorian border to the Dinawan substation



Figure 5-9 Location of Coleambally Creek/Outfall Drain and Carrooboon Creek – NSW/Victorian border to the Dinawan substation

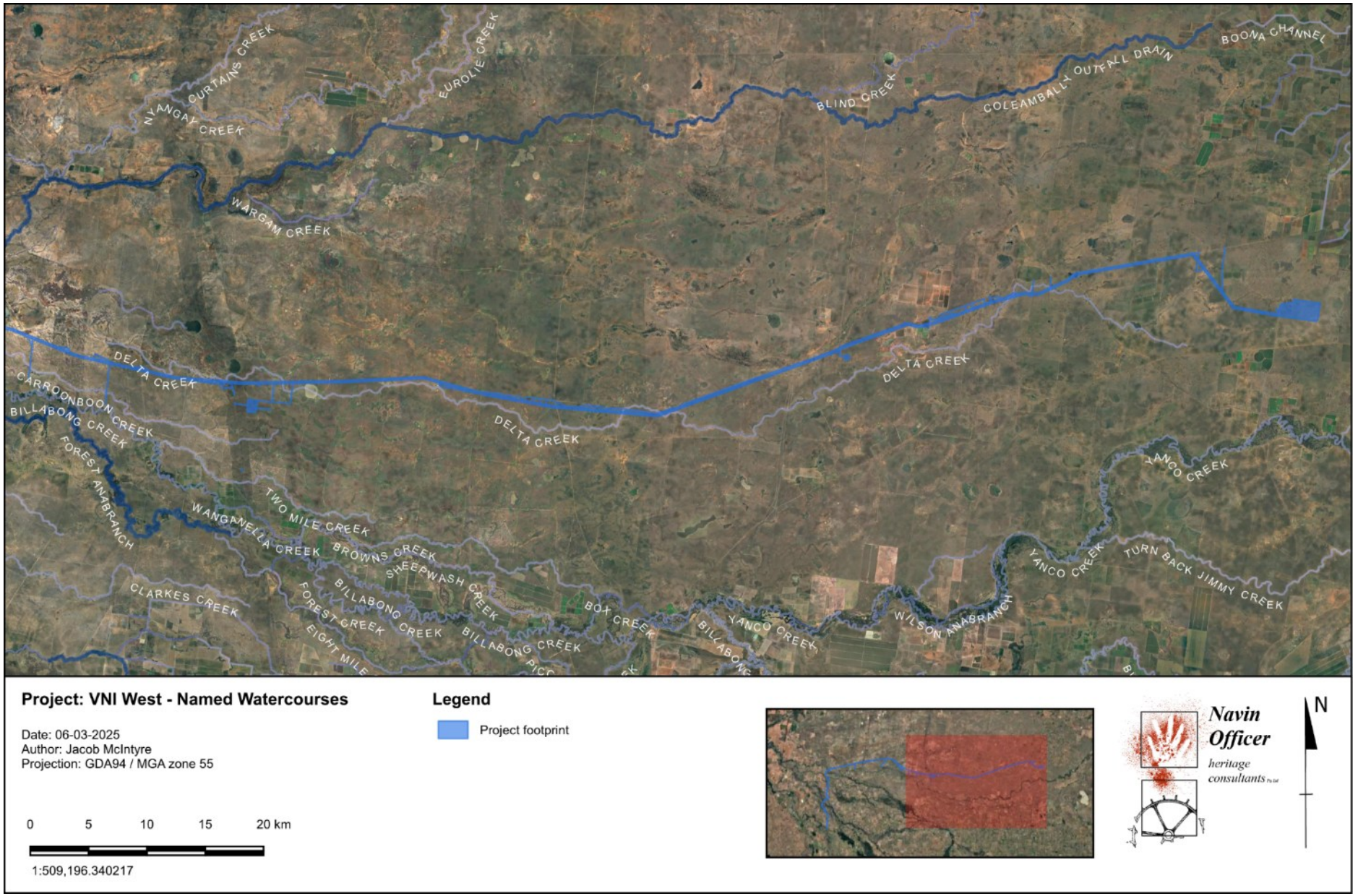


Figure 5-10 Location of Delta Creek – NSW/Victorian border to the Dinawan substation

5.1.5 Land-use history

John Oxley first explored the Riverina in 1817, following the Lachlan River downstream southwest of Booligal in the centre of the bioregion (Eardley 1999). Oxley was followed almost 20 years later by Thomas Mitchell who arrived at the junction of the Lachlan and the Murrumbidgee Rivers in 1836, and by Charles Sturt, who explored the Murrumbidgee and lower Murray in the years between 1828 and 1831 (Sturt 1833; Eardley 1999). Graziers followed soon after, establishing pastoral runs near Yanco and on the Murrumbidgee and Murray rivers as far west as Hay between 1835 and 1839 (Eardley 1999). In the 1840s, cattle grazing was the primary industry of the area but by the 1860s sheep were the predominant livestock (Eardley 1999).

Land use along the project footprint is mostly agricultural with some pockets of crown land. Agricultural land use consists of a mix of cattle and sheep grazing, dry land cropping and irrigated cropping. Several dams were constructed during the twentieth century, namely, with the Hume Dam between 1919 and 1931 on the Murray near Albury, Burrinjuck Dam built on the Murrumbidgee in 1928, and Blowering Dam on the Tumut River built in 1968 (Eardley 1999). These allowed for large areas of irrigated crops to be utilised in the region. Since rice growing is highly dependent on water supply, these dams, along with irrigation schemes endorsed by the state, allowed rice production to grow into an important industry for the region. Cotton crops, which are also highly reliant on water supply, were established in the Riverina Bioregion more recently. Sheep grazing still occurs on land not suitable for cropping, and potatoes are farmed on fast-draining sand hills (Eardley 1999).

Much of the irrigated plains landscape was originally semi-arid grass/shrub-land known as rangelands. The remaining rangelands landscape is now found largely to the west of Hillston, around Hay, and south to Jerilderie and Moulamein. Low stocking rates of cattle and sheep over large areas are typical of rangeland grazing systems. Cross-bred and dorper sheep are grown for meat and merino sheep for wool (NSW Department of Primary Industries 2018). Agricultural land used in the region also includes intensive poultry and pig farming, dairy farming, and irrigated crops including citrus, grapes and nuts (NSW Department of Primary Industries 2018).

The Riverina Bioregion has traditionally been the stronghold of wool and grain production together with lamb and beef cattle farming, however, climate challenges, most notably drought, have caused a rethinking of traditional farming techniques. Changes to water allocations in the Riverina have significantly changed land use with irrigated crops moving to higher yield and higher value crops with cotton, rice, fruit and nuts common examples.

An important consideration in examining the history of recent land use in the area is its impact on Aboriginal sites and objects and their ‘discoverability’ in the landscape. Fanning (1999) has noted that since the introduction of domestic and feral herbivores by Europeans to western NSW during the nineteenth century, widespread soil loss through sheetwash, riling, gullying, and aeolian deflation has occurred. These are recognised as serious threats to Aboriginal heritage including the destruction of Aboriginal sites leading to the dispersal of Aboriginal objects from their original context across the landscape and their destruction through trampling by livestock or ploughing, road, dam and fence construction. These problems are especially relevant to the project footprint given the long history of sheep farming in the region and its impact on land degradation including soil loss (Eardley 1999).

5.2 Network augmentation works

5.2.1 Biogeographic region

The project footprint for the Wagga substation to the future Gugaa substation component of the project lies wholly within the South Western Slopes Bioregion (Sahukar et al. 2003). The South Western Slopes Bioregion is a large area of foothills and ranges from the western fall of the Great Dividing Range to the eastern edge of the Riverina Bioregion and comprises 8 million hectares or 10.1 per cent of NSW (as defined by Sahukar et al. 2003). It spans the area from Albury in the south to Dunedoo in the northeast and contains the major towns of Wagga Wagga, Mudgee, Cootamundra, Narrandera, Parkes, Gundagai and Young.

The South Western Slopes Bioregion is further divided in NSW into two subregions (Morgan and Terrey 1992): Upper Slopes and Lower Slopes subregions. The project footprint is contained within the Lower

Slopes subregion which is described as follows (Sahukar et al. 2003): this subregion largely occupies the west of the bioregion and comprises undulating and hilly ranges and isolated peaks set in wide valleys at the apices of Riverina alluvial fans, with soils similar to the upper slopes through to grey clay alluvium. It contains a wide variety of vegetation communities.

5.2.2 Geology, landforms and soils

The project footprint is contained within a small region of the Lower Slopes subregion south of the Murrumbidgee River and southeast of the city of Wagga Wagga (refer to Figure 5-11). The geology of the this area is summarised in Table 5-8 and Figure 5-11.Within the project footprint lies a range of rocks and sediments of widely varying type and age. Large areas of Silurian IS transitional-type granite are exposed in its central part with a small outcrop also in the north (refer to Figure 5-11). These are mostly associated with Mount Flakney and its foothills. Smaller exposures of Ordovician sedimentary rocks which are part of the Albury-Bega Terrane are exposed in the east and south. Adjacent to them, and in the north and south of the project footprint, is Ordovician rock which is overlain by sedimentary rocks largely interbedded quartz-rich sandstone, siltstone and mudstone. Following the creek lines in the southern and eastern parts of the project footprint are largely unconsolidated Quaternary alluvial and colluvial deposits which derive from creek overbank flooding within the Murrumbidgee catchment area and contain assorted rock fragments from older geological and uplift units. In the south, Quaternary alluvial deposits define the landscape surrounding Kyeamba Creek and Tywong Creek and their tributaries, O'Briens Creek, Big Spring Creek (refer to Section 5.2.4).

The overall pattern of soils in these landscapes is one where shallow, stony soils are found on the tops of ridges and hills. Moving downslope, texture contrast soils are the norm with subsoils derived from the underlying weathered rock and the topsoils being a homogenised surface mantle of coarser material derived from all parts of the slope. On valley floors subsoils have drabber colours indicative of poor drainage and they may accumulate soluble salts. In contrast to the project footprint for NSW/Victorian border to Dinawan substation component of the project footprint, a wide variety of soils are found in the network augmentation works. These comprise chromosols, kandosols, kurosols, sodic or natic kurosols, rudosols and sododols (refer to Table 5-9 and Figure 5-12).

Table 5-8 Geology and landforms – Network augmentation works

Aspect	Detail
Geology	Silurian age igneous felsic intrusive rocks, specifically, S-type granite with quartz feldspar muscovite biotite and Ordovician rock overlain by sedimentary rocks dominantly interbedded quartz-rich sandstone, siltstone and mudstone. Sedimentary rocks include Quaternary regolith and recent sediments of mud, silt, sand and gravel deposited by a river or creek.
Landforms	Undulating and hilly ranges with occasional peaks set in wide valleys at the apices of the Riverina alluvial fans. The project footprint is dominated by a small mountain with foothills in the south and alluvial/colluvial deposits associated with the Murumbidgee River catchment area in the north.

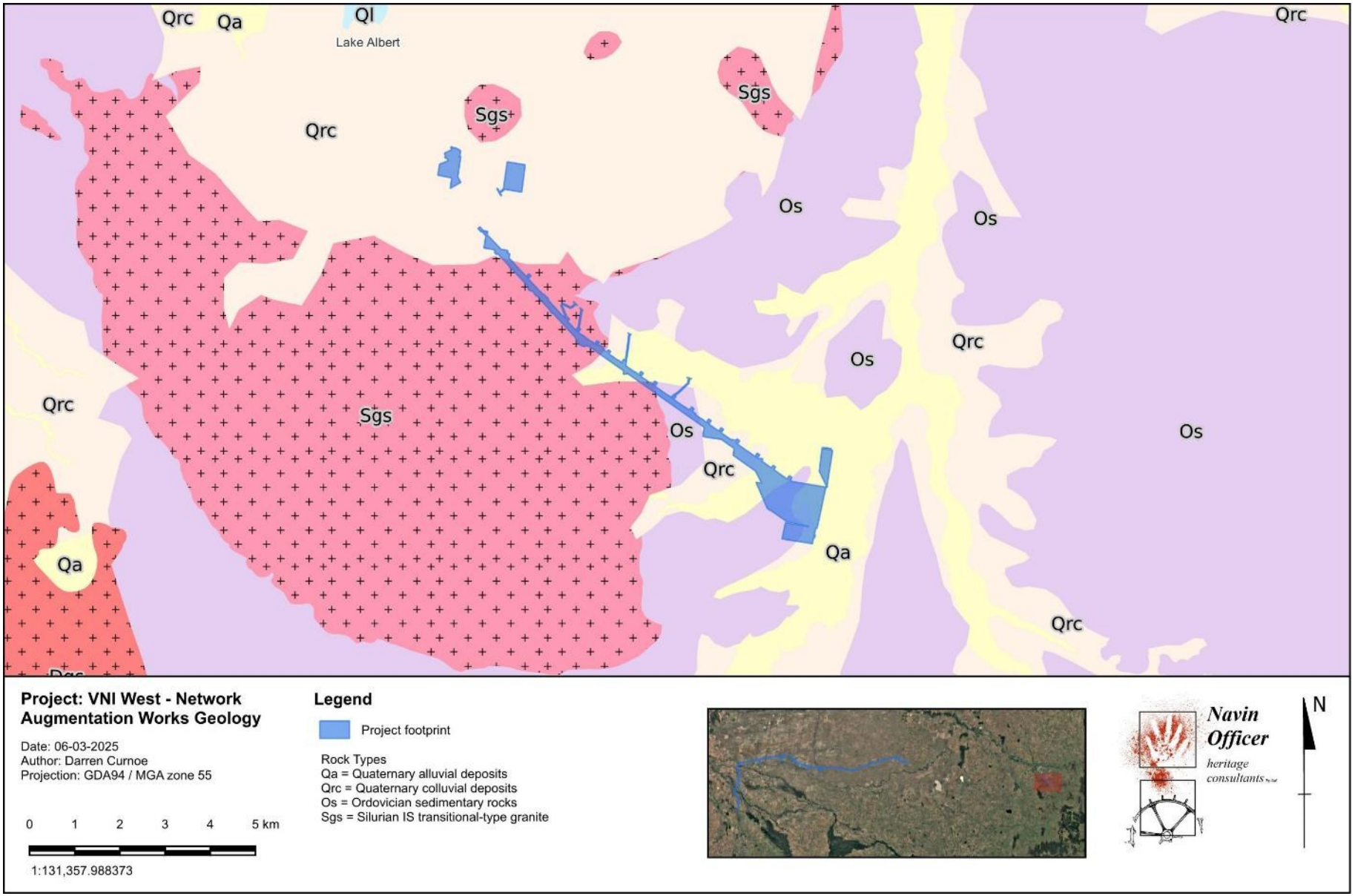


Figure 5-11 Simplified geology for the region surrounding the project footprint – Network augmentation works

Table 5-9 Soil types present in the project footprint – Network augmentation works

Soil Type	Description
Chromosols (CH)	This order consists of soils with strong texture and clearly defined horizon boundaries. Soils of this order are among the most widespread oils used for agriculture in Australia, particularly those with red subsoils. They do not have high levels of sodium and are not strongly acidic in the subsoil (Isbell 2020, p. 36).
Kandosols (KA)	This soil type is associated with old land surfaces, lack a strong texture contrast, exhibit a massive or weakly structured B horizon and a not calcareous throughout. These soils are well structured but still prone to hard setting and surface crusting. They are considered fertile in the region (Department of Primary Industries 2001).
Kurosols (KU)	These soils are defined by the presence of a strong contrast between A horizons and strongly acid B horizons with most of the upper 0.2 metres of the B2t horizon being strongly acid.
Kurosols – natic (Kun)	Kurosols in which most of the upper 20 cm of the B2t horizon is sodic.
Rudosols (RU)	As noted above (refer to Table 5-3), rudosols exhibit little, if any, pedologic organisation owing to a minimal A1 horizon or the presence of less than 10 per cent of B horizon in fissures in the parent rock or saprolite and are apedal. Alluvial (or clastic) rudosols are formed deep in alluvial deposits, normally fan formations at the base of steep slopes.
Sododols (SO)	Soils with a tong textural contrast between horizons and sodic B horizons and which are not strongly acid

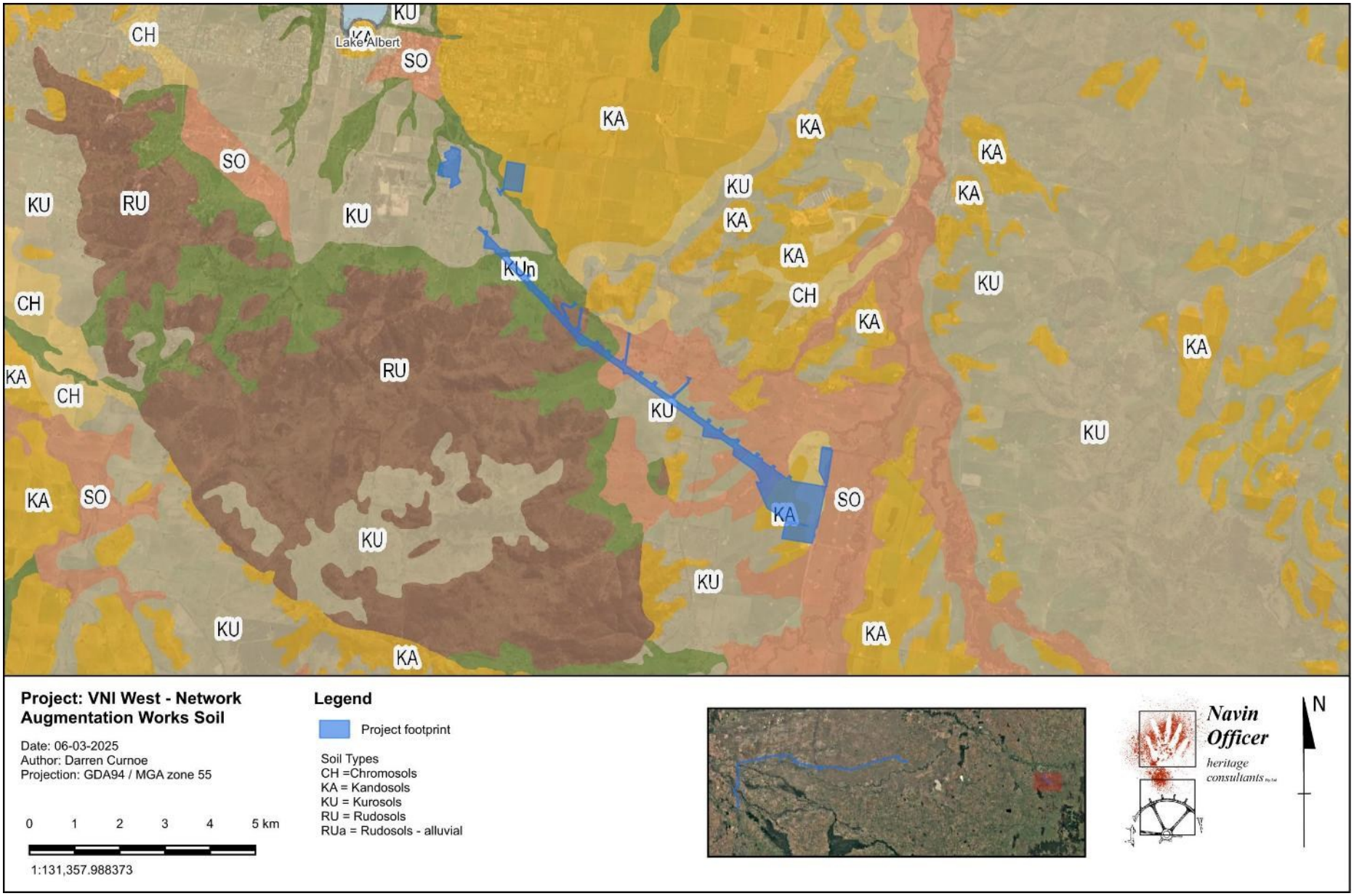


Figure 5-12 Soil types present in region surrounding the project footprint – Network augmentation works

5.2.3 Flora and fauna

Most of the vegetation within this component of the project footprint has not been classified owing to land clearance in the past (DECCW 2022). Within the project footprint, the NSW State Vegetation Map shows four vegetation forms existing in small pockets (refer to Figure 5-13). Forested wetlands exist in the east of the project footprint, grassy woodlands are found in its centre and northwest, and semi-arid woodlands and dry sclerophyll forests are found in its south and west (refer Figure 5-13).

Three of these vegetation forms have been further classified into a class and named type (refer to Table 5-10). Pockets of Mugga Ironbark – Red Box – Red Stringybark – Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta-Gundagai region are found in the south and the west. Red Stringybark – Red Box – Long-Leaved Box – Inland Scribbly Bark Gum tussock grass – shrub low open forest on hills in the southern part of the NSW South Western Slopes exists in the centre and west of the project footprint. Finally, grassy woodlands in the centre and north comprise White Box-Blakely's Red Gum shrub/grass woodland on metamorphic hillslopes in the mid-southern part of the upper slopes sub-region.

Table 5-10 NSW Vegetation Formation Types present in the project footprint – Network augmentation works

Name	Class	Form
Mugga Ironbark – Red Box – Red Stringybark – Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta-Gundagai region	Western Slopes Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)
Red Stringybark – Red Box – Long-Leaved Box – Inland Scribbly Bark Gum tussock grass – shrub low open forest on hills in the southern part of the NSW South Western Slopes	Upper Riverina Dy Sclerophyll Forests	Dry Sclerophyll Forests (Shrub/grass sub-formation)
White Box-Blakely's Red Gum shrub/grass woodland on metamorphic hillslopes in the mid-southern part of the upper slopes sub-region	Western Slopes Grassy Woodlands	Grassy Woodlands

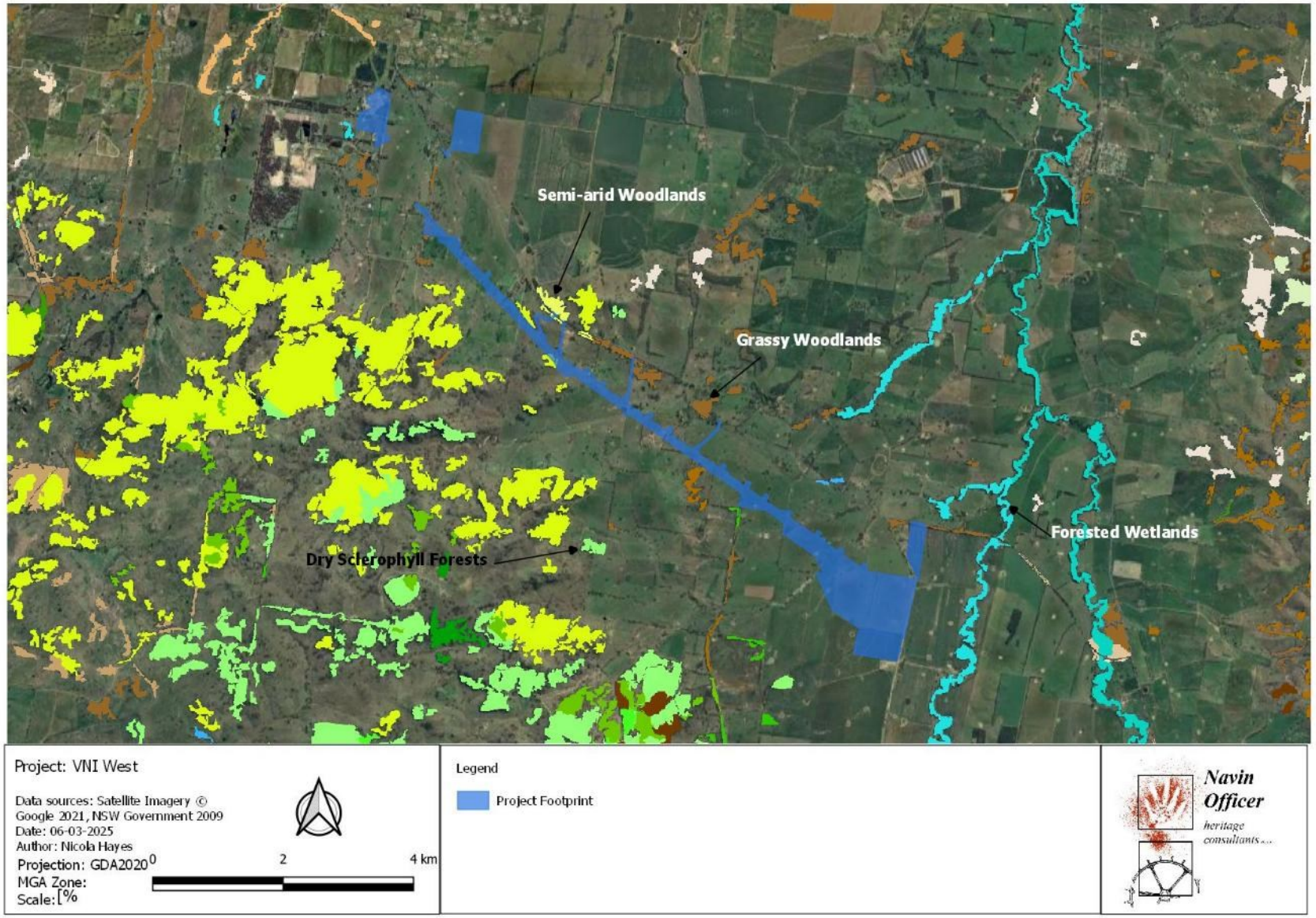


Figure 5-13 Remaining vegetation forms region surrounding the project footprint – Network augmentation works

5.2.4 Hydrology

Overall, the South Western Slopes Bioregion is dominated by a sub-humid climate with hot summers and no dry season (Sahukar et al. 2003). Mean annual temperature varies across the bioregion, with low temperatures in the south and east to higher temperatures in the north and west (Sahukar et al. 2003). Highest rainfall occurs in the east of the bioregion, with mean annual rainfall up to 1200 millimetres, dropping substantially in the west to a mean annual rainfall of around 400 millimetres (Gibbons 2001).

This bioregion is dominated by a sub-humid climate with hot summers and no dry season. Rainfall occurs mostly in winter especially towards the south. Annual rainfall ranges between 360 and 1266 millimetres, decreasing from east to west across the region. Bureau of Meterology data from the Wagga Wagga AMO observation station, the closest to the project footprint, shows the long term yearly mean rainfall to be 573 millimetres (range 245.2–1019.2 millimetres).

The South Western Slopes Bioregion contains sections of the Murray, Murrumbidgee, Lachlan and Macquarie River catchments which flow to the west into the adjacent Riverina Bioregion. The project footprint, located to the south of Wagga Wagga, and lies within the Murrumbidgee catchment area (refer to Figure 5-14). Mount Flakney and its foothills give rise to small creeks which feed into the Murrumbidgee via a series of creeks of varying size which flow from the south/southwest to the north/northeast. These are: Kyeamba Creek in the east, and Marshalls Creek through the artificial Lake Albert, in the west.

Six creeks are located within the project footprint (refer to Table 5-11 and Figure 5-14 Table 5-11). Two creeks are perennial – Tywong Creek and O'Brien's Creek – while the remining four are non-perennial (refer to Table 5-11).

Table 5-11 Named watercourses in the project footprint – Network augmentation works

Name	Type
Coxs Creek	Non-perennial
Boiling Down Creek	Non-perennial
Tywong Creek	Perennial
Gregadoo Creek	Non-perennial
Big Spring Creek	Non-perennial
O'Brien's Creek	Perennial

5.2.5 Land-use history

The first Europeans to visit the Wagga Wagga region were Charles Sturt and his exploration party in 1829 during their travels on the Murrumbidgee. European colonists quickly followed, and by 1836 when Thomas Mitchell traversed the country to the southeast of Wagga Wagga he reported that Europeans had settled the banks of the Murrumbidgee (Swan 1970).

The landscape containing the project footprint for this component of the project has been subject to varying degrees of disturbance by historical activities such as clearing and farming over a period of almost 190 years. The native vegetation was variably cleared in the historic period and now the project footprint predominantly comprises open pasture with some pockets of native vegetation (refer to Section 5.2.3).

Within the project footprint, land-use has been identified from the NSW Landuse 2017 v1.5 mapping (DECCW 2023). Land-uses today comprise cropping, native vegetation grazing and grazing modified pastures.

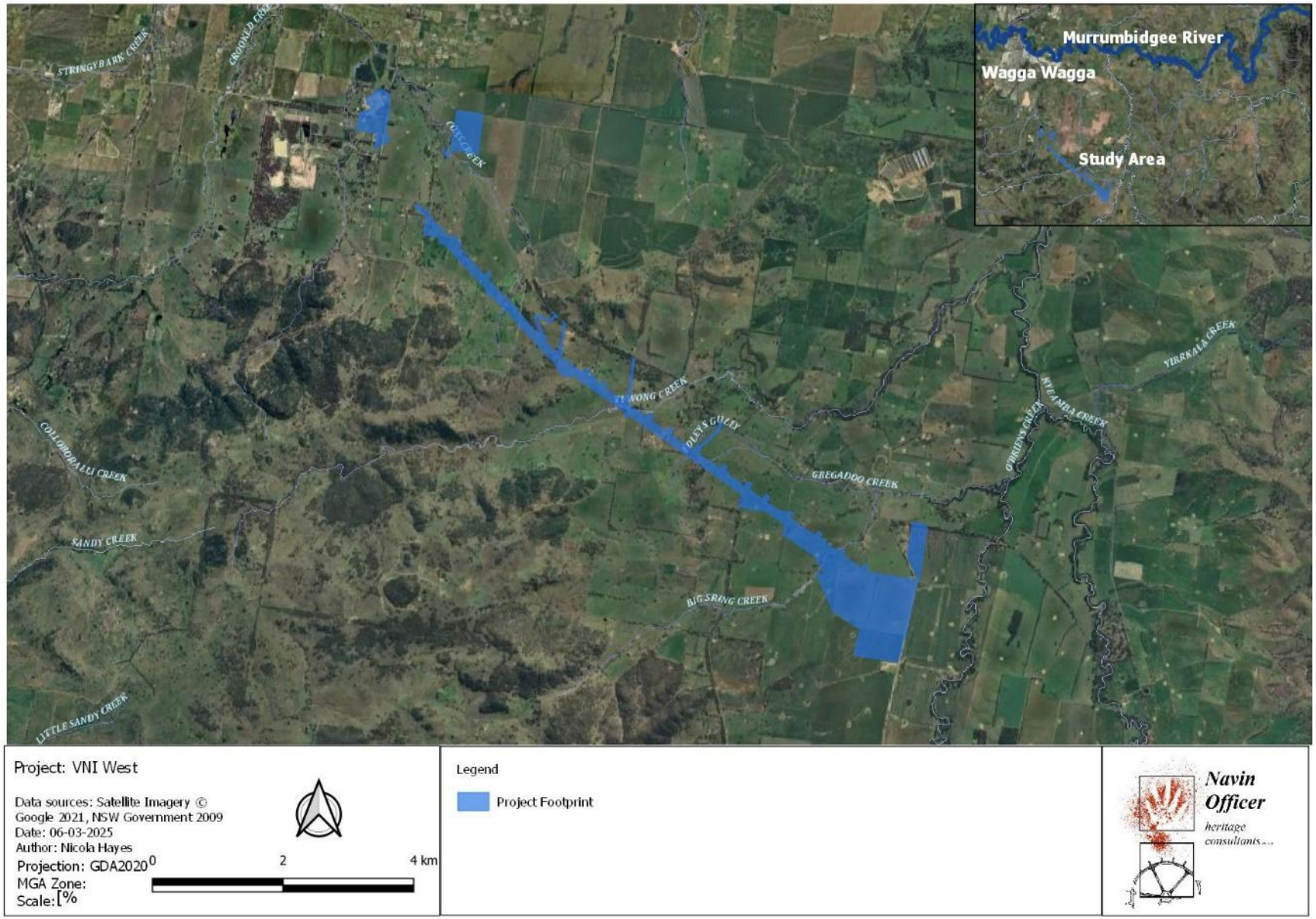


Figure 5-14 Named watercourses in the region surrounding the project footprint – Network augmentation works

6 ABORIGINAL HISTORY

This chapter describes the Aboriginal nations and language groups present in the broad region which includes the project footprint, summarises aspects of their culture and lifeways, as documented during the contact period with European explorers and settlers, and overviews the impact European settlement had upon these communities. While ethnographic records provide vital firsthand knowledge of Aboriginal languages, culture and economic activities, they should be understood as reflecting to some extent the historical and cultural values of the European ethnographers who made them.

6.1 Languages

David Horton's map of Indigenous Australia (Tindale 1974) indicates the project footprint passes through the traditional country of three Aboriginal nations, from west to east: 1) Wemba Wemba, 2) Yorta Yorta and 3) Wiradjuri (refer Figure 6-1).

More broadly, the languages spoken by these peoples fall within three language groups, although, as Pardoe and Martin (2011) have noted, "the boundaries in this area are complicated because of the small size of language groups along the Murray River and Lower Murrumbidgee, and the lack of research into the area as a whole" (p. 21).

The three major languages spoken in the project footprint are:

- **Kulin language group** – which includes the Nari Nari and Wemba Wemba (or Wamba Wamba) in the west and southwest, and the Mutthi Mutthi and Wathi Wathi language speaking communities further west and north of the project footprint around Balranald and south into Victoria (respectively);
- **Murray River language group** – including Baraba Baraba (or Barapa Barapa) and Yorta Yorta, and other communities further south and east of the project footprint; and
- **Wiradjuri language group** –Hay and north, south and east of the city, incorporating a large part of central and south-eastern NSW including Wagga Wagga (Macdonald 2011).

The project footprint passes through four Local Aboriginal Land Councils (LALCs) – Wamba Wamba LALC, Deniliquin LALC, Cummeragunja LALC and Griffith LALC – and close to the southern border of the Hay LALC (refer to Figure 6-2).

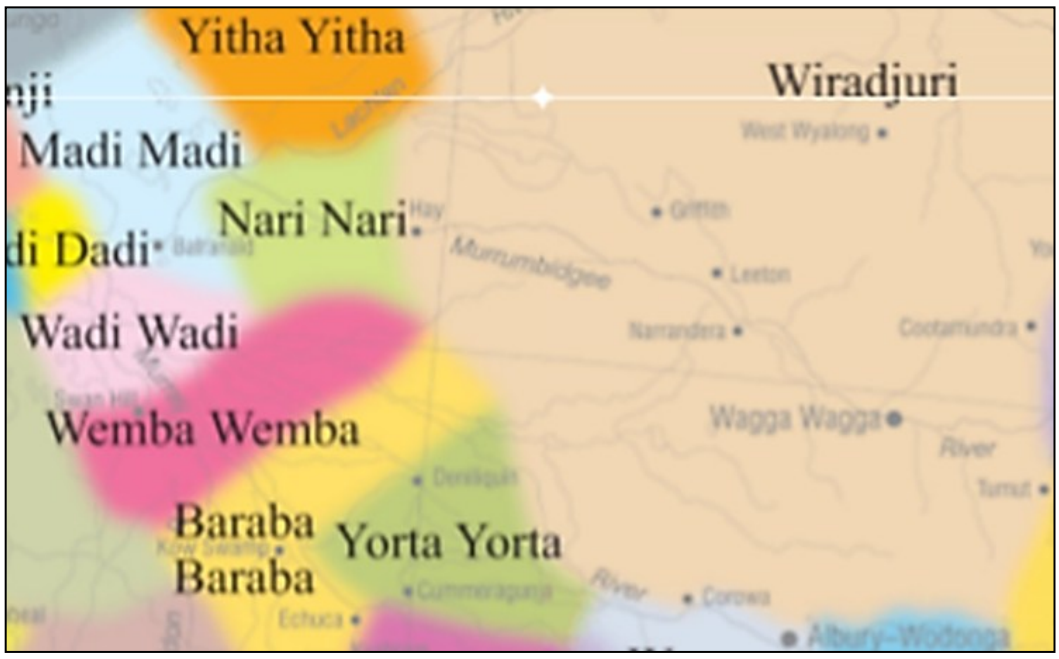


Figure 6-1 Map of Indigenous Australia covering the region containing the project footprint (Map source: AIATSIS 2024)

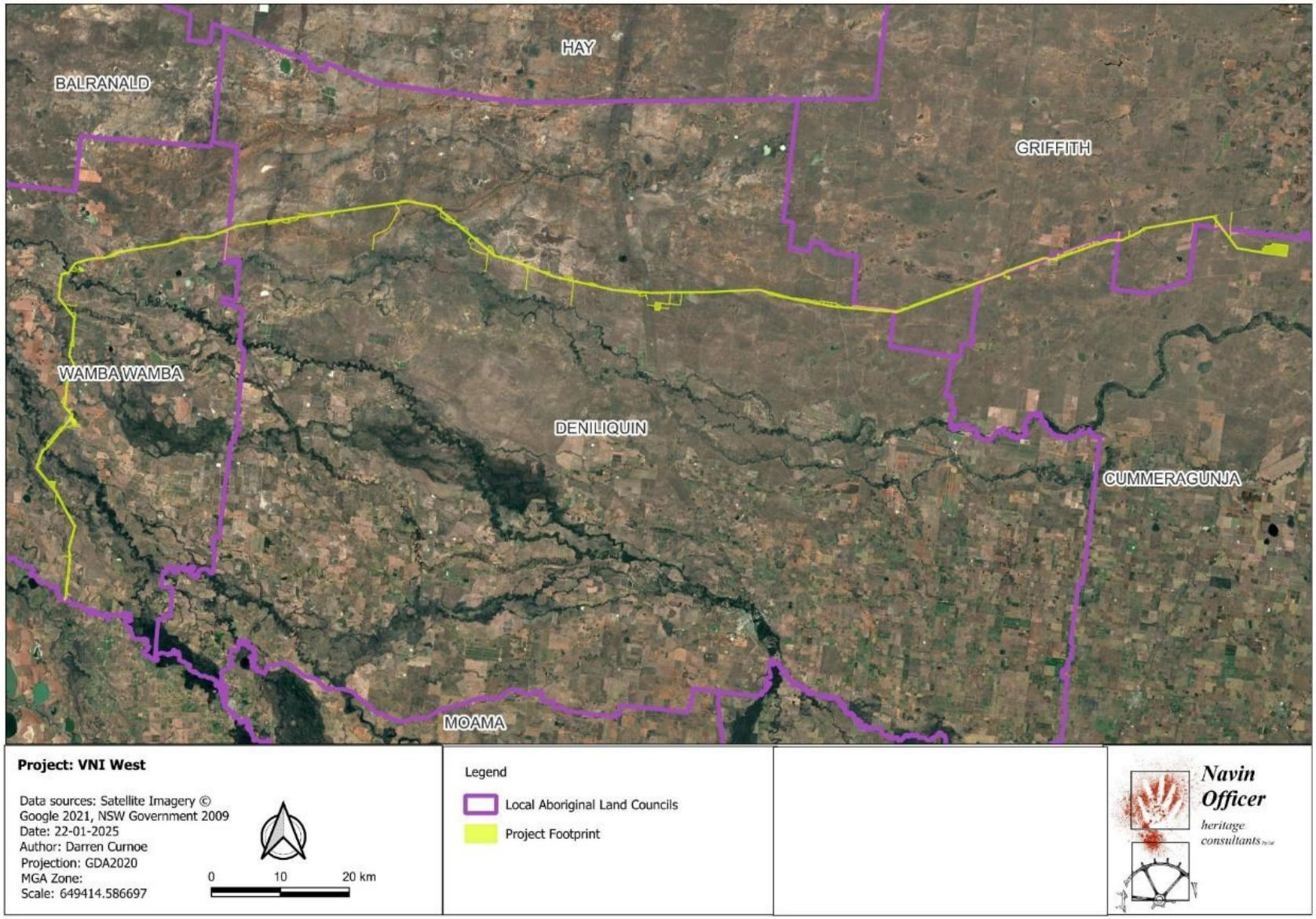


Figure 6-2 Local Aboriginal Land Councils crossed by the project footprint – NSW/Victorian border to the Dinawan substation

6.2 History and ethnography

6.2.1 NSW/Victorian border to Dinawan substation

6.2.1.1 Aboriginal Peoples of the Southern Riverina - traditional culture and lifeways

The project footprint is contained with land that traditionally belonged to the Yorta Yorta, Baraba Baraba and Wemba Wemba peoples. The earliest European observations of their culture and lifeways of the Aboriginal communities of the southern Riverina were made by explorers such as Oxley in 1820, Hume and Hovell during 1824, Sturt during 1828-29 (1833) and Mitchell (1839), and the early pastoralists and missionaries who settled the area (refer to Figure 6-3). Somewhat later, ethnographers like Brough Smyth (1878) and Beveridge (1889) recorded in greater detail aspects of local Aboriginal culture and language. Encounters between settlers and Aboriginal communities mostly occurred along rivers such as the Murrumbidgee or Murray as they were used as major stock and trade routes including the journey from Sydney to South Australia. Early historical accounts show the Murray River was a focus for Aboriginal occupation with Eyre (1845, p. 372) noting that it was amongst the most densely populated parts of the country that he had visited. Both rivers provided a permanent source of water and food, even during times of drought (Bonney 1884; Angas 1847; Butlin 1983). The following information is a summary of these historical and ethnographic accounts as well as more recent studies.

As Read (1983) and Bonhomme (1990) have both noted, the journals and letters of these explorers and other ethnographers record a rich cultural life with economic activities tied closely to waterways. Communities were observed to be larger near major watercourses, such as the Murrumbidgee and Murray Rivers, due to the substantial perennial resources they offered (refer to Figure 6-4). Similar observations would have held also for other major waterways across the project footprint such as the Edward, Wakool and Niemur Rivers and various permanent creeks across the region making them highly relevant (refer to Figure 6-4). From the observations made on the Murray and Murrumbidgee Rivers, we may reasonably infer similar resource use and forging activities and cultural practices for the Aboriginal people living along these inland rivers.

Sturt and his exploration party were the first Europeans to venture through the region in 1829. Sturt commented on the heavily utilised paths along the Murray River used by Aboriginal people (Sturt 1883 p. 125) suggesting most of their travel was conducted along the rivers rather than via inland journeys. During winter people are believed to have moved further inland away from the river's edge, taking shellfish with them on this journey as evidenced by the presence of middens at a distance from the river in Mallee Country (HCA 1993, p. 17).

- Communities including family-based territories were strongly tied to watercourses. Inland areas were visited less frequently, as noted by Wills (1860, cited by Hercus, 1989), and more often during winter-spring when rainfall was higher, or floodwaters fed additional waters into creeks. Although, Hercus (1989) has noted that some communities west of the Riverina region occupied inland areas throughout the year and relied on tree roots for water during emergency times. Elaborate water storage methods were constructed and used away from the rivers in more inland areas which allowed people to survive for periods away from major waterways. People also carried portable water containers made from wallaby skin when travelling away from rivers and creeks and relied upon plant roots and underground storage organs for water during scarcity (Beveridge 1889). People lived in small communities and along the rivers occupied relatively small territories (or nations) compared to people living on the plains or in woodlands (Beveridge 1889).
- Along the rivers, fish and shellfish seem to have been the staple foods for at least eight months of the year when they were plentiful. These were supplemented or supplanted at other times of the years by a large variety of water birds captured using nets, kangaroos and wallabies, emus, possums, snakes, turtles, frogs, insect larvae and grubs, collected eggs which were abundant during the bird breeding season and honey (where available) (Beveridge 1889; Brough Smith 1878). Regularly consumed plant foods included a type of flag (*kumpung*) and a water lily (*lahoor*) which grow in abundance around rivers and lakes. Some plants were eaten raw while others were baked. The *nardoo* plant (*Marsilea drummondii*) was a commonly occurring fern in damp and wet areas used as a food and medicinal plant (refer Figure 6-5; Murrumbidgee Catchment Management Authority 2008). The seeds of nardoo were ground up to make a flour from which bread was sometimes baked in thin cakes on hot coals. Stone grinding mills or grinding stone are still found across the landscape of the

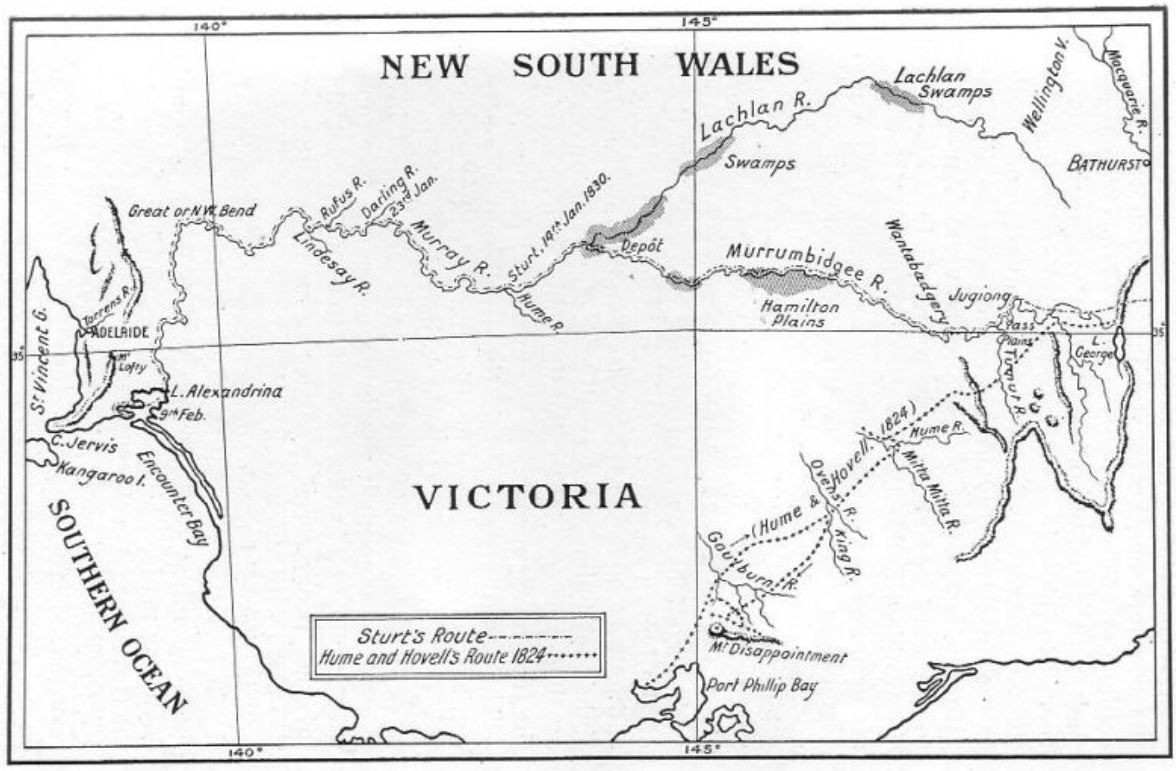


Figure 6-3 Routes taken by Sturt and Hume and Hovell (1824)

(Image source: State Library of NSW)

- Riverina and form an important part of the archaeological record of the region. According to Beveridge (1889, pp. 139–140), the milling of nardoo seeds was a job undertaken by women and involved two operators, “one to use the pestal and the other to stir the meal.” The nardoo flour was prepared for consumption by “mixing it with water until it is of the consistency of gruel” and then consumed by young and old alike (Beveridge 1889, p. 140).
- Beveridge (1889) has described how clay ovens were constructed and used to cook animal foods. Given the ubiquity of hearths and hearth materials in the archaeological record of the Riverina (refer Figure 6-6), his descriptions of the making and use of such ovens offers us invaluable insights into their use and insights into how some archaeological sites were used in the past (pp. 32–35):

…they begin with a will to excavate a hole three feet in diameter and eighteen inches deep. During the digging of the hole, any pieces of clay of about the size of cricket balls which are turned out are carefully placed on one side. When the hole is sufficiently deep, it is swept or brushed out… it is then filled to the top with firewood… upon which the selected pieces of clay are carefully placed. The wood is then ignited, and by the time it is all burned the clay nodules gave become baked, until they are exactly similar to irregular sections of well-burnt brick; of course, they are red hot… after the hot clay is removed from the hole, the ashes are carefully swept out, and a thin layer of grass lightly moistened, place dover the bottom, and round the sides, upon which the prepared opossums are nicely packed, and then covered with more damp grass. The hot clay nodules are then spread equally over the top of the grass, when the whole oven is then closed with the finer earth which originally came out of the excavation. Before the heat in the clay nodules, and the bottom of the hole has become exhausted, the opposums are beautifully cooked… This process being repeated at short intervals, over years, perhaps indeed for centuries, results in mounds… As long as the camp remains in one place, the same hole is used for baking their food in, and when it is understood that at least a barrowful of clay is required every time the oven is heated to replace unavoidable waste by crumbling…

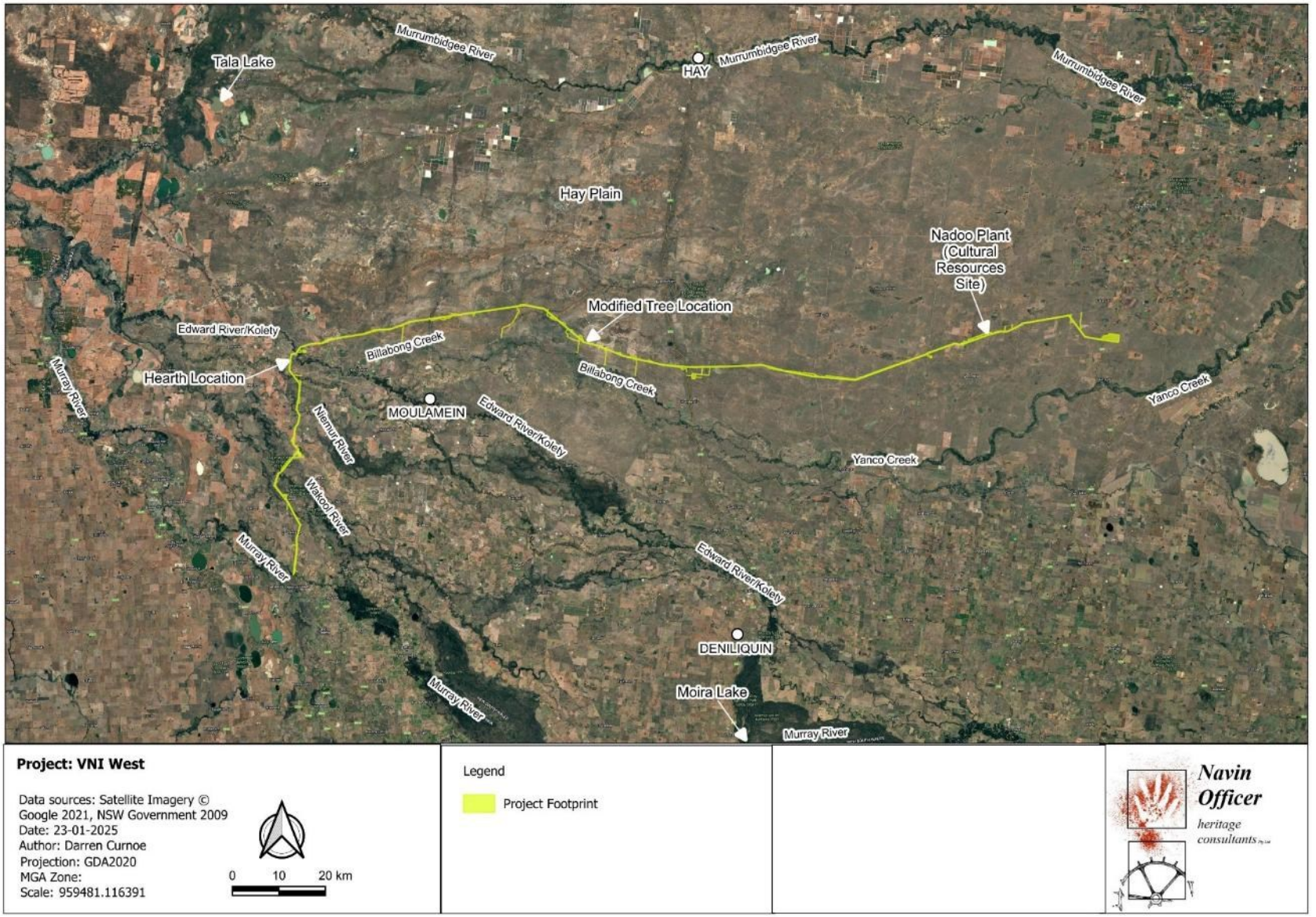


Figure 6-4 Map showing some natural features and places informing local Aboriginal history discussed in the text



Figure 6-5 Nardoo plant (left) and Aboriginal Resource Site comprising dry nardoo within the project footprint north of Bundure (right)

(Location: refer to Figure 6-4; Attributions: left image, Casliber - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=7584098; right image, NOHC)

- Beveridge (1889, p. 35) also noted that in areas near watercourses subject to flooding that:

"all over the submerged country, cooking mounds stand out of the flood, perfect little islands… These oven islands the natives utilise in flood season for their village sites, conveying their firewood and other requirements over miles of water…"

- For communities living near major waterways or lakes, canoes were the most highly prized of all the technology produced (refer Figure 6-7; Beveridge 1889). Durable and long-lasting canoes were made from a single strip of bark cut from a river red gum with a natural band or curve, although, other tree methods such as peeling away sheets of bark, and barks from other tree species, were employed on occasion to make temporary watercraft or smaller canoes for spear fishing (refer
- Figure 6-8; Beveridge 1889). The heads of families generally had vessels large enough to carry their entire family and all their possessions.



Figure 6-6 Nodules of burnt clay in an Aboriginal hearth within the project footprint near Moulamein

(Location: refer to Figure 6-4; Image source: NOHC)



Figure 6-7 Samuel Calvert, Aboriginal Fishing Camp on the River Murray, Near Lake Moira
(Location: refer to Figure 6-4; Souce: Illustrated Australian News for Home Readers, 21 May 1872)

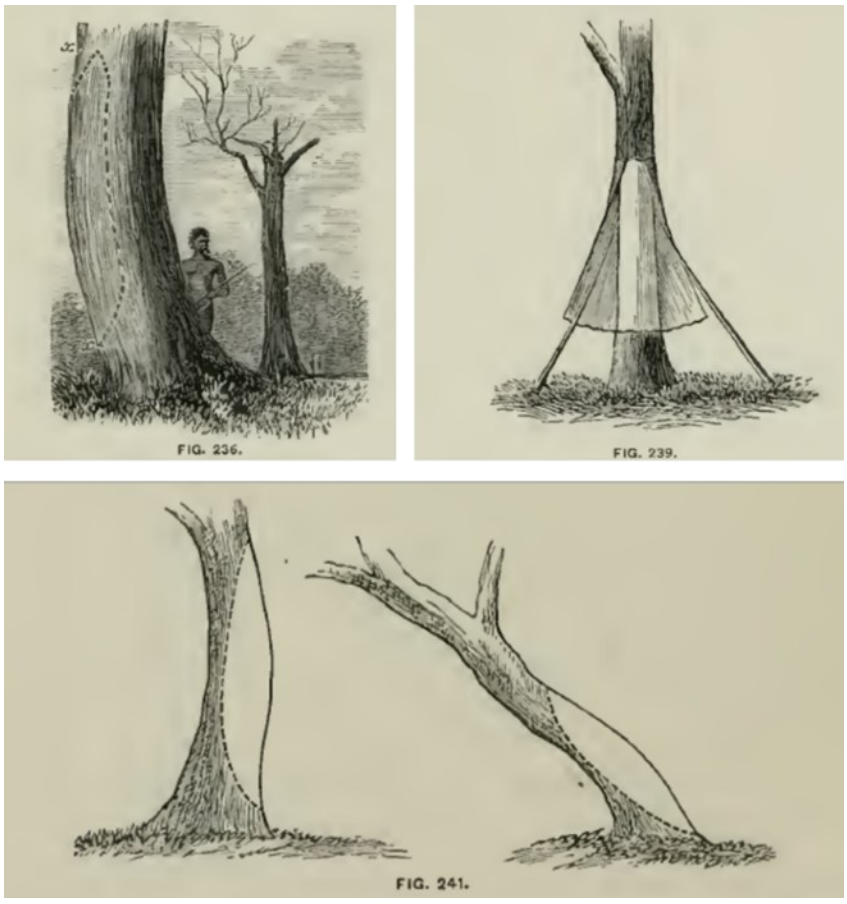


Figure 6-8 Examples of bark removal locations and methods for canoe making from northern Victoria and the Riverina
(Image source: Brough Smith 1878)



Figure 6-9 Modified tree recorded in the project footprint. The bark removed was probably used to make a coolamon or other type of container
(Location: refer to Figure 6-4; Image: NOHC)

Today, the Riverina contains many examples of modified trees including from bark removed for making canoes, with many dozens of examples documented and registered on AHIMS (refer to Figure 6-9).

Hawdon (1838, p. 51), Beveridge (1883, p. 36) and Eyre (1845, p. 267) all note the importance of mussels as a food source and to a lesser extent fish. Mussels are noted as being available year-round, taken on journeys as sustenance, and were consumed in large quantities during ceremonial gatherings. Eyre described the collection of freshwater mussels (1845, p. 267):

[Mussels] of the very large kind are also got by diving. The women whose duty it is to collect these, go into the water with small nets (lenko) hung around their necks and diving to the bottom pick up as many as they can, put them into their bags, and rise to the surface for fresh air, repeating the operation until their bags have been filled.

- Burning of the landscape was a key management strategy and it permanently shaped the ecology and wider landscape over many millennia. The term “Aboriginal ecosystems” has been applied to the region owing to the pervasive nature of the ecological changes arising long-term from such management practices (Jurskis 2009). Major changes in the landscape including the composition and density of native vegetation communities and the introduction of weeds and feral animals occurred after traditional burning practices ceased and European agriculture was introduced. This was only exacerbated by forestry, cropping, grazing and the construction of dams and weirs to control water flows along the major waterways and irrigation channels and dams on agricultural properties.
- The region is also notable for its large number of Aboriginal burials and cemeteries many of which are located away from major waterways, lakes and higher ground, a feature first described by Mitchell (1836; see Martin 2006; refer to Figure 6-10). The large number of burials documented in the archaeological record of the southern Riverina will be discussed further below (refer Section 7.1.2).



Figure 6-10 Mitchell's 1836 sketch of an Aboriginal burial on the Hay Plain

(Source: Reproduced from Martin 2006; original held by the Mitchell Library, Picture File DG-A6)

- The explorer Mitchell (1939, p. 70-71) noted a particular characteristic of burials in the region:

On a corner of the plain, just as we approached the land of reedy hollows, I perceived, at some distance, a large, lonely hut... it was closed on every side, the materials consisting of poles and large sheets of bark, and that it stood in the centre of a plot of bare earth of considerable extent, but enclosed by three small ridges, the surface within the area having been made very level and smooth. I had little doubt, that this was a tomb, ... the floor was covered with a bed of rushes, which had been recently occupied...this bed covered a grave...the rushes within that solitary tomb, were actually the nightly bed of some near relative or friend of the deceased, (probably a brother), and...the body was thus watched and attended... until no flesh remains on the bones...

- Cemeteries and other burials were a visible element of social behaviour, with corporate groups documenting ownership through the visible evidence of cemeteries as territorial markers. Inland communities were likely to be using multiple burial locations at one time, rather than a single location, implying different groups were sharing single locations. Indeed, the Upper Murray region contains both the largest number of burials and largest number of sites containing single burials across the Murray-Darling basin. Burial practices and ceremonies were elaborate across the Riverina including in the south along the Murray River (Beveridge 1889; Bonhomme 1990; Brough Smith 1878). For cultural reasons, people were often buried close to where they had died. A variety of burial methods was used including interment, cremation, placing a body in a stream or in the branches of a tree, or the deceased may have been wrapped in a possum skin mat and placed on a wood platform, in a stone lined trench or within an earth mound (Brough Smith 1878). As Bonhomme (1990) has described, much attention was paid to the preparation of graves and the burial ground, huts made of woven grass and netting were often built over the deceased, sand ridges and fences were built around burials areas, and burial grounds were maintained over long periods. Sand dunes near rivers and creeks were generally favoured for interring the deceased where available as they were easier to dig.
- Robinson (1846: 32 in Clark 2000) recorded similar graves at Tala Lake (refer to Figure 6-11 and Figure 6-12):

Grave…north end of lake…ancient grave, raised ridges, bark hut five feet high, four feet wide made of bark and timber, hollow inside, wooden shield. Visited second grave with two bodies, made in same manner but no bark hut only old wood laid on grave.



Figure 6-11 Sketch of first grave at Lake Tala described by Robinson (1846) in above quote

(Location: refer to Figure 6-4; Image source: Pardoe and Martin 2011)

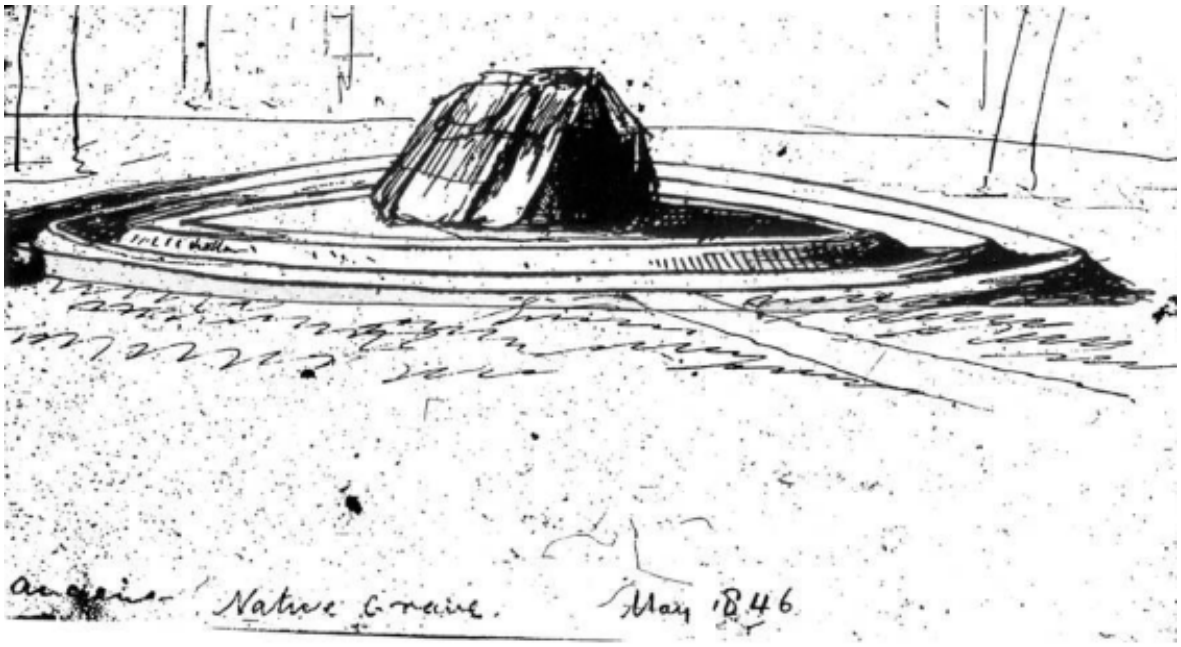


Figure 6-12 Sketch of second grave at Lake Tala described by Robinson (1846) in above quote

(Location: refer to Figure 6-4; Image source: Pardoe and Martin 2011)

6.2.1.2 European impact and population decline

The Aboriginal population declined following European settlement in the area, bringing outbreaks of smallpox and influenza particularly, and disrupting access to resource gathering zones and camp areas (Dowling 1988). The impacts of infectious disease, violence and their loss of traditional lands and access to economic resources were devastating to local Aboriginal communities.

Several missions were established in the Riverina and would have attracted dispossessed Aboriginal people from across the region. In 1851, Moravian missionaries constructed a mission at Lake Boga, just south of the NSW/Victorian border near Swan Hill, which was later abandoned in 1856. Maloga Mission was established in 1874, east of Moama on the NSW side of the Murray. The Aboriginal people living at Maloga Mission were moved in 1883 to Cummeragunja NSW, closer to Echuca (Massola 1970 in TZGA 2013).

Missionary Reverend John Gribble founded Warangesda Mission at Darlington Point in 1880, on the south bank of the Murrumbidgee River inspired by his time at Maloga Mission (Elphick and Elphick 2004). In 1883 The NSW Aboriginal Protection Board (APB) was established and assumed governance of the reserves set up for Aboriginal people. Moonacullah Mission, located 40 kilometres northwest of Deniliquin on the Edward River, was a government run Aboriginal mission set up by the APB in the 1890s and was managed by the Aborigines Inland Mission (AIM). Annual reports released by the APB give details of the numbers of Aboriginal people in centres until the early 1900s. In 1883, 106 Aboriginal people are listed as living in Balranald (Aboriginal Protection Board Annual Reports 1883, 1891 in TZGA, 2013). In 1891, the APB recorded the employment of Aboriginal people on Yanga and Canally Stations. Bonney (1884) recalls Aboriginal men working as farm hands across the Riverina and Murray Darling regions.

6.2.2 Network Augmentation Works

6.2.2.1 Aboriginal peoples in the Wagga Wagga area - traditional lifeways and culture

The Southwestern Slopes of NSW are home to the Wiradjuri people. The Wiradjuri people are the largest Aboriginal group in NSW, known as ‘the people of three rivers’, for the Wambool (the Macquarie River), the Kalari (the Lachlan River) and the Murrumbidjeri (the Murrumbidgee River) which border their country. Within the south of Wiradjuri country three local groups are known, the Murringbulla at Murrumburrah, the Kutamundra at Cootamundra, and the Narrungdera at Narrandera. The current project footprint sits within Narrungdera country. Narrungdera boundaries ran approximately from Ganmain to Ardlethan, west to Mirrool Creek and along the Murrumbidgee River to Darlington Point (Howitt 1884, Wood 1992).

The Murrumbidgee River and its larger creeks would have been a focus of occupation in the region, with the river supporting woodland and forest habitats housing a wide range of resources for the Aboriginal population to support themselves. The frequent floods of the Murrumbidgee River provided Aboriginal people with abundant resources, as pools left by the receding floodwaters would be filled with freshwater mussels, fish, yabbies, and aquatic plants (Kabaila 1998).

Burials and ceremonial sites are rare in the Wagga Wagga region, though there are several historical accounts that mention these sites. An 1861 article in *The Argus* (Express 1861) reported on the burial of Wiradjuri man ‘Old Billy’ near the racecourse camp at Wagga Wagga. He had died under suspicious circumstances and the chief constable of the Wagga Wagga police had visited the camp to investigate, finding that the body had already been prepared for burial with a grave dug ‘a short distance from the camp’ (The Argus, 20th November 1861). A local history of Wagga Wagga by J. J. Baylis notes that the sandhills of Wagga Wagga were known burial grounds for Wiradjuri people (Baylis 1927).

Historical records of cultural practises in the Wagga Wagga region from the 1870s to the 1940s focus mainly on the ‘burbong’ or male initiation ceremonies and other ‘men’s business’ (Green 2002). It should not be assumed that women did not also have a ceremonial life with important places associated with this as well as places associated with other day to day activities. The male-centric focus of the historical record stems from the European recorders being men who would not have been privy to any ‘women’s business’ and often overlooked domestic or mundane tasks as being unimportant. Though the recorders were given some knowledge of these practises, the level of information given was similar to that given to children who had not yet been initiated as much of the knowledge was protected for only initiated men. The practise of ceremony declined quickly following European settlement in the region and by 1900 was no longer

seen to happen, there is evidence that some of these ceremonial practises continued in secret till the 1930s and potentially beyond (Green 2002).

6.2.2.2 European impact and population decline

Following Sturt's initial exploration along the Murrumbidgee River, colonists settled the region rapidly and brought with them infectious diseases such as smallpox. Indeed, these were spread quickly between Aboriginal populations well ahead of European settlement so that by the early 1830s Aboriginal groups had already suffered dramatic population loss. This implies that early records of population numbers recorded by explorers are not an accurate measure of how many Aboriginal people would have lived in the region prior to the arrival of Europeans in Australia.

By the mid-1830s it was estimated that, of a possible population of 3,000, only 1,000 Aboriginal people survived (Garland 1984). The loss of fishing grounds and significant sites, as well as the murder of Aboriginal people, was retaliated through attacks with spears on cattle and stockmen. Clashes between European settlers and Aboriginal people were very violent, with the period from 1838 to 1841 being termed the 'Wiradjuri Wars'.

Aboriginal people are noted camping on the outskirts of Wagga Wagga throughout the mid-1800s, two noted sites are Hampden Bridge and at the racecourse situated next to the Murrumbidgee River (Garland 1984; Green 2002). Following the establishment of Warangesda Mission at Darlington Point and Brungle Mission near Tumut in the 1880s remaining Aboriginal people in the Wagga Wagga region would have been encouraged, often through force, to relocate to these missions. Only six Aboriginal people were counted in Wagga Wagga in the 1901 census (Green 2002, p. 115) though this is likely a misrepresentation of the number of Aboriginal people in the region as the Commonwealth Constitution, which came into effect on 1 January 1901, stated, "in reckoning the numbers of people, Aboriginal natives shall not be counted". Aboriginal people were instead recognised under the *Flora and Fauna Act* (Green 2002, p. 15).

7 MATERIAL EVIDENCE OF ABORIGINAL LAND USE

The chapter summarises the material evidence of the Aboriginal use of the project footprint as inferred from the archaeological record. A review of the findings of previous archaeological investigations has been used to place the area in a local and regional context. A search area for information on AHIMS for site locations and reports included the project footprint plus a one kilometre buffer either side of the project footprint. A predictive model has been developed (refer to Section 3.2.2) to assist in determining the archaeological potential (or landscape sensitivity) for Aboriginal sites to be present, and their likely nature and distribution.

7.1 NSW/Victorian border to Dinawan substation

7.1.1 Regional overview

A groundbreaking study of archaeological sites across the Murrumbidgee Province was undertaken by Pardoe and Martin (2011) and it provides a vital context for understanding Aboriginal land use in this component of the project footprint. These researchers employed a non-random sampling procedure which targeted areas with little archaeological data and predicted to provide evidence of Aboriginal habitation. Altogether, they studied 918 archaeological sites to understand the nature and distribution of Aboriginal sites, employing existing and new field data, and developed a GIS model which predicted the Murrumbidgee Province contained around 92,000 localities in total.

Several of the site types used in their analysis resulted in the double counting of sites, and to avoid this, several of their site type categories were combined here resulting in a final list of seven categories (out of their original 16) (refer to Figure 7-1).

From these results we can derive some broad observations about the nature of the archaeological record and the use of the landscape by Aboriginal people. More than half of the sites they recorded were open sites comprising isolated finds, artefact scatters, hearths, or a combination of these types (refer to Figure 7-1). The second most common site type was modified trees followed by earth mounds (refer to Figure 7-1).

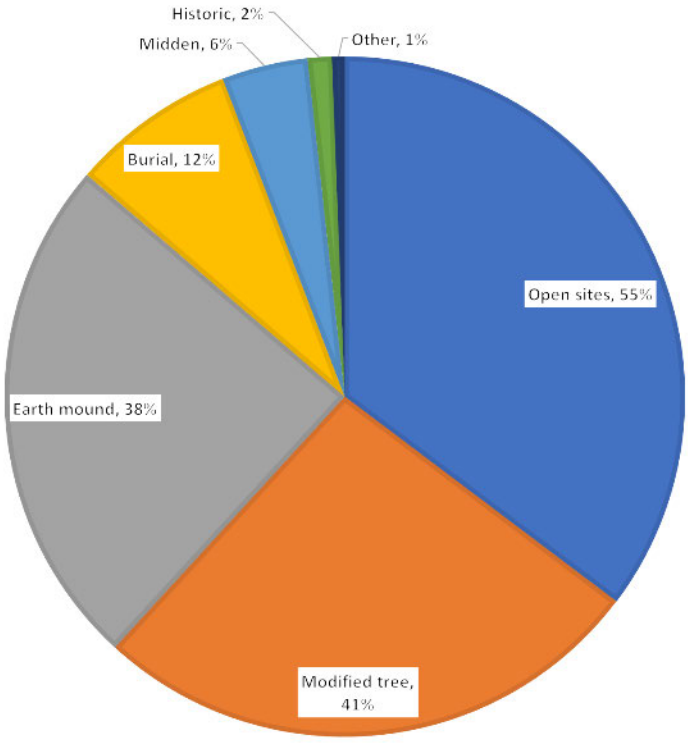


Figure 7-1 Summary of the findings of Pardoe and Martin (2011)

Areas where prior stream channels and modern major river channels intersect contain major concentrations of occupation (Martin 2006). These concentrations, or nodes of occupation, are typified by large numbers of mounds and perhaps the presence of cemeteries. As Pardoe and Martin (2011, p. 119) have noted:

> …these places may be central locations within tribal areas or they may be places where large numbers of people could be sustained for the kinds of gatherings noted by early ethnographers.

Modified trees (41 per cent) are clustered close to watercourses whether they be rivers, permanent or non-perennial creeks.

There is clear evidence for the construction of landscapes across the region largely in the form of earth mounds. Thus, it is useful to think of the area as a cultural landscape which combines the effects of burning and fire management as well as the building of earthen structures. Artificial earth mounds are widespread including in the project footprint and adjacent landscape, being especially noteworthy for their round mound structures. Martin (2006) has noted that there were numerous burial site plans that were recreated across the landscape. Moreover, some mounds are in various stages of being deliberately joined up to become one oval mound. Martin (2006 p. 244) has observed:

> …the Hay Plain people did not have to make mounds with the characteristic roundedness and moundedness, but they desired to make such constructed features for reasons other than purely technological or economic ones. Thus the attributes of roundness and moundedness displayed by the Hay Plain mounds form 'redundant patterns' from a purely technological aspect and it can therefore be inferred that they reflect other cultural processes.

Earth mounds are quite common across the Riverina and comprised almost 40 per cent of sites. Indeed, some earth mounds represent places of habitation which were returned to repeatedly. These included the construction of huts on mounds around lakes, swamps and higher ridges signalling a more enduring use of place. In some parts of the Riverina, these may have formed villages built by communities engaged in a more sedentary lifestyle (e.g. Pardoe and Hutton 2020).

Burial sites were far less common (12 per cent) and were typically clustered around lakes in sand deposits. Middens and other types of sites are generally rare across the Riverina landscape.

7.1.2 A region rich in Aboriginal burials

The Riverina/Muray-Darling region contains the largest number and density of Aboriginal burials in Australia. Across this region, at the turn of the millennium, the number tallied in the hundreds with, for example, more than 160 burial sites containing more than 600 burials recorded by archaeologists in the Upper Murray alone (Littleton 1999). The Upper Murray is defined by archaeologists as the area east of the junction of the Murrumbidgee and Murray Rivers (Littleton 1999) and includes the broad region surrounding the project footprint from the NSW/Victorian border to the Dinawan substation. The average number of burial sites at any given location in the Upper Murray is three, but with a wide range of 1–22 locations, while the number of individuals buried at each site averages 13, with a wide range of 1–126 burials (data from Littleton 1999).

Just why so many burials exist in the Riverina/Muray-Darling region has perplexed archaeologists for many decades and has been a subject of intense debate. Some archaeologists have argued it likely reflects greater long-term population density of Aboriginal people across the region. Yet other researchers have highlighted likely problems with such interpretations suggesting a landscape bias towards preservation of burial sites owing to prevailing soil and climatic conditions (Clark and Hope 1985). It should also be kept in mind also that large burial sites will be more prominent in the landscape than those containing single or smaller numbers of graves making them more visible to archaeologists. The same observation applies to children and people whose bodies were cremated as their burial locations would be virtually invisible in the landscape.

Aboriginal cemeteries – places used exclusively for burial over time – mostly occur in the western area of the Riverina with burials increasing in density towards the southwest of the Riverine Plains (Bonhomme 1990). It was suggested by Bonhomme (1990) that population numbers had been greater in the western

portion, and this was attributed to the wider variety of landscape features and, therefore, greater resource availability.

Bonhomme (1990) classified burials in the Riverine Plains into three main types: 1) isolated and individual burials, 2) many individual and unrelated burials, and 3) cemeteries. The second category was thought to be associated with a preference for certain landforms in the location of burial sites. This classification hints at the large disparities within and between different parts of the Riverina in terms of the types of landscapes utilised by Aboriginal people to locate their burials and cemeteries.

Table 7-1 provides a more detailed comparison of different landforms used by Aboriginal people for burials comparing the Hay Plain and Murray River corridor. In is noteworthy here that the Hay Plain is contained within the southern part of the Riverina Bioregion and contains the eastern component of the NSW/Victorian border to the Dinawan substation. Here, away from the rivers, Aboriginal people utilised a wide range of landforms for burial but preferred to construct earth mounds (55.7 per cent) as well as to inter the deceased in dunes (21.6 per cent). This reinforces the fact that any earth mounds within the project footprint are likely to be culturally highly sensitive as they may contain burials.

A number of these earth mounds are known to contain several burials, ranging from a few individuals to up to 80 skeletons (Littleton 1999). In contrast, along the Murray River corridor a much smaller range of landforms was utilised for burial with the deceased interred overwhelmingly in dunes (93.2 per cent).

The large number of burials within the Riverina region has also meant that historically speaking the area has played a major role in Australian archaeology as an academic discipline. Indeed, collections of burials from the area – all of which were removed without community permission – were important to the development of scientific understanding about the origins, skeletal anatomy and lifestyles of Aboriginal Australians during the twentieth century. They also helped establish the academic discipline of physical anthropology in Australia by providing research objects for several generations of scientists from around the world (e.g. Ray 1959; Giles 1974; Thorne 1975; Brace 1980; Brown 1989; Hanihara 1977; Pardoe 1984; Collier 1989; Molnar et al. 1989; Webb 1995; Littleton 1999).

Table 7-1 Comparison of landforms containing Aboriginal burials on the Hay Plain and in the Murray River corridor (after Littleton and Allen 2007)

Landform	Hay Plain (%)	Murray Corridor (%)
Claypan	13.2	0
Levee	3.6	0
Earth Mound	55.7	0
Midden	1.8	0
Riverbank	0.6	0
Residual	1.8	0
River Terrace	0	6.8
Dune	21.6	93.2

7.1.2.1 Burial sites not listed on AHIMS

A number of burial sites were recorded during the twentieth century by archaeologists within the region surrounding the project footprint and which are not listed on AHIMS (they were listed on the NSW NPWS site database, but the numbers listed in publications do not match any AHIMS entries). A list of them is provided in Table 7-3, and their reconstructed locations are provided in Figure 7-2 and Figure 7-3, as assembled from the scientific literature (e.g. Littleton 1999) and a report of Bonhomme (1987). They add

to the existing picture of the richness of the archaeological record of the region, emphasise the remarkable number of burials in the area, and provide additional information about the context and archaeological content of Aboriginal burial sites relevant to the project footprint.

7.1.3 Murray Black Collection

An important example of such a collection is the so-called 'Murray Black Collection' which was assembled from 1929 until 1950 by amateur archaeologist George Murray Black and comprised the skeletal remains of around 1000 Aboriginal people buried at various locations across the Western Riverina (refer to section 7.1.4; Table 7-3). This diverse set of burials was divided between the Australian Institute of Anatomy in Canberra and the Department of Anatomy of the University of Melbourne. Sadly, Black failed to keep proper records of his excavations and from his letters it is clear the collection included individuals from a wide geographic area spanning approximately 14,000 years ago until after contact (Littleton and Allen 2007; Robertson 2007).

Especially notable here are the Coobool Creek Aboriginal cemetery excavated in 1949 and 1950 near the Wakool River and one at Nacurrie, near Meran Creek, both of which formed part of the Murray Black Collection (refer to Table 7-2 and Figure 7-2). Unfortunately, the precise location where Black excavated these remains continues to be unknown and many of the postcranial skeletons were left in situ so that Black could focus on collecting skulls (Brown 1982). In the end, Brown (1989) reconstructed and studied 70 crania in and PhD thesis which provided a detailed description and comparison of them. To this day, an accurate estimate of their geological age has eluded archaeologists, although, Brown (1989, 2010) suggests the Coobool Creek cemetery may date in the range ca. 14,300–7200 years ago while Nacurrie 13,610-13,072 cal BP (calibrated years before present; calibrated by NOHC using Bronk Ramsey 2021). A section of the southern course of Coobool Creek where it meets Larrys Creek lies close to the project footprint while Nacurrie is approximately two kilometres away (refer to Figure 7-2).

During the 1980s, the Murray Black Collection was repatriated to communities for reburial on country, an event seen by historians as marking the beginning of the repatriation movement (Prince 2007).

Table 7-2 Murray Black collection composition and collection years (after Bonhomme 1990)

Year of Excavation	Number of Burials	Location
1940	69	Unknown
1941	92	Chowilla
1942	62	Chowilla
1943	46	Chowilla
1944	144	Lake Victoria/Rufus River
1945	87	Lake Victoria/Rufus River
1946	43	Euston/Benanee
1947	139	Poo Boon
1949	120 (or 96?)	Nacurrie
1950	126	Coobool
1951	2	Unknown
1954	57(?)	Unknown
Total	987	

Table 7-3 Burial sites within the region surrounding the project footprint not listed on AHIMS [site details from Bonhomme (1987) and Littleton (1999)]

Location	Landscape	Number of Burials	Distance from Project Footprint	Note
Southern component of project footprint				
Edward River	Beside Edward River	1	Approx. 24 km	Five burials
Lake Agnes	Gravel pit 100 m north of Niemur River	1	Approx. 6 km	Human remains removed from pit
Moulamein-Nacurrie Road (i.e. Nacurrie Rd)	1	1	Approx. 13 km	Unknown
Lake Wollare	Lunette southern end of lake	Unknown	Approx. 38 km	Exposed in 1930 and subsequently likely destroyed
Lake Poon Boon (not Murray Black location)	Lunette northern end of lake	5	Approx. 32 km	Located during a VAS survey in 1980
Niemur River	Unknown	Unknown	Unknown	At least one burial associated with a carved tree
Eastern component of project footprint				
Calimo East	Beside Edward River	1	Approx. 26 km	Burial within an earth mound
Pretty Pine	Unknown	1	Approx. 30 km	Unknown
Zara	Dune near Edward River	1 or more	Approx. 26 km	Human bone scattered across the dune surface; associate with hearth and stone artefacts

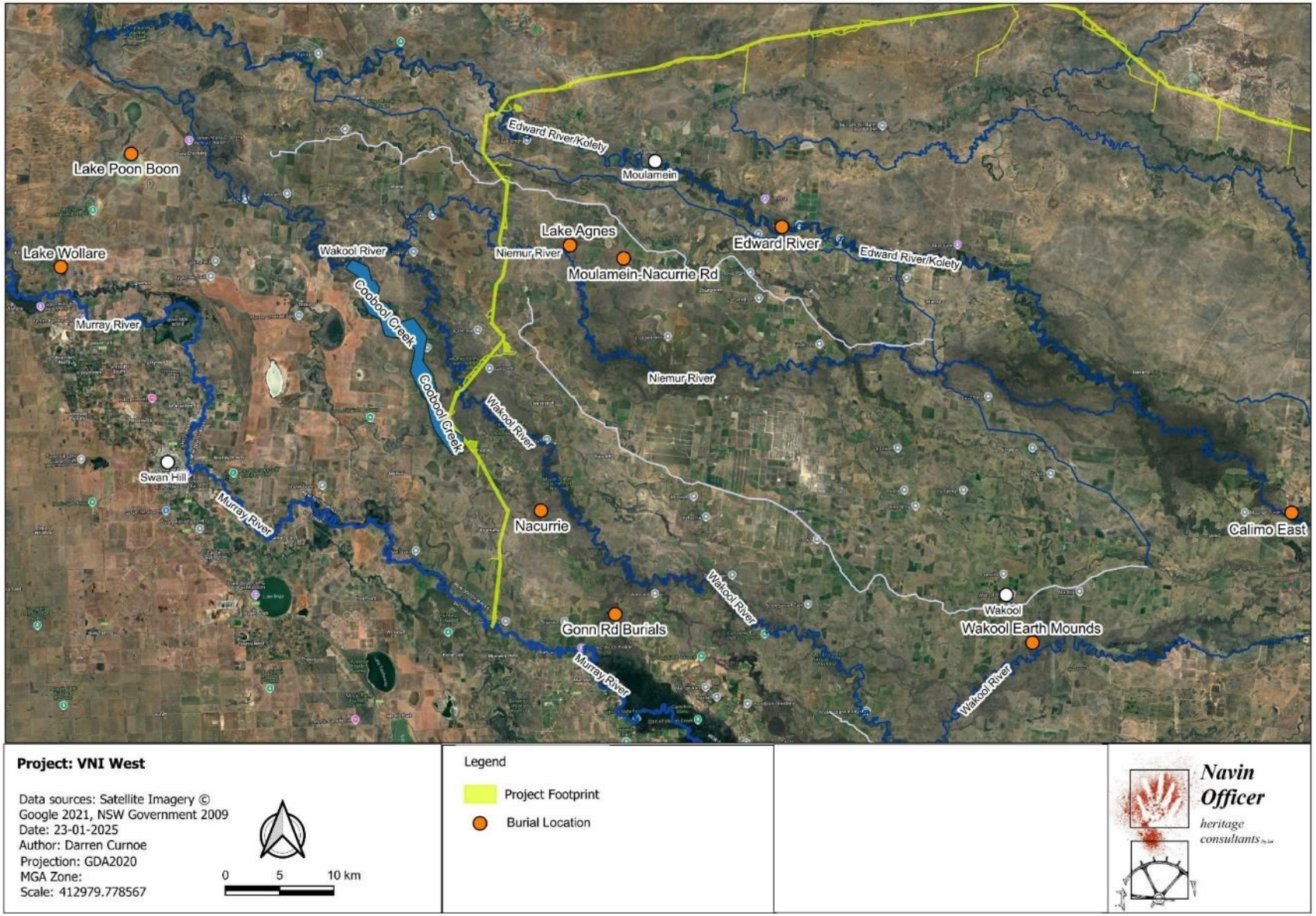


Figure 7-2 Burial sites in the region surrounding the southern section of the project footprint

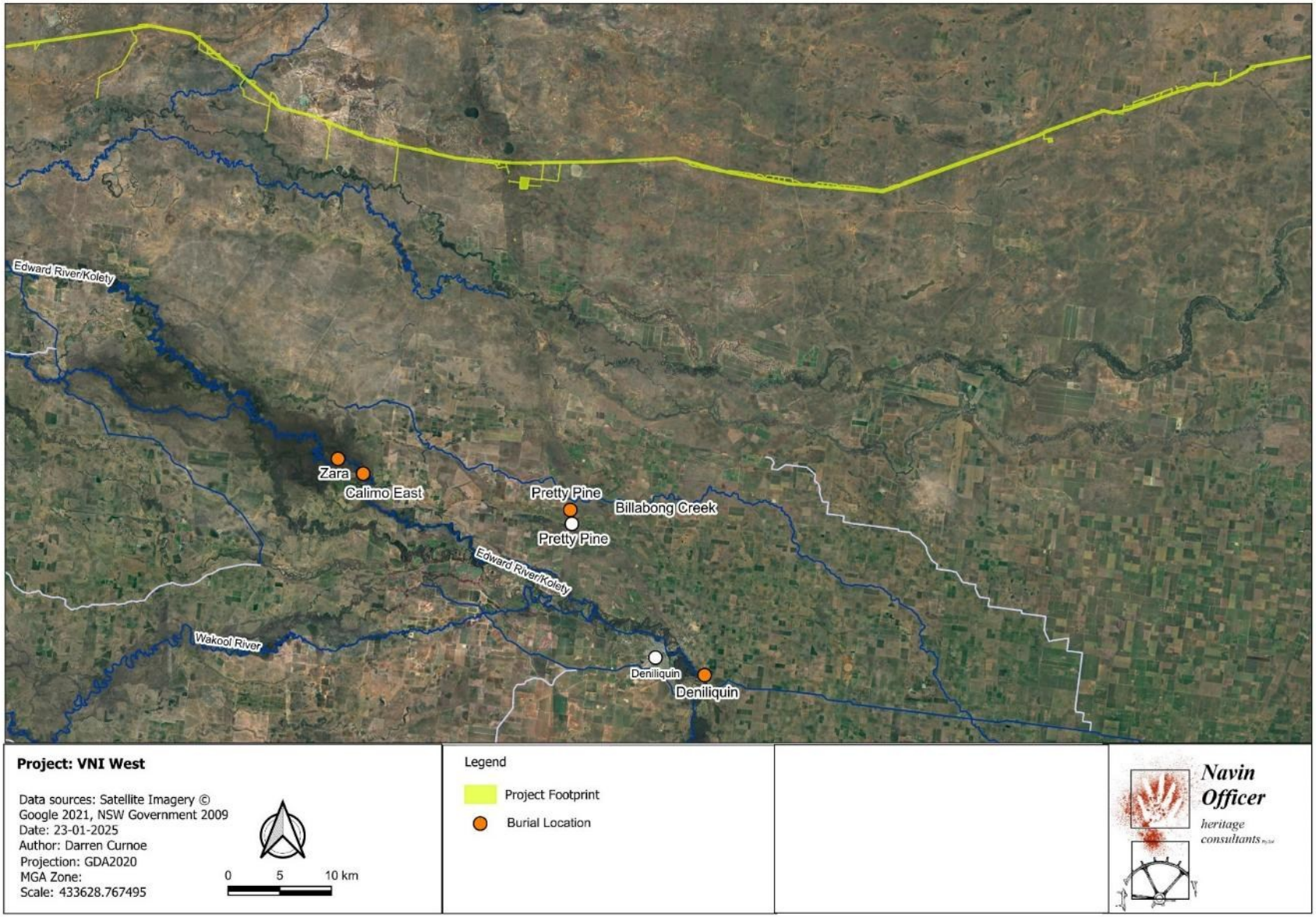


Figure 7-3 Burial sites not listed on AHIMS in the region surrounding the eastern section of the project footprint

7.1.4 Gonn Road Burials

Five burials were investigated by Judith Littleton from NPWS in 1993 in the Gonn area following a community member reporting their disturbance (refer to Figure 7-2, Figure 7-5; Littleton 1993). The first burial (Burial 1) was a single adult, Burial 2 contained small fragments from an adult's skeleton, Burial 3 was the burial of a man and child aged 10-15 years old, Burial 4 was single adult, and Burial 5 was the bundle burial of a young woman (Littleton 1993). No other details of the burials or any other Aboriginal objects from the area have been reported. Little (1993) suggested they were very old burials and were perhaps buried between 10,000 and 6,000 years ago based on their preservation, landscape context and other known burial form the southern Riverina. The area is about eight kilometres east of the project footprint. It further reinforces the sensitive nature of the landscape between the Edward River and Murray River which is well known for containing Aboriginal burials which are culturally and scientifically highly significant.

7.1.5 Tchelery Area

The first archaeological sites to be recorded at Tchelery were mostly burials in 1993 by the Hay LALC and NPWS (Johnston and Littleton 1993). This continued the long tradition of focussing on burials in the Western Riverina region (refer to Figure 7-4). Five sites were initially recorded by Johnston and Littleton (1993), and before them Colin Pardoe in unpublished reports, and within a few years eight sites had been described (refer to **Table** 7-4; Johnston and Littleton 1993; Littleton 1995). Together these sites included more than 20 earth mounds, many containing one or more burials including cremated remains, artefact scatters, hearths, a possible tool manufacturing workshop associated with a region-specific microblade technology, and shell midden.

After 2000, for her PhD research, Sarah Martin (2006) undertook survey and test excavations of a site located approximately 4 kilometres northwest of Dry Lake associated with Box Swamp (refer to **Table** 7-4 and Figure 7-5). She recorded a lunette which contained seven distinct activity areas in a location measuring 80 metres x 130 metres. The site included hearth features, a possible hut floor, various activity areas with animal bones, earth mounds containing plant material, and stone artefacts. Radiocarbon dating of charcoal indicated the site was used between 5403–4448 cal BP and 4466–4250 cal BP (calibrated using OxCal; Bronk Ramsey 2021; 95.4 per cent CI) or approximately between 5403 years ago and 4250 years ago. The adjoining swamp west of the lunette was identified and recoded as a resource and gathering site.

Later, human remains were located near Maude Road in 2018 (refer to Table 7-4; Gilding 2018). Three sites were identified as having suspected Aboriginal human remains and an OEH representative visited the sites to assess the nature of the skeletal material. The remains of two individuals in two separate locations were able to be identified. One individual was discovered eroding out of a large Aboriginal earth mound and the other eroding out of a lunette along a mild slope. A second earth mound was identified during the assessment, the skeletal remains associated with the mound were of indeterminant species and could not be definitively assessed.

NOHC undertook archaeological survey and text excavations for EnergyConnect (both NSW sections) (PEC) during 2001-2022, a new high voltage interconnector between NSW and SA being constructed for Transgrid and ElectraNet. A section of the approved route for EnergyConnect (NSW – Eastern section) transmission line passes west-east to the north of the present project footprint and runs in parallel to it from the eastern end of McLennans Bore Road to the future Dinawan substation (refer to Figure 7-4 and Section 7.1.8). Within the Tchelery area, 11 sites were recorded associated with EnergyConnect (NSW – Eastern section) and these are summarised in Table 7-5. Recorded were six isolated artefacts, three artefact scatters and two hearths. Finally, survey and PAD testing for the proposed Tchelery Windfarm was undertaken by NOHC during 2023 and 2024. The proposed Tchelery windfarm impact area excludes Dry Lake but does include the landscape containing the EnergyConnect (NSW – Eastern section) impact area and the current project footprint (refer to Figure 7-4). A summary of Aboriginal sites recorded by NOHC is provided in Table 7-6. A total of 69 sites were recorded and included a large number of isolated finds (26) and artefact scatters (23), six artefact scatters associated with a hearth and a PAD, four scatters associated with a PAD, three isolated finds associated with a hearth, two isolated hearths and an isolated find associated with a hearth and a PAD. The impact area for the proposed Tchelery windfarm is within two kilometres of the project footprint while EnergyConnect (NSW – Eastern section) is approximately 13 kilometres north of it in the region.

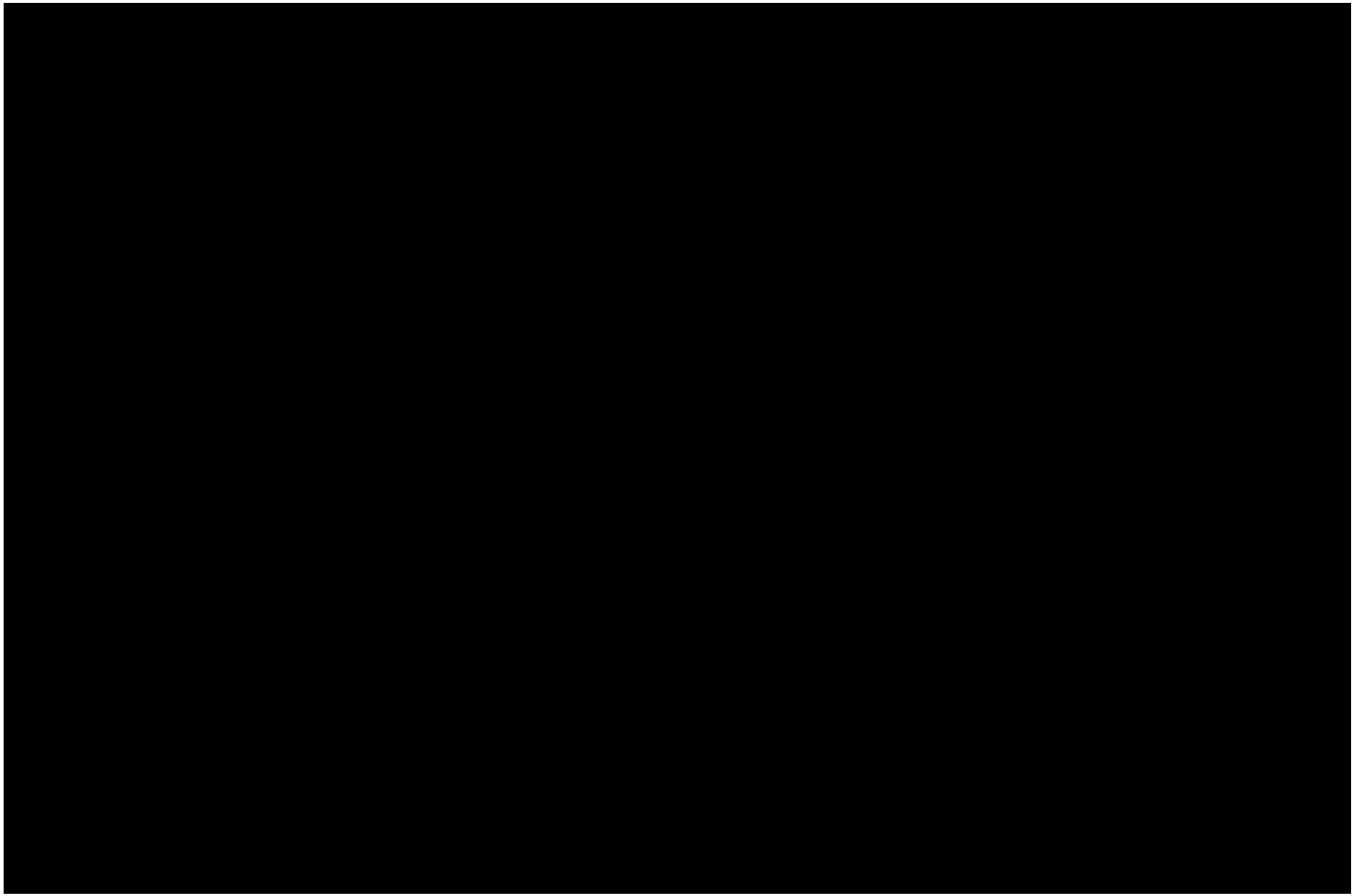


Figure 7-4 Aboriginal sites recorded in the Tchelery region north of the project footprint

Table 7-4 Sites in the Tchelery area not recorded by NOHC

Site Name	Site Type/Features
Recorded during the 1990s	
Dry Lake East	Artefact scatter, possible tool manufacturing workshop
Northeast area of Dry Lake	Earth mound complex
Tchelery Mound 1-3	Earth mounds containing burials, hearths and a stone tool (microblade) production workshop
Dry Lake West	Eight earth mounds of varying size, with at least 12 burials, a hearth scatter and shell deposits
Dry Lake 10	Two earth mounds containing three burials, several hearths and 64 surface artefacts made of quartz, silcrete, quartzite and chert
Tchelery Station Moulamein	Earth mound containing large midden (approximately 91 metres x 46 metres) with mussel shells, ash, charcoal, and artefacts
Tchelery/Abercrombie Creek	Three earth mounds with at least three burials including cremated human bone fragments hearths, burnt animal bone, artefacts, river mussel shells and a microblade production workshop
Tchelery 4	Eight burials within an erosional surface
Recorded after year 2000	
Tchelery 1 Mound Complex	Lunette on east side of Box Swamp near Dry Lake, containing seven distinct activity areas including hearth features, a possible hut floor, various activity areas with animal bones, earth mounds containing plant material, and stone artefacts. Adjoining swamp recoded as a resource and gathering site
Dry Lake Travelling Stock Route	Human remains were located near Maude Road in 2018 (Gilding 2018). Three sites were identified as having suspected Aboriginal human remains and an OEH representative visited the sites to assess the nature of the skeletal material. The remains of two individuals in two separate locations were able to be identified. One individual was discovered eroding out of a large Aboriginal earth mound and the other eroding out of a lunette along a mild slope. A second earth mound was identified during the assessment, the skeletal remains associated with the mound were of indeterminant species and could not be definitively assessed

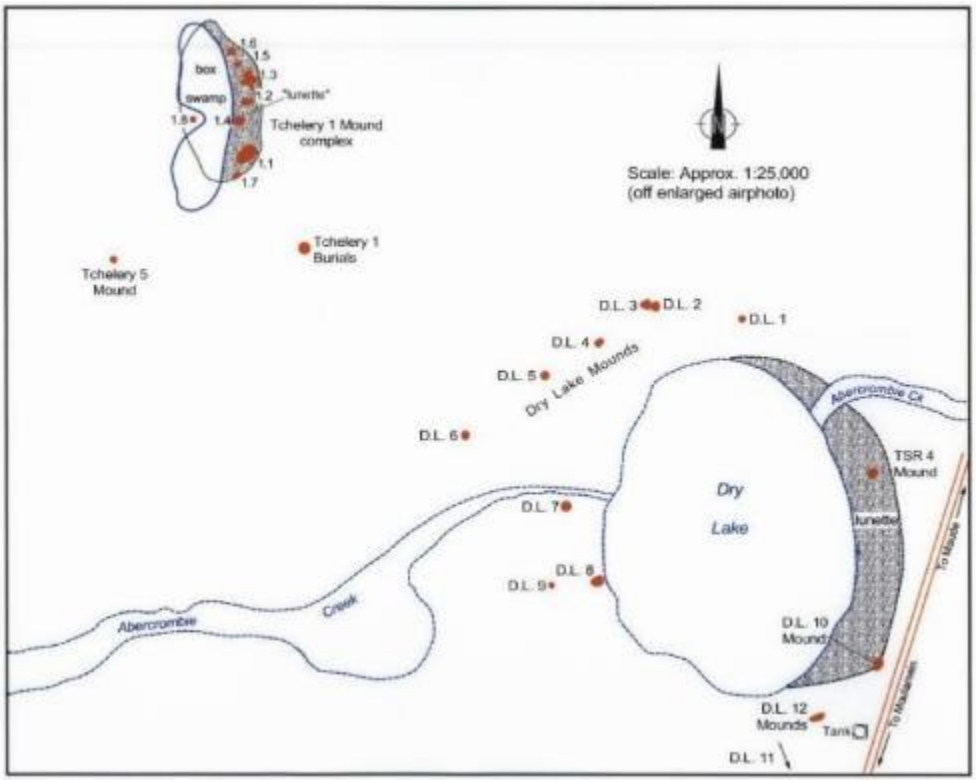


Figure 7-5 Location of sites at Dry Lake (DL) and Box Swamp

Table 7-5 Summary of sites recorded by NOHC around Tchelery for EnergyConnect (NSW – Eastern section)

Site Type	Number Recorded
Isolated artefact	6
Artefact scatter	3
Hearth	2

Table 7-6 Summary of sites recorded by NOHC at the proposed Tchelery windfarm site

Site Type*	Number Recorded
Isolated finds/artefacts	26
Artefact scatters	23
Artefact scatter + hearth + PAD	6
Artefact scatter + PAD	4
Artefact scatter + hearth	4
Isolated find + hearth	3
Hearths	2
Isolated find + hearth + PAD	1

*Combined sites are counted once only

7.1.6 Wakool Mounds

The Wakool mounds were investigated by archaeologists in 1983 on the Wakool River near northeast of Barham (Berrymen and Frankel 1984; refer to Figure 7-2). A total of 95 artificial earth mounds and 11 modified trees were recorded with several of the mounds subject to archaeological test excavations. Radiocarbon dating of charcoal from several of the mounds established their age as being between 5537–3900 calBP and 2638–1948 calBP (calibrated using OxCal; Bronk Ramsey 2021) or approximately 5537 years ago to 1948 years ago. No burials, artefacts or other Aboriginal objects were reported by Berrymen and Frankel (1984) but are likely to be present in the site. The Wakool Mounds are located about 50 kilometre east of the project footprint and provide the only example of a controlled archaeological excavation of earth mounds in the southern part of the region surrounding the project footprint, thus providing important archaeological background of the area's earth mounds.

7.1.7 Darlington Point to Deniliquin Transmission Line

An archaeological survey was undertaken in 1985 for a proposed 132 kV transmission line from Darlington Point to Deniliquin (McIntyre 1987). The 167-kilometre route was situated within the southern Riverina Bioregion in a landscape characterised by occasional sand hills and long tree lined creeks. This study area and final powerline cross the project footprint on Mabins Well Road.

Fourteen Aboriginal sites comprising 48 site types were recorded during the survey, one of the sites contained both Aboriginal and historic features. Site types included modified (scarred) trees (29), artefact scatters (11) and earth (oven) mounds (8) (refer to Table 7-7). The only site close to the project footprint was an artefact scatter about 2.5 kilometres south of the area where it passes near Mabins Well Road.

Table 7-7 Summary of sites recorded by McIntyre (1987)

Site Type*	Number Recorded
Modified trees	29
Artefact scatters	11
Earth (oven) mound	8

*Designated a 'feature' in original report

7.1.8 EnergyConnect (NSW – Eastern section) – East of Tchelery

The EnergyConnect (NSW – Eastern section) transmission line corridor runs parallel to the current project footprint, at a distance varying from 32 kilometre near the Cobb Highway to immediately beside it from McLennons Bore Road to the Dinawan substation (refer to Figure 7-7). Sites recorded by NOHC (2021) for EnergyConnect (NSW – Eastern section) in the area east of Tchelery to the Dinawan substation are shown in Figure 7-7 and summarised in Table 7-8. The most common site type was PADs which represented 24 per cent of site types, followed by isolated finds (19 per cent), artefact scatters (17 per cent), combined artefact scatters and hearths (10 per cent), hearths (9 per cent) and combined isolated finds and hearths (9 per cent). Far less common sites were modified trees (5 per cent), sites comprising artefact scatter, hearths and modified tree(s) (3 per cent) and earth mounds (3 per cent).

The large number of PADs also indicates the relative richness of the area, however, their patchiness in the landscape is likely the result of significant disturbance since European settlement in the early 1800s with many sites likely destroyed in that time (refer to Section 5.1.5). Many of the PADs tested excavated during EnergyConnect (NSW – Eastern section) archaeological activities covered very large areas of the landscape, for example, PEC-E-PAD 19 covered an area of 738,409 square metres, PEC-E-PAD 21 has an area of 1,184,722 square metres and PEC-E-PAD 22 an area of 357,494 square metres.

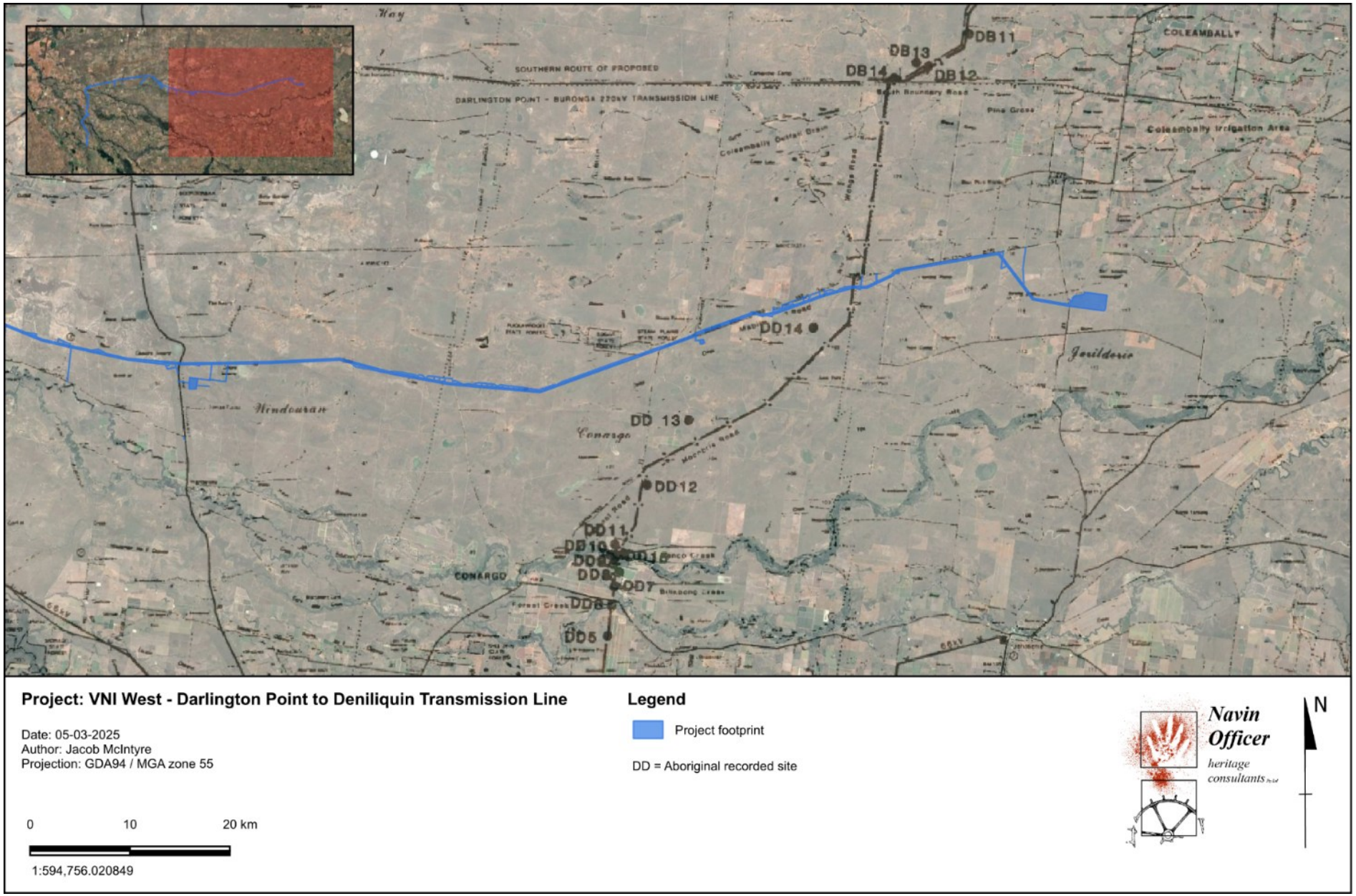


Figure 7-6 Darlington Point to Deniliquin Transmission Line project footprint and sites recorded by McIntyre (1987)

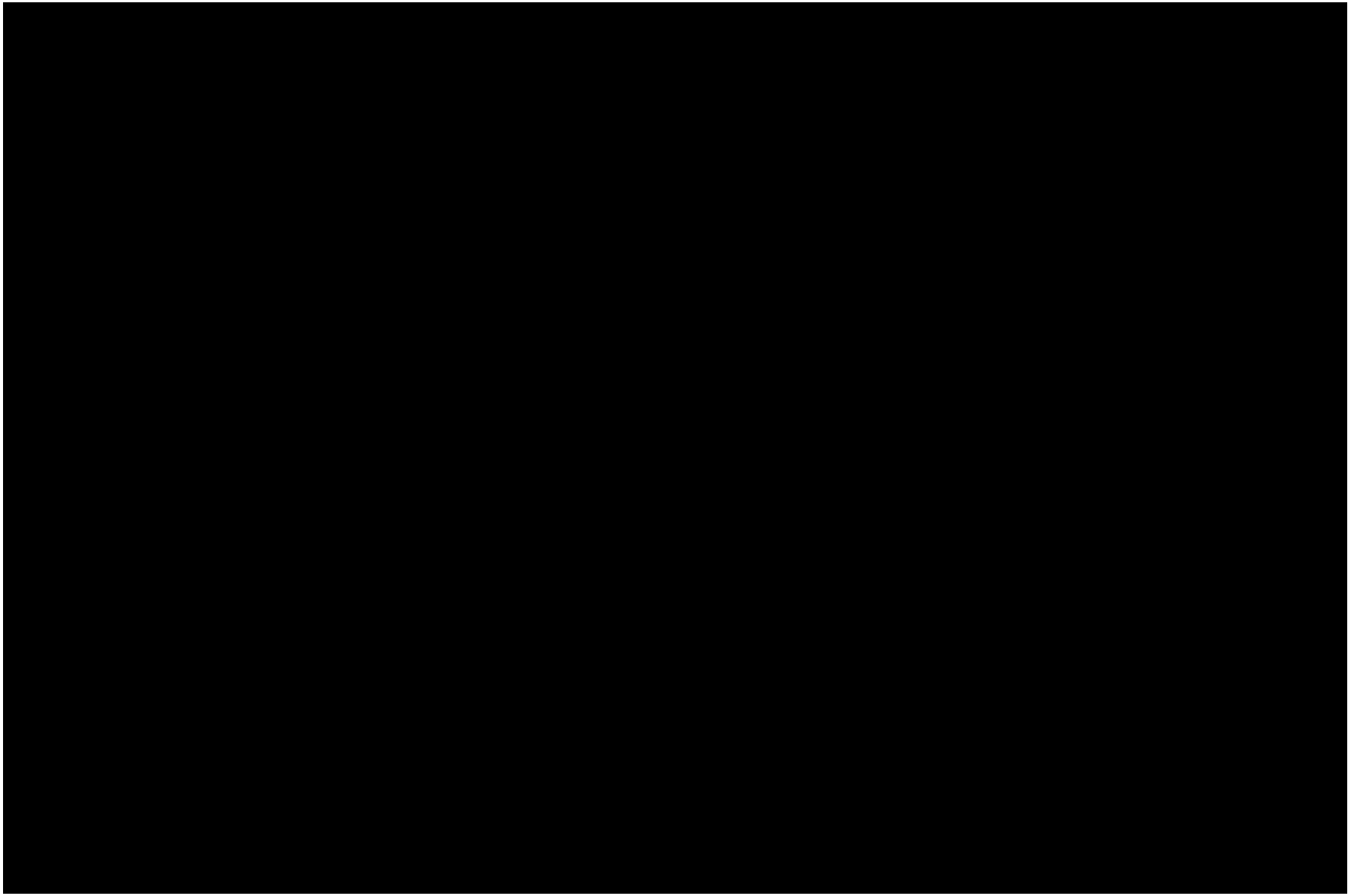


Figure 7-7 Sites recorded by NOHC for EnergyConnect (NSW – Eastern section) east of Tchelery to the future Dinawan substation

Table 7-8 Summary of sites recorded by NOHC for EnergyConnect (NSW – Eastern section) east of Tchelery area to the future Dinawan substation

Site Type	Number Recorded	% of Total
PADs	14	24
Isolated finds/artefacts	11	19
Artefact scatters	10	17
Artefact scatter+hearth(s)	6	10
Hearths	5	9
Isolated find+hearth	5	9
Modified trees	3	5
Artefact scatter+hearths+modified tree(s)	2	3
Earth mound	2	3

7.2 Network augmentation works

A number of archaeological studies have been undertaken around the Wagga Wagga (e.g., Hiscock 1983; McIntyre 1987; Silcox 1987; Klaver 1987; Wood 1992; Williams 1993; ASC 1995; Navin, Officer and Tracy 1996; NOHC 1996; 1998a; 1998b; Green 2002; KNC 2008; OzArk 2011a,b). They provide an important context for understanding the sites contained with the project footprint and a summary of their findings is provided in Table 7-10. Two studies undertaken by NOHC for the EnergyConnect (NSW – Eastern section) and HumeLink transmission line projects are considered separately below.

Overall, these studies confirm the high archaeological sensitivity and diversity of site types associated with permanent waterways, especially in areas close to the Murrumbidgee River. The range of sites documented in the region surrounding the project footprint includes earth mounds, modified trees, artefact scatters, isolated finds and quarries. Areas near the river were also used intensively over long periods and include places occupied by Aboriginal people in a sustained way indicating reduced reliance on with transient camps. The number and diversity of sites reduces rapidly away from the Murrumbidgee river area, with artefacts particularly isolated finds and modified trees being the most common site types in such places.

Survey for EnergyConnect (NSW – Eastern section) by NOHC (2021) covered the landscape around the northern eastern component of the project footprint (refer to Figure 7-8). The area was found to be of low archaeological sensitivity with just a single isolated find recorded in the northern part of the project footprint with a second artefact just west of the project footprint (refer to Figure 7-8 and Table 7-10).

NOHC (2024) has recently completed an ACHAR for the HumeLink Project. This project is proposing to increase the energy network capacity in southern NSW through the development of around 365 kilometre of high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. Survey included the current project footprint as well as the landscape southwest of Wagga Wagga (refer to Figure 7-9).

Only nine isolated finds and seven artefact scatters were recorded during survey by NOHC (refer to Figure 7-9 and Table 7-9). These include two artefact scatters recorded during post approval works (refer to Figure 7-9). Combined with the EnergyConnect (NSW – Eastern section) surveys, this suggests the current project footprint is contained within a landscape with the low archaeological sensitivity as might be expected given its considerable distance from the Murrumbidgee River and its floodplain.

Table 7-9 Sites recorded near the project footprint by NOHC for EnergyConnect (NSW – Eastern section) and HumeLink

Site Type	Number	% of Total
Isolated find	9	56
Artefact scatter	7	44
Total	16	100

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Table 7-10 Summary of findings from archaeological surveys around Wagga Wagga

Project	Authors	Main Findings	Relevance to Current Project
Proposed 330 kV electricity transmission line running from Wagga Wagga to Darlington Point	Hiscock (1983)	Six culturally modified trees among 18 scarred trees documented in landscape close to Murrumbidgee River.	Confirms prevalence of modified trees close to waterways in the region.
Proposed Wagga to Darlington Point 330 kV electricity transmission line	McIntyre (1987)	Seven scarred trees and four occupation sites, with lithic artefacts located at two of the occupation sites, and three isolated artefact sites in landscape close to the Murrumbidgee River.	Confirms diversity of sites (modified trees, artefact scatters) near waterways.
Survey and testing for Department of Public Works at Gumly Gumly, south of the Murrumbidgee River	Silcox (1987)	52 artefacts found during test excavations.	Potential for moderately high artefact densities in sub-surface deposits located close to the Murrumbidgee River.
Archaeological research of the Old Man Creek floodplains	Klaver (1987)	Intensive survey of Old Man Creek floodplain west of Wagga Wagga. 112 earth mound sites recorded ranging in size from 6 m to 58 m in diameter.	Identified extensive presence of earth mounds in some floodplain landscapes close to major waterways.
Relocation of Naval communication facilities from the ACT to the Wagga Wagga	Wood (1992)	Survey of Old Man Creek area - 42 sites including earth mounds, scarred trees, artefacts and hearths. Tentative model for site distribution and archaeological sensitivity for region, hypothesising mounds, hearths, and artefact scatters are likely to be located in all areas with access to water.	Confirmed diversity of site types across the region and importance of proximity to water sources as a key factor determining location of sites.
Proposed optic fibre cable route for Optus Communications from Albury to Cootamundra - amended to include Wagga Wagga	Williams (1993)	Three new sites and three areas of high archaeological sensitivity located survey along the Olympic Way southwest of Wagga Wagga. No sites recorded near Uranquinty.	Project footprint around 14 kilometres west of current project footprint; suggests low archaeological sensitivity away from waterways.

Project	Authors	Main Findings	Relevance to Current Project
Wodonga to Wagga Wagga Natural Gas Pipeline	Navin, Officer and Tracy (1996), NOHC (1996, 1998a,b)	Four artefact isolated finds were noted in the area west of Uranquinty and several areas of archaeological potential were identified during survey.	Pipeline route passed east of Uranquinty, approximately 15 kilometres west of current project footprint; several isolated finds and areas of archaeological potential described
Wagga Wagga LGA Wiradjuri Heritage Study	Green (2002)	A range of important general conclusions about the archaeological record of the region were made: • Quartz main raw material with occasional occurrences of chert, silcrete and quartzite • Artefact scatters most likely located in well drained areas near reliable water sources, such as sand hills and creek levees • Hearths and associated cultural material likely located at the base of sand dunes where exposed by erosion • Middens often found associated with ashy grey material and charcoal • Burials most often located in naturally elevated sand dunes or alluvial sites but typically only detected following disturbance or erosion • Modified trees located anywhere old growth trees survive but most likely to occur near water.	Study indicates a high level of activity in concentrated areas by Aboriginal people particularly associated with reliable water sources. Earth mounds on rover floodplains demonstrate sustained and repeated use of sites with less reliance on transient camps. All site types common near waterways but artefacts and modified trees (less so) found also away from creeks and rivers.

Project	Authors	Main Findings	Relevance to Current Project
Wagga Wagga Local Environment Study	Kellerher Nightingale Consulting (2008)	Study examined eight areas subject to rezoning Predictive model developed by KNC concurred with previous modelling for Wagga Wagga region indicating areas with highest archaeological sensitivity likely to occur on low rises within gently undulating terrain adjacent to drainage features. Two project footprints located approximately 9 kilometres west, and several others 11-13 kilometres northeast, south of the Murrumbidgee River. In these areas, they described several PADs (4), a quarry site (1), scarred trees (7), artefact scatters (2) and isolated finds (9).	Richest areas found close to the Murrumbidgee River and along creeks located close to the river. High to moderate archaeological sensitivity is associated with creeks generally but the number and diversity of sites reduces quickly further away from the river area. Overall, proximity to water is the most important determinant of the presence and diversity of sites.

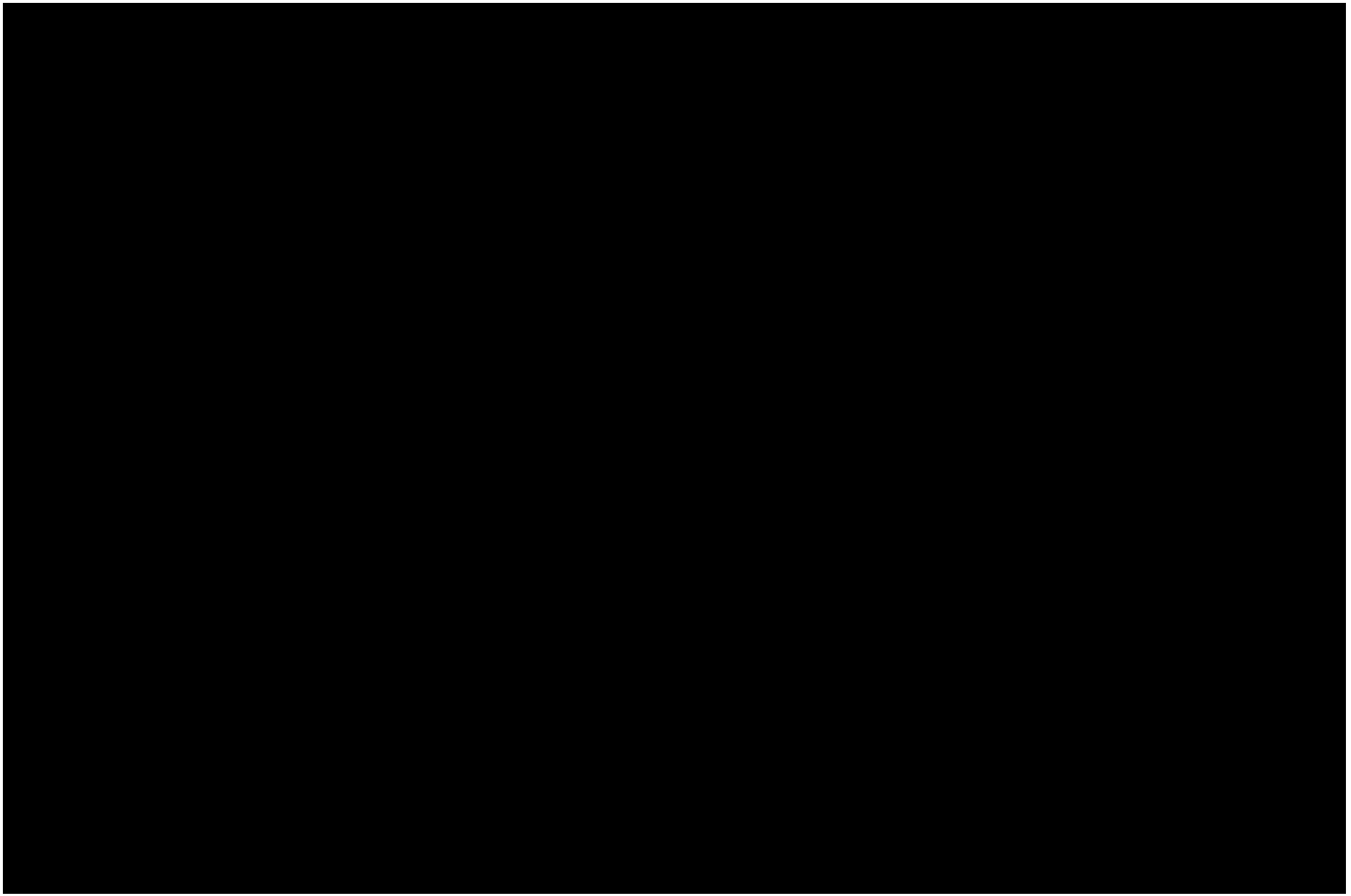


Figure 7-8 Sites recorded by NOHC for EnergyConnect (NSW – Eastern section) – Network augmentation works

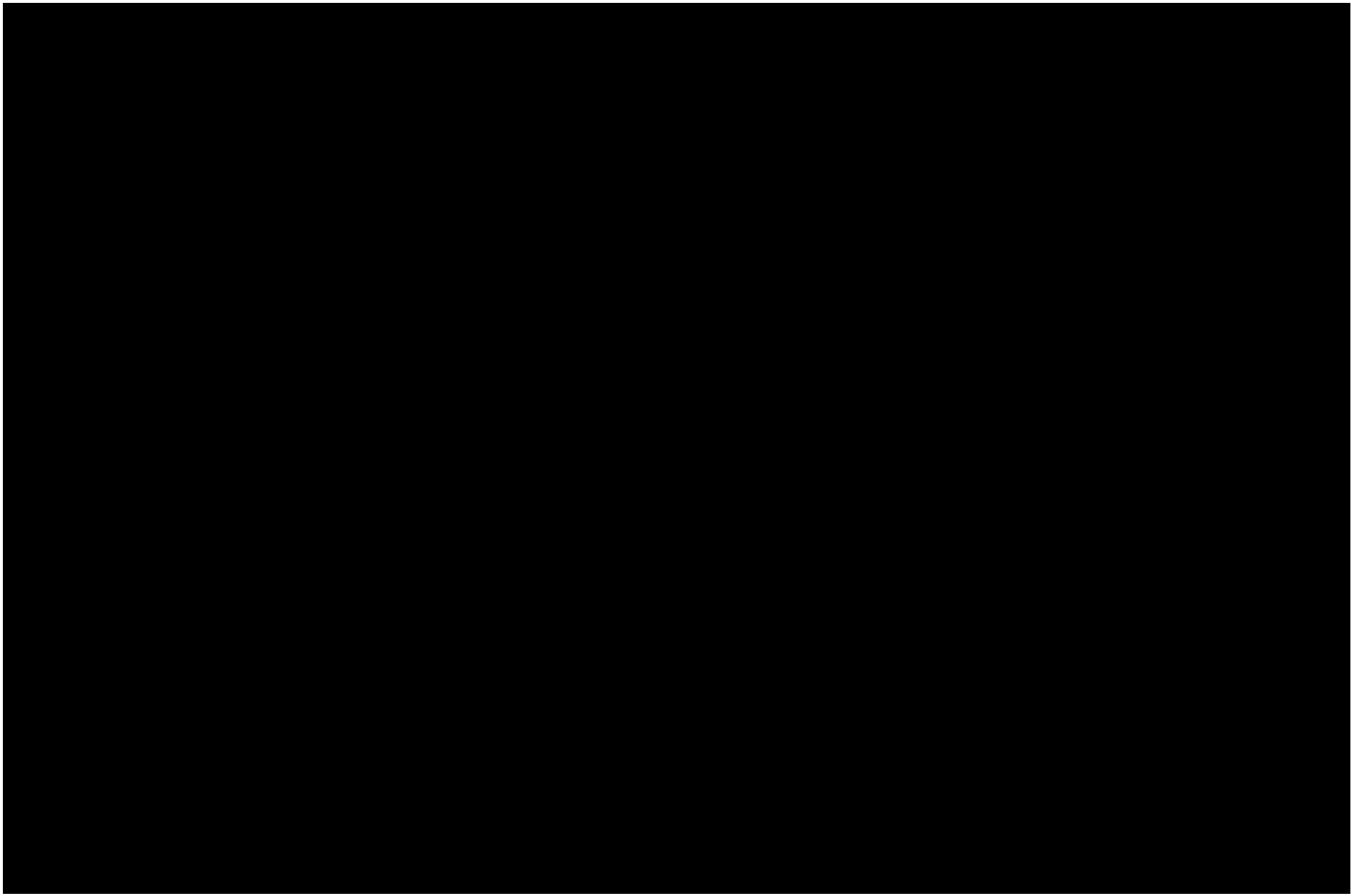


Figure 7-9 Sites recorded by NOHC for HumeLink – Network augmentation works

7.3 Aboriginal Heritage Information Management System

7.3.1 NSW/Victorian border to Dinawan substation

A detailed AHIMS site search was conducted on 18 August 2023, 28 August 2023, 12 March 2024, 10 July 2024 and 2 April 2025. The results showing sites only within the project footprint are provided in Appendix 2. A search of the NSW Aboriginal Places inventory was also undertaken, and no Aboriginal Places are located in the project footprint for this component of the project.

There are 12 Aboriginal sites listed on AHIMS within the project footprint (refer to Figure 7-10). Any apparent spatial patterning, such as a clustering of sites, should be considered to be artificial because it results from the limited number of heritage surveys undertaken across region and the very small number of sites recorded rather than actual Aboriginal land use patterns. AHIMS sites within the project footprint are summarised in Table 7-11. The most common site type recorded across the project footprint is isolated finds (50%); the next most common site type are modified trees (25%) and hearths (17%) and finally artefact and hearth together (8%).

To assist in assessing the likelihood of unrecorded Aboriginal sites being present in the project footprint, an Aboriginal archaeological sensitivity model for this component of the project was compiled and is presented below in Section 7.4.

Table 7-11 AHIMS site types and features within the project footprint*

Site Type/Feature	Number of Sites	% of Total
Artefact - isolated find	6	50
Modified tree (Carved or Scarred)	3	25
Hearth	2	17
Artefact + hearth	1	8
Total	**12**	**100**

*AHIMS search 2 April 2025; each site counted only once

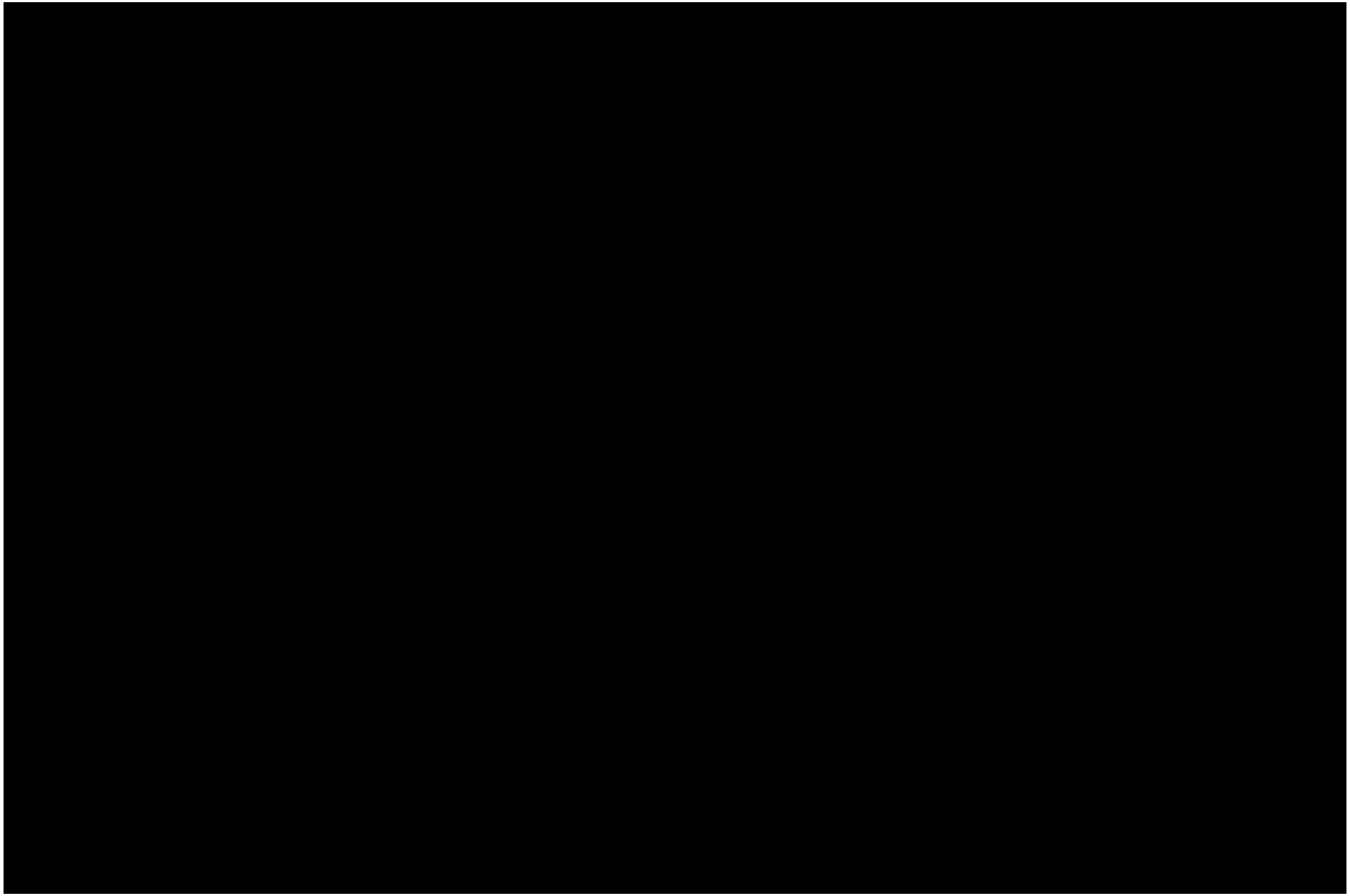


Figure 7-10 Location of AHIMS sites in the project footprint – NSW/Victorian border to Dinawan substation

7.3.2 Network augmentation works

Within the project footprint for this component of the project, there are five Aboriginal cultural sites listed on AHIMS (Table 7-12, Figure 7-11). They comprise one artefact scatter, one isolated find, one artefact scatter with associated PAD, one subsurface artefact scatter and one scarred tree, located immediately adjacent to the project footprint. The results of the detailed AHMS searches are provided in Appendix 2. As identified in Section 7.2, an additional two artefact scatters have been identified (HLW-10 and HLW-11) during the post approval works for HumeLink.

As noted in the landscape analysis (refer to Section 5.2), this component of the project footprint contains a diversity of geological outcrops, soil types and landforms including a relatively large number of creeks which form part of the southern catchment area of the Murrumbidgee River. Given the general principle in archaeology that the majority and highest density of Aboriginal sites will occur within 200 metres of water (DECCW, 2010a), the project footprint is evidently of low-moderate archaeological sensitivity. This is most likely to be the result of significant land disturbance since European settlement of the area.

To assist in assessing the likelihood of unrecorded Aboriginal sites being present in the project footprint, an Aboriginal archaeological sensitivity model for this component of the project was compiled and is presented below in Section 7.4.

Table 7-12 Previously recorded site types and features within the project footprint*

Site Type/Feature	Number of Sites	% of Total
Artefact scatter/PAD	1	15
Subsurface artefact scatter	1	15
Artefact scatter	3	40
Isolated find	1	15
Modified tree (Carved or Scarred)	1	15
Total	**7**	**100**

*AHIMS search 2 April 2025; each site counted only once

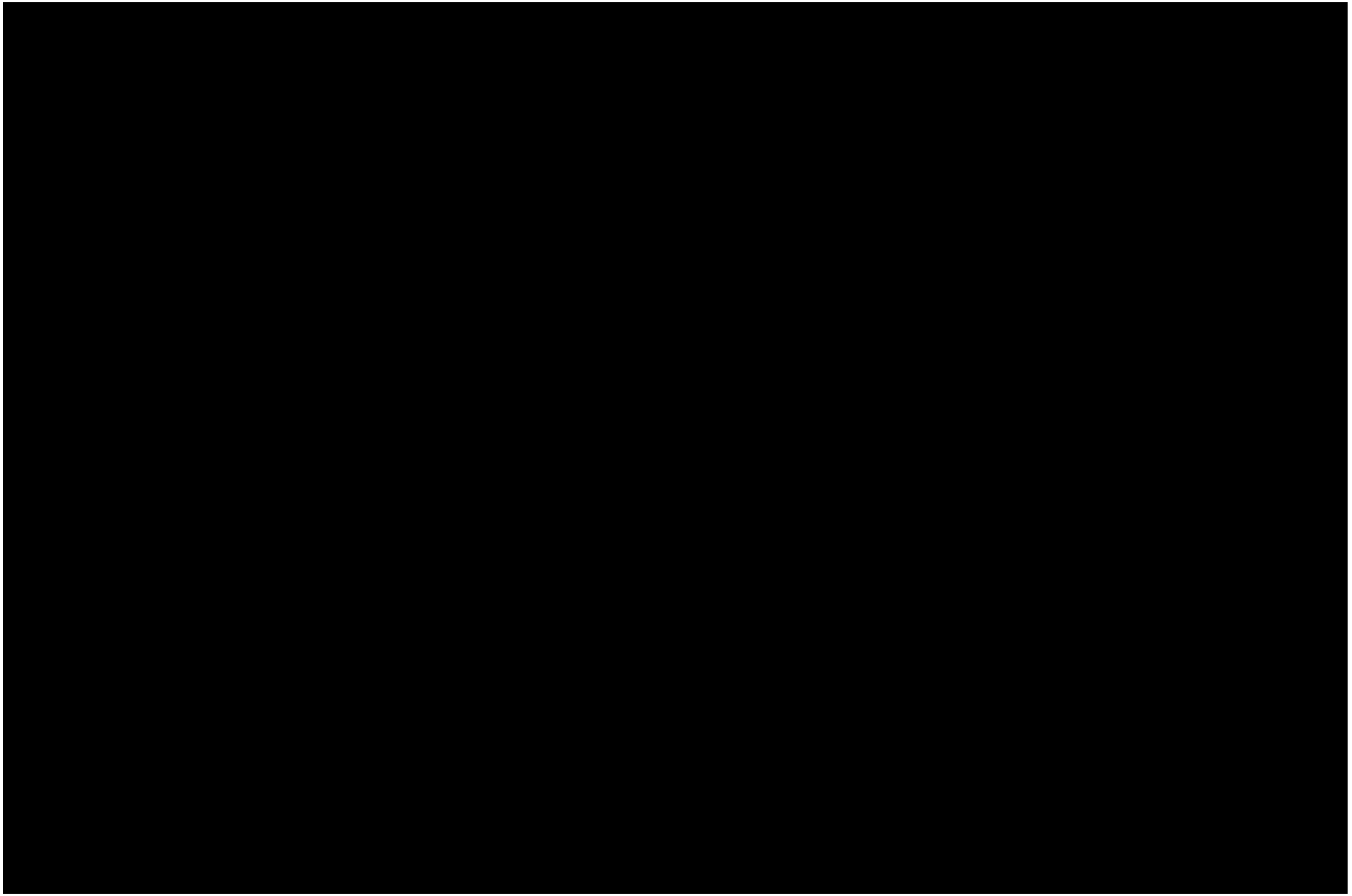


Figure 7-11 Location of AHIMS sites in the project footprint – Network augmentation works

7.4 Predictive model

The archaeological sensitivity models described in Section 3.2.2 are probability-based models developed in a GIS application. The archaeological sensitivity models provide a prediction about the likelihood of archaeological objects occurring given the presence or absence of particular landscape features (i.e., topography, soil types, waterways etc.). The results of these sensitivity analyses do not, however, specify which type of objects are likely to be found in each area. What follows (below) is a set of general predictions about specific site types based on a synthesis of the landscape data (refer to Chapter 5), Aboriginal history and culture (refer to Chapter 6) and previous archaeological surveys (refer to Chapter 7) within a given area or nearby regions that inform areas contained within the project footprint.

From this existing body of work, the following set of broad site location criteria have been summarised for the project footprint and apply to both sections.

Artefact scatters – Open artefact scatters are likely to be the most common site type encountered. They may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting or gathering activities, domestic camps, or the manufacture and maintenance of stone tools. The spatial extent and density of artefacts represented in these scatters can vary dramatically. Within the general region of the project, artefact scatters tend to be dominated by assemblages of quartz, with lesser percentages of other rock types such as silcrete, sandstone, quartzite and volcanics.

Previous survey results suggest that artefact scatters are most likely to occur in well drained elevated contexts within riparian zones, flood plains and adjacent to water sources. Level or gently sloping surfaces are typical site locations, with few sites recorded from moderate to high gradient contexts. Within the project footprint potential site locations include elevated banks, terraces and sand bodies associated with streamlines, flood channels, paleochannels, water holes, lagoons and wetland basins. Larger and denser sites are more likely to occur in association with stable sedimentary contexts adjacent to (past or present) permanent water sources, and major tributaries.

Modified trees – These sites may occur almost anywhere, and identification of scars as Aboriginal in origin can often be problematic. The potential for scarred trees to survive within the project footprint is moderate to high due to the retention of considerable numbers of mature native trees along fluvial corridors and as isolated shade trees on grazing land. Archaeological surveys within the surrounding region have typically identified relatively high frequencies of scarred trees (e.g. Djekic 1978; Crosby 1978,1979; Hiscock 1983; McIntyre 198; Navin 1992; Officer and Navin 1994). Within the project footprint scarred trees may occur anywhere mature native trees have survived.

Earth mound sites – Mound sites have been recorded in many areas of Australia and are typically associated with fluvial and lacustrine environs on the Quaternary sedimentary basin of the Murray-Darling Basin. Mound sites may be described as raised circular to oval accumulations of charcoal blackened soil. They have been interpreted as either deposits resulting from the steady accumulation of cooking and occupation debris or deliberate constructions which were later occupied.

Mound sites may contain various cultural materials such as stone, baked clay and faunal remains and occasionally human burials. The content and patterns of use evident in mound sites may vary according to environmental and cultural characteristics of a region. The identification of culturally formed mounds can be problematic since several other natural processes mimic their appearance (Klaver 1987). Some mound sites have been eroded by ploughing to the extent that only soil discolouration remains, with no outstanding relief.

Mounds which have been interpreted as earth ovens are generally “located in damp soils, in proximity to water, at the same time staying above flood levels” (Klaver 1987, p. 117). Within the project footprint there is some potential for mound sites to occur along the margins of wetland basins and flood channels.

Burials – Burials within similar landscape contexts are generally found either in mound sites, or in elevated natural topographies consisting of soft, easily dug, sediments, such as aeolian sands or unconsolidated alluvial silts. They may occur in isolation or in groups and may also be association with occupation site debris. Burials are generally only visible where there has been some disturbance of

sub-surface sediments or where some erosional process has exposed them. Within the project footprint burials may occur in sand bodies, in mound sites and on elevated fine sediment topographies on floodplains. It should be noted that the incidence of some isolated burials cannot be accurately predicted beyond the broad parameters of deposits with deep, fine sediments.

Freshwater middens – Freshwater middens are defined as a concentration of artefactual debris that includes a significant percentage of freshwater shell (predominantly mussel shell *Velesunio sp*. or *Alathyria sp*.). They are usually the result of interim or base camp activity and are normally situated within riparian zones characterised by relatively permanent water.

Within the project footprint freshwater middens may be associated with creeks, rivers, billabongs and prior stream channels. Midden material may be buried by overlying silt deposits.

Hearths – In archaeology, a hearth is a firepit or other fireplace feature. Hearths are common within the project footprint and are often made of fired clay balls and sometimes reflect multiple use.

Isolated finds – Isolated finds are artefacts which occur without any associated evidence for prehistoric activity or occupation. They are defined as single artefacts located more than 60 metres from any other artefact. Isolated finds can occur anywhere in the landscape and may represent the random loss or deliberate discard of artefacts, or the remains of dispersed artefact scatters.

Potential archaeological deposits – A PAD is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. PADs are generally landscape based and like artefact scatters are most likely to be identified in well drained elevated contexts within riparian zones and adjacent to water sources and on remnant sand dunes/sand hills, where the soil depth is assessed to be deep enough to retain an archaeological deposit.

Other site types – More fragile/rare sites such as ceremonial bora rings, stone arrangements, habitation structures, and carved trees may also be present in the project footprint, as evidenced by these site types being present within five kilometres of the project footprint at very low densities. Based on the likely agricultural practices which have occurred since white settlement (ploughing and levelling, trampling by stock, crop cultivation, construction of drainage canals, fences, roads and access tracks), the potential for these more fragile/rare sites to have survived in the project footprint to the present day is considered low.

The site types which are most likely to occur in the project footprint are artefact scatters, isolated finds, modified/scarred trees, and hearths. Other site types which may occur in the project footprint are mound sites, freshwater middens and burials. The most archaeologically sensitive topographic contexts in the project footprint is elevated ground adjacent to water sources, lunettes, sand bodies and sand sheets within valley floor contexts, and the margins of lakes and river terraces.

7.5 Aboriginal archaeological sensitivity model

The occurrence and survival of archaeological sites is dependent on many factors including micro-topography and the degree of land surface disturbance. It should also be noted that for practical reasons, archaeological surveys tend to focus on environments identified as archaeologically sensitive, on the basis of previous research and aided by effective ground visibility. As a result, predictive site location models can tend to reflect previous survey bias and become self-perpetuating.

7.5.1 NSW/Victorian border to Dinawan substation

Using the methodology detailed in Section 3.2.2, following the field survey an updated Aboriginal archaeological predictive model was developed for this component of the project footprint. The archaeological sensitivity of the project footprint from the NSW/Victorian border to Dinawan substation is shown in Figure 7-12 to Figure 7-17. Overall, the results of the model are as follows:

- High sensitivity areas are typically found in indicative soil and indicative vegetation landscapes close to major sources of water (within 200 metres) and in indicative soil and indicative vegetation landscapes if further away from major sources of water.
- Moderately sensitive areas are found within 500 metres of major sources of water and in non-indicative soil and non-indicative vegetation landscapes.
- Low sensitivity areas are typically in non-indicative soil and non-indicative vegetation landscapes and located more than 500 metres from major sources of water.

Between Dinawan Substation, west of Carrathool Road and the Cobb Highway sites are associated with landscapes with high, medium and low archaeological sensitivity (refer to Figure 7-12 and Figure 7-13).

Between the Cobb Highway to the Niemur River Aboriginal sites are found almost entirely in areas of high archaeological sensitivity with only a single site outside of high sensitivity areas (refer to Figure 7-14 and Figure 7-15).

From the Niemur River to the Murray River, a landscape with a high concentration of watercourses including rivers and perennial streams (refer to Section 5.1.4), sites are located in areas of low–high sensitivity, but mostly within low sensitivity landscapes (refer to Figure 7-15, Figure 7-16 and Figure 7-17).

Two important limitations on sensitivity modelling for the southern Riverina are the complex hydrology of the area and the impact of landscape disturbance since the early 1800s. As described in Section 5.1.4, the region contains many watercourses including vast areas of palaeochannel sediments and ephemeral creeks. Many of them have not been mapped and therefore could not be included in the archaeological predictive modelling. Similarly, the course and flow of many watercourses has been altered since agricultural activities began and dams/weirs were constructed on the Murrumbidgee and Murray rivers. Finally, livestock grazing has had a significant degrading impact on the landscape of the area combined with cyclical droughts which have seen large amounts of topsoil removed through aeolian erosion (refer to Section 5.1.5). As most subsurface archaeological sites are expected to be 10-40 centimetres below the ground surface, many will have been destroyed or damaged over the last 200 years.

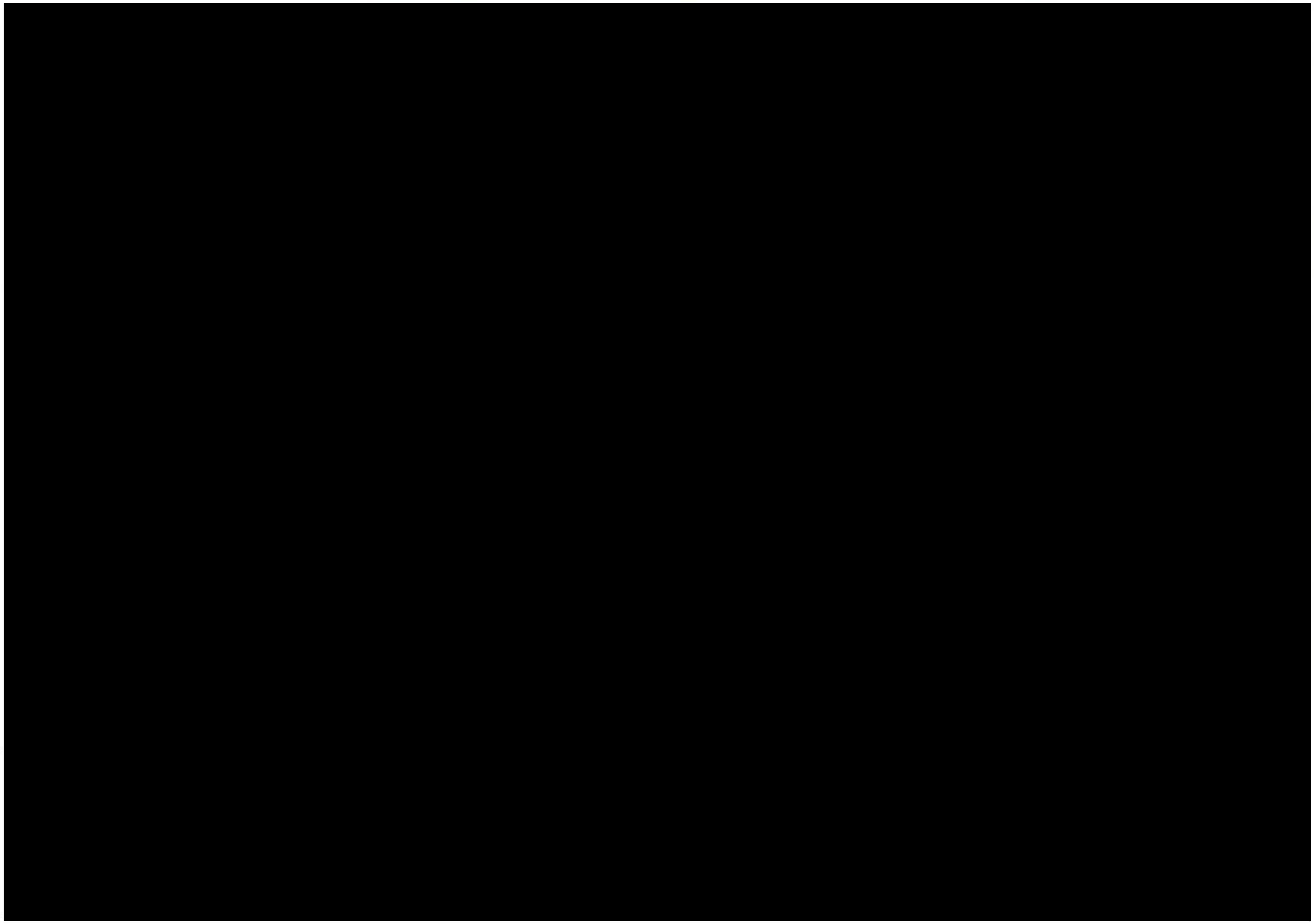


Figure 7-12 Archaeological predictive model west of Carrathool Road - NSW/Victorian border to Dinawan substation

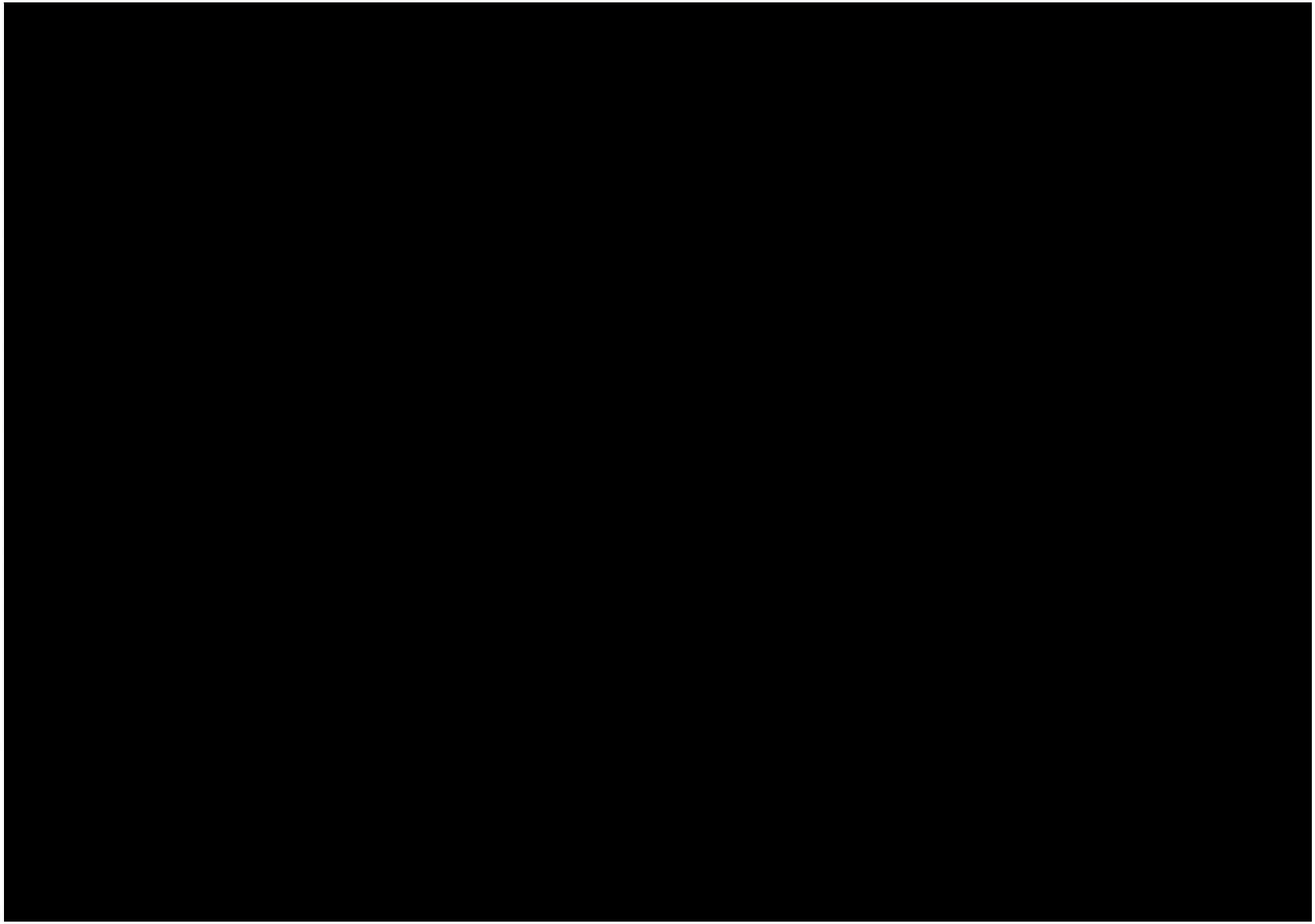


Figure 7-13 Archaeological predictive model from Carrathool Road to the Cobb Highway - NSW/Victorian border to Dinawan substation

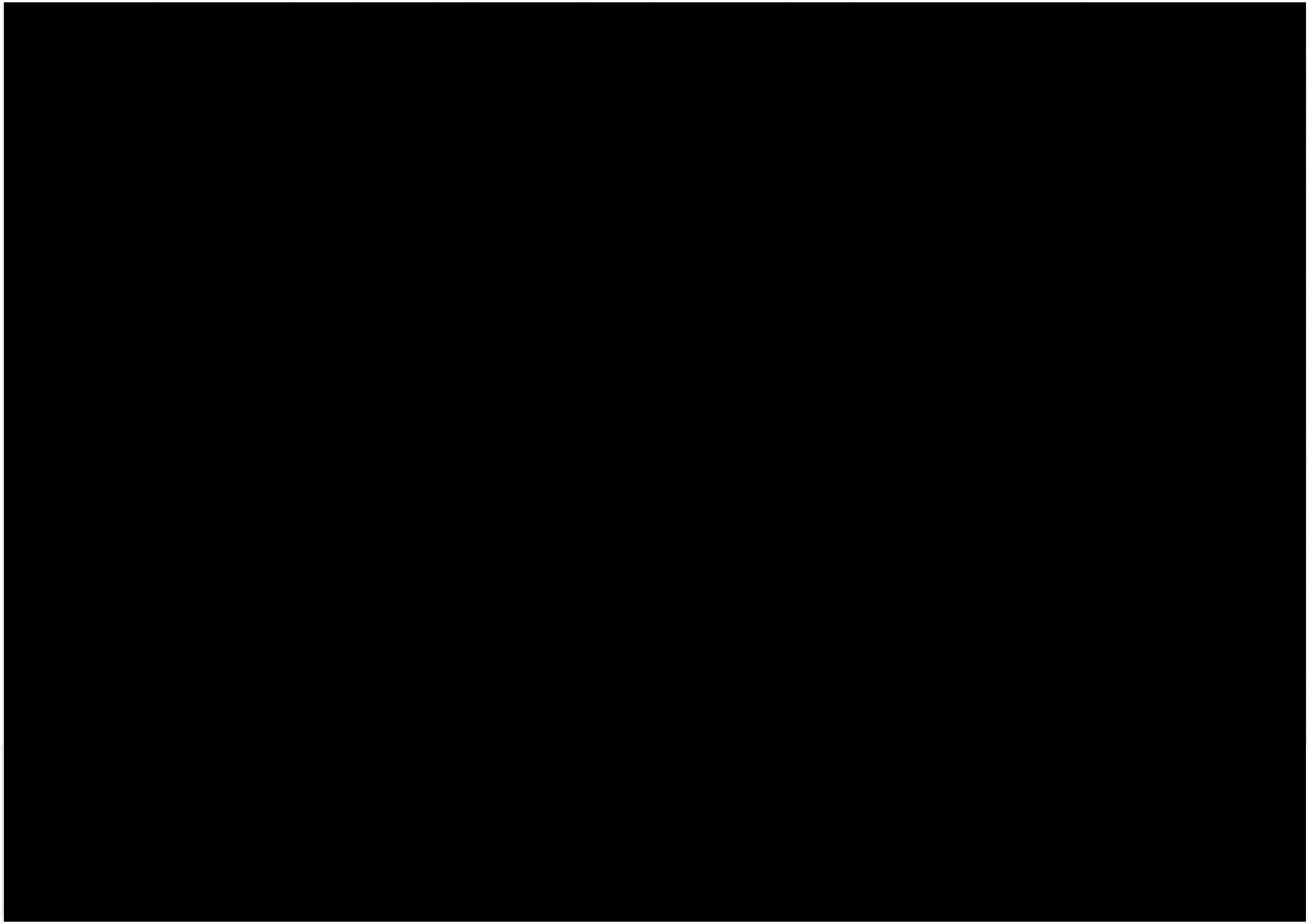


Figure 7-14 Archaeological predictive model from the Cobb Highway to Maude Road - NSW/Victorian border to Dinawan substation



Figure 7-15 Archaeological predictive model from the Maude Road to the Niemur River - NSW/Victorian border to Dinawan substation

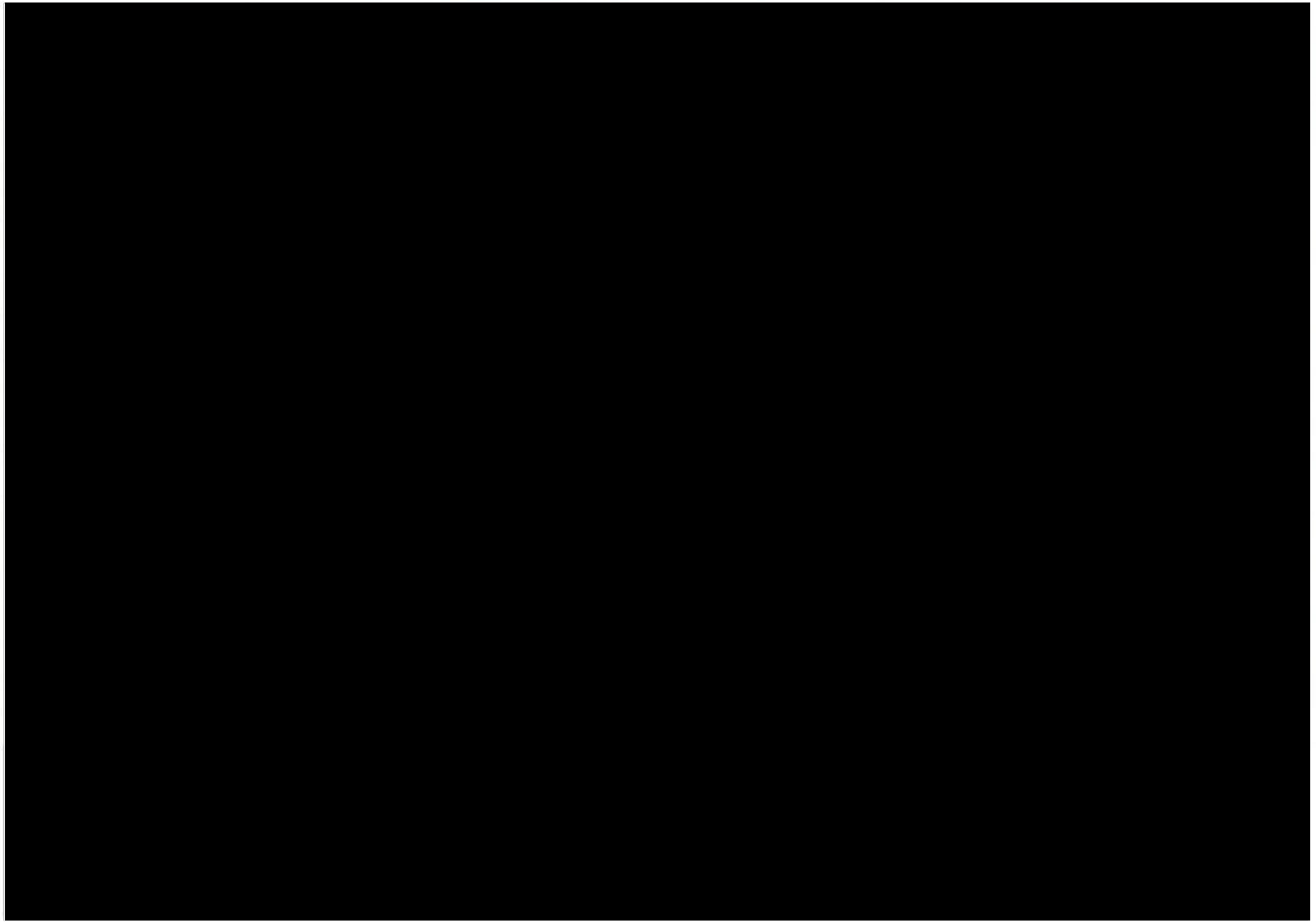


Figure 7-16 Archaeological predictive model from the Niemur River to Coobool Creek - NSW/Victorian border to Dinawan substation

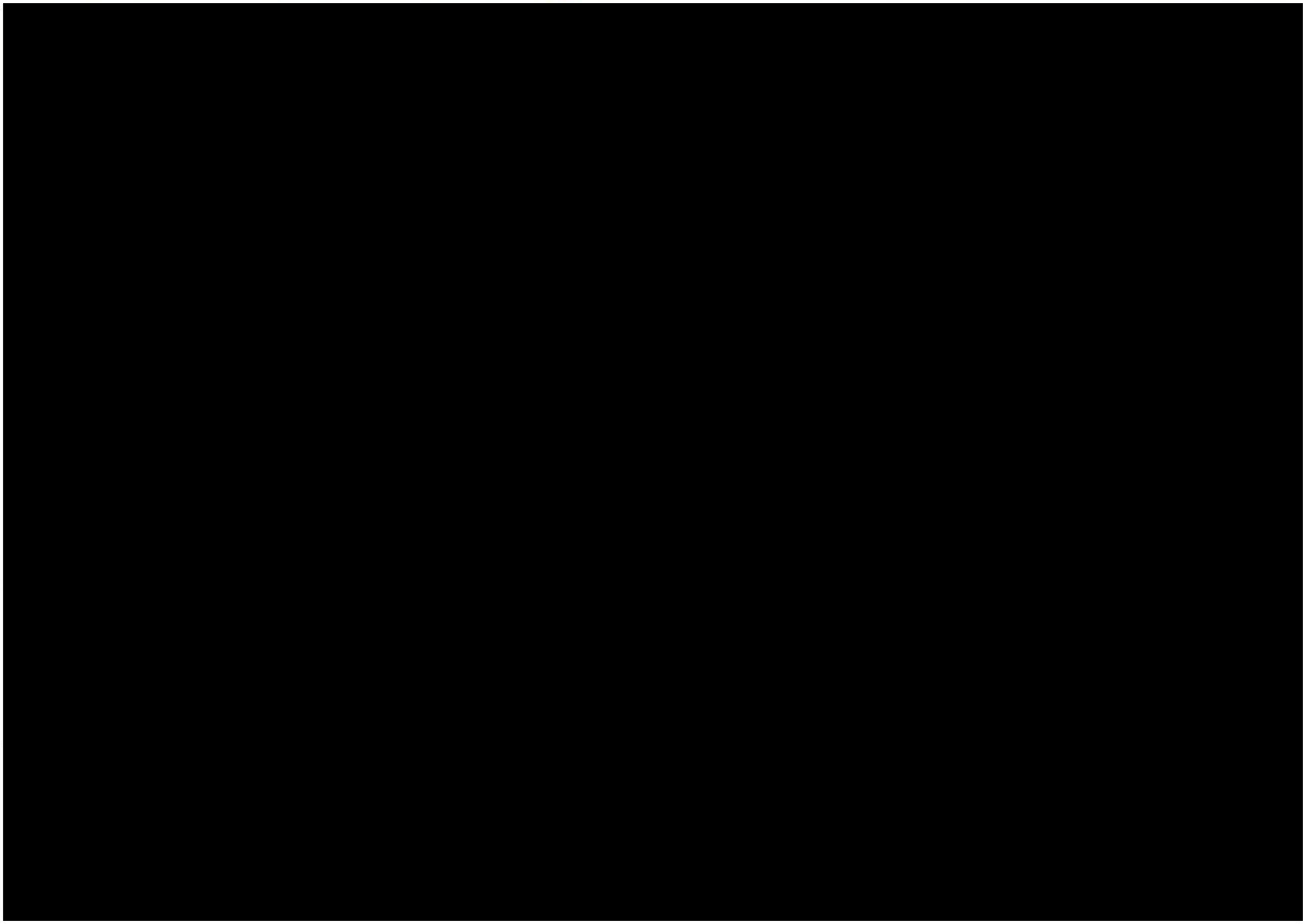


Figure 7-17 Archaeological predictive model from the Coobool Creek to the Murray River - NSW/Victorian border to Dinawan substation

7.5.2 Network augmentation works

For the network augmentation works component of the project, a sensitivity model was developed as part of the EIS for the HumeLink project (NOHC, 2024). Figure 7-18 depicts the results, the results of the model are as follows:

- High sensitivity areas are typically be found on areas of low slope within 350 metres of an order 2 stream or higher and areas of low slope within 100 metres of an archaeological site
- Moderately sensitive areas are within moderate slope within 350 metres of an order 2 stream or higher, areas of low slope between 350 and 500 metres of an order 2 stream or higher or areas of moderate slope within 100 metres of an archaeological site
- Low sensitivity areas are in all other areas.
- Pedestrian survey showed that sites are located in areas of high and moderate sensitivity as identified by archaeological sensitivity modelling.

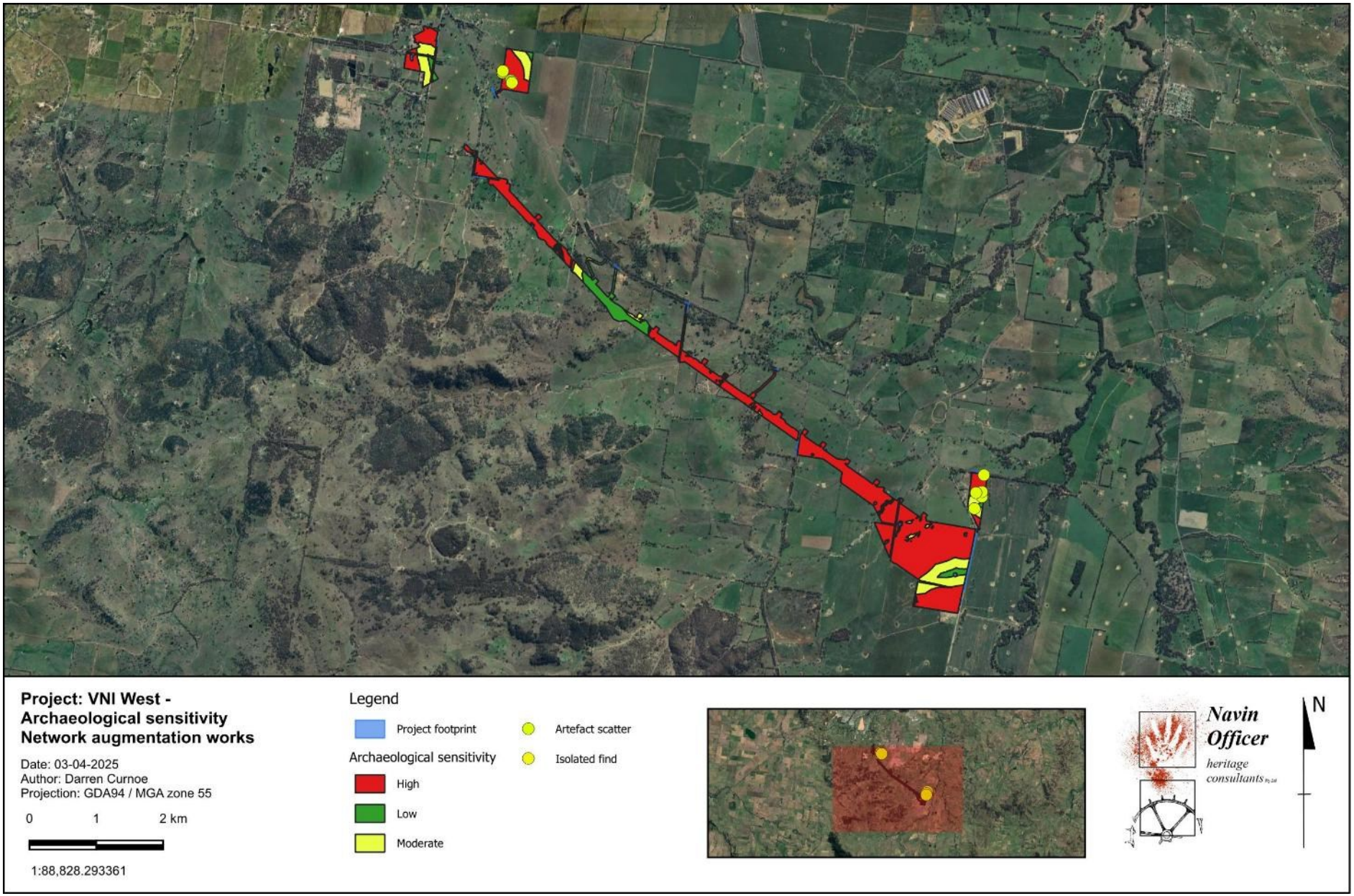


Figure 7-18 Archaeological predictive model – Network augmentation works

8 ARCHAEOLOGICAL INVESTIGATION

8.1 Field methods

This Chapter outlines the results of the field investigation undertaken as part of this ACHAR. The archaeological survey and data collection were carried out in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010).

8.2 Archaeological survey results

8.2.1 Site obtrusiveness and survey coverage

The effectiveness of archaeological field survey is determined largely by the obtrusiveness of sites in the landscape. Moreover, the obtrusiveness of an archaeological site is the result of two major factors: the Ground Surface Visibility (GSV) and Ground Surface Exposure (GSE).

GSV is defined as:

…is the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stony ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals' (DECCW 2010b, p. 39)

GSE is defined as:

…is different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals' (DECCW 2010b, p. 37)

A range of interacting factors will determine the level of GSV and GSE present in any given project footprint, and these are summarised in Figure 8-1. The main landscape factors determining them are: topography, underlying geology, soil type, hydrology, vegetation type, distribution and surface cover, erosion risk and impacts, and land use (refer to Figure 8-1).

These variables and their complex interactions are illustrated by way of an example of an erosional scald (or mini clay pan) typical of the inland of the southern Riverina Bioregion (refer to Figure 8-2). Aboriginal objects (esp. hearths and artefacts) are frequently recorded in scalds because of their typically high levels of GSV and GSE. A high GSV results from minimal or no vegetation cover, depending on the local vegetation types, which has been caused through a combination of erosion of sandy topsoils down to clay layers and grazing from native and agricultural animals. Excessive stocking of the region and overgrazing by sheep in the late 1800s caused extensive permanent damage to the landscape ((Eardley 1999) and undoubtedly also the loss of much Aboriginal heritage. The loss of vegetation exacerbates erosion and leads to increased GSE as result of seasonal heavy rainfall and wind especially aeolian erosion. While the topography of the inland Riverina is generally flat, there is local and micro-spatial variation in slope and aspect which may enhance erosion potential.

In another example, artefacts made from locally occurring rock such as quartz may be more difficult to detect under usual field survey conditions than rock types that are foreign to the area. The impact of natural gravels on artefact detection was taken into account in the visibility variables estimates outlined above.

The incidence of old growth trees is an important considerations in identifying both survey effectiveness and site location patterns outside of environmentally determined factors.



Figure 8-1 Major factors determining GSV and GSE in the project footprint



Figure 8-2 Variables affecting GSV and GSE illustrated with an erosional scald typical of the southern Riverina

8.2.2 NSW/Victorian border to Dinawan substation

A summary of the approximate area of the complete project footprint, the area of the transmission line corridor and the area of access tracks, compounds and other sites for this component is provided in Table 8-1. Also provided are the approximate areas that were surveyed by NOHC archaeologists and RAPs. Pedestrian survey was focused largely on the 200 m transmission line corridor. The areas identified as being surveyed include sections where minor design changes have occurred but where the project footprint is located immediately adjacent to areas physically surveyed and are within the same landform. These are deemed by NOHC to be partially surveyed (refer to Table 8-2).

Overall, the complete project footprint in this component of the project covers approximately 61,436,700 square metres of land. Approximately 66 per cent of the complete footprint has been subject to pedestrian survey by NOHC archaeologists and RAPs. The transmission line corridor represents approximately 77 per cent of the complete project footprint and pedestrian survey has occurred on approximately 78 per cent of the transmission line corridor. Access tracks, compounds and other sites represent approximately 22 per cent of the complete project footprint and pedestrian survey has occurred on approximately 26 per cent of the access tracks and compounds.

The project footprint was broken down into survey units to assist in documenting the pedestrian survey. Survey units are based on property boundaries and daily survey extents. Table 8-2 provides a summary of the Survey Units (SUs) within the NSW/Victorian border to Dinawan substation component of the project footprint including the property holding, landform, land use, SU dimensions and representative GSV and GSE, and the effective coverage area in square metres and as a percentage of total SU area. The location of each SU is illustrated in Figure 8-3. The average GSV for the SUs was 50 per cent and GSE 31 per cent resulting in an average Effective Survey Coverage (ESC) of 17 per cent. The ESC estimates the proportion of the project footprint which provided a net 100 per cent level of ground surface visibility to archaeological surveyors. Thus, 17 per cent of the total surveyed area provided sufficient exposure and visibility to ensure effective coverage to assess for archaeological deposits.

To summarise, while the project footprint contains a diversity of landforms, greater than 90 per cent of representative locations comprise plains, or areas of level to undulating relief. Additionally:

- around seven per cent of landforms are Quaternary alluvial terraces on which erosion and aggradation by channelled and overbank stream is inactive due to a lowered flood level
- less than one per cent are Cenozoic linear sand dunes formed by wind action parallel to the prevailing winds at the time of formation.

In terms of their soil, the vast majority of the representative landscapes (97 per cent) contain vertosols or clay soils which are typical of the duplex soils found in semi-arid and arid areas with the remaining (3 per cent) comprising rudosols or soils with little or no pedologic organisation (refer to Section 5.2.2). Importantly, the former are characterised by high erodibility and are likely to have experienced significant erosion due to the long history of land clearance and sheep grazing across the region.

Table 8-1 Area of project footprint components and areas surveyed by NOHC

Project Impact Area Element	Approx. Area (sq m)	Approx. Area Surveyed (sq m)	% Total Surveyed by NOHC
Complete Project Footprint	61,436,700	40,993,063	66.7
Transmission Line Corridor	47,744,200	37,347,200	78.2
Access Tracks, Compounds and Other Sites	13,692,500	3,645,863	26.6

Table 8-2 Survey coverage – NSW/Victorian border to Dinawan substation

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
MC-SU1	H8 East	Complete	Undulating plain	Grazing	4530	200	906000	40	10	36240	4	VNIW-A-027
MC-SU2	H8 Central	Complete	Undulating plain	Grazing	5102	200	1020400	60	30	183672	18	VNIW-A-03
MC-SU3	H8 West	Complete	Undulating plain	Grazing	2479	200	495800	40	10	19832	4	-
MC-SU4	H12	Not surveyed	Undulating plain	Grazing	2530	200	506000	-	-	-	-	-
MC-SU5	H13	Complete	Undulating plain	Grazing	5825	200	1165000	40	10	46600	4	VNIW-A-0306, VNIW-A-0307
MC-SU6	H16	Complete	Undulating plain	Grazing	3449	200	689800	50	20	68980	10	VNIW-A-0131, VNIW-A-0214
ERC-SU1	H17	Complete	Undulating plain	Grazing	4369	200	873800	50	10	43690	5	VNIW-A-06
ERC-SU2	H20	Complete	Undulating plain	Grazing	1659	200	331800	60	10	19908	6	-
ERC-SU3	H339 East	Complete	Undulating plain	Grazing	3189	200	637800	50	10	31890	5	-
ERC-SU4	H339 Central	Complete	Undulating plain	Cropping	686	200	137200	40	70	38416	28	-

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
ERC-SU5	H339 West	Complete	Undulating plain	Grazing	968	200	193600	40	20	15488	8	VNIW-A-0146, VNIW-A-0175, VNIW-A-0215
ERC-SU6	H341	Partial/ visual	Undulating plain	Grazing	1756	200	351200	-	-	-	-	-
ERC-SU7	H343	Partial/ visual	Undulating plain	Grazing	1814	200	362800	-	-	-	-	-
ERC-SU8	H344	Complete	Undulating plain	Grazing	1234	200	246800	80	20	39488	16	VNIW-A-022, VNIW-A-0168
ERC-SU9	H377	Complete	Undulating plain	Grazing	3239	200	647800	60	30	116604	18	VNIW-A-028
ERC-SU10	H27	Complete	Undulating plain	Grazing	232	200	46400	70	100	32480	70	VNIW-A-0242, VNIW-A-PAD029
ERC-SU11	H32 "Falkiner & Sons"	Complete	Undulating plain	Grazing	4550	200	910000	40	30	74892	6	VNIW-A-0287, VNIW-A-0262, VNIW-A-PAD028
ERC-SU12	H32 "Falkiner & Sons"	Complete	Undulating plain	Grazing	6241	200	1248200	30	20	130152	6	-
ERC-SU13	H32 "Falkiner & Sons" Central West	Complete	Undulating plain	Grazing	10418	200	2003600	40	30	250032	12	VNIW-A-129, VNW-A-0142, VNIW-A-0145, VNIW-A-0149, VNIW-A-0151, VNIW-A-0152, VNW-A-0216, VNIW-A-0217, VNIW-A-PAD01, VNIW-A-PAD02, VNIW-A-PAD03A,

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
												VNIW-A-PAD03B
ERC-SU14	H32 "Falkiner & Sons" West	Complete	Undulating plain	Grazing	9378	200	1845600	40	20	150048	8	VNIW-A-01, VNIW-A-0126, VNIW-A-0144, VNIW-A-0163, VNIW-A-0196, VNIW-A-0197, VNIW-A-PAD04, VNIW-A-PAD05
ERC-SU15	H350	Complete	Undulating plain	Grazing	8903	200	1780600	30	20	106836	6	-
ERC-SU16	H41	Complete	Undulating plain	Grazing	2694	200	538800	10	10	5388	1	-
ERC-SU17	H44	Complete	Undulating plain	Grazing	4149	200	829800	40	20	66384	8	VNIW-A-05, VNIW-A-033, VNIW-A-0140, VNIW-A-0157, VNIW-A-0164, VNIW-A-0178, VNIW-A-0218, VNIW-A-PAD019

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
ERC-SU18	H351 East	Complete	Undulating plain	Grazing	4337	200	867400	60	30	156132	18	VNIW-A-0135, VNIW-A-0143, VNIW-A-0166, VNIW-A-0167, VNIW-A-0219
ERC-SU19	H54A	Complete	Undulating plain	Grazing	149	200	29800	60	30	5364	18	-
ERC-SU20	H54	Complete	Undulating plain	Road and grazing	785	200	157000	10	30	4710	3	-
ERC-SU21	H375	Complete	Undulating plain	Grazing	1039	200	207800	40	20	16624	8	-
ERC-SU22	H351 West	Completed	Undulating plain	Grazing	2744	200	548800	60	80	263424	48	VNIW-A-0303
ERC-SU23	H32 Zara	Complete	Undulating plain	Grazing	6728	200	1345600	40	20	107648	8	-
ERC-SU24	H353	Complete	Undulating plain	Grazing	2302	200	460400	50	10	23020	5	-
ERC-SU25	H354 East	Complete	Undulating plain	Grazing	5127	200	1025400	70	20	143556	14	VNIW-A-0187, VNIW-A-0188, VNIW-A-0189, VNIW-A-0211, VNIW-A-PAD08

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
ERC-SU26	H354 Central	Complete	Undulating plain	Grazing	5875	200	1175000	80	70	658000	56	-
ERC-SU27	H354 West	Complete	Undulating plain	Grazing	930	200	186000	80	70	104160	56	-
ERC-SU28	H355	Partial/ visual	Undulating plain	Grazing	8319	200	1663800	80	20	266208	16	VNIW-A-0138, VNIW-A-0173, VNIW-A-0185, VNIW-A-0186, VNIW-A-0220
ERC-SU29	H360 East	Complete	Flood plain	Grazing	412	200	82400	80	20	13184	16	VNIW-A-0190, VNIW-A-0191, VNIW-A-0192
ERC-SU30	H360 Central	Complete	Undulating plain	Grazing	4209	200	325400	70	30	68334	21	VNI-A-08 VNIW-A-010, VNIW-A-011, VNIW-A-012, VNIW-A-013, VNIW-A-014, VNIW-A-015, VNIW-A-0148, VNIW-A-0221, VNIW-A-0225 VNIW-A-0226, VNIW-A-0227 VNIW-A-

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
												PAD016, VNIW-A-PAD017
ERC-SU31	H360 West	Complete	Undulating plain	Grazing	4238	200	639600	70	30	134316	21	VNIW-A-099
ERC-SU32	H366 East	Not surveyed	Undulating plain	Grazing	15434	200	3086800	-	-	-	-	-
ERC-SU33	H366 West	Not surveyed	Undulating plain	Grazing	8824	200	1764800	-	-	-	-	-
ERC-SU34	H374	Complete	Undulating plain	Grazing	791	200	158200	50	10	7910	5	-
MRC-SU1	H387	Complete	Undulating plain	Grazing	2440	200	488000	70	20	68320	14	-
MRC-SU2	H388	Complete	Undulating plain	Grazing	1691	200	338200	60	20	40584	12	-
MRC-SU3	H201	Complete	Undulating plain	Grazing	1942	200	388400	40	20	31072	8	-

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
MRC-SU4	H401 East	Complete	Undulating plain	Grazing	4913	200	982600	80	30	235824	24	VNIW-A-07, VNIW-A-0172, VNIW-A-PAD06
MRC-SU5	H401 Central	Complete	Dune	Cropping	1343	200	268600	100	70	188020	70	-
MRC-SU6	H401 West	Complete	Undulating plain	Grazing	3394	200	678800	60	20	81456	12	VNIW-A-0210, VNIW-A-017, VNIW-A-057, VNIW-A-058, VNIW-A-0132
MRC-SU7	Crown Land	Complete	Undulating plain & flood plain	Recreation	1279	200	255800	30	10	7674	3	VNIW-A-0255, VNIW-A-0256, VNIW-A-0257, VNIW-A-0258, VNIW-A-0283 VNIW-A-0288 VNIW-A-0289 VNIW-A-0314 VNIW-PAD024
MRC-SU8	H214 North	Complete	Undulating plain & flood plain	Cropping & grazing	3807	200	761400	40	20	60912	8	VNIW-A-0230, VNIW-A-0181, VNIW-A-0231, VNIW-A-0176, VNIW-A-0232, VNIW-A-PAD014
MRC-SU9	H214 Central North	Complete	Undulating plain	Grazing	6192	200	1238400	50	20	123840	10	VNIW-A-0233, VNIW-A-016, VNIW-A-0234, VNIW-A-PAD015

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
MRC-SU10	H214 Central South	Complete	Undulating plain	Cropping	1912	200	382400	10	70	26768	7	VNIW-A-087, VNIW-A-0193
MRC-SU11	H214 South	Complete	Undulating plain & flood plain	Grazing	1930	200	386000	80	50	154400	40	VNIW-A-067, VNIW-A-073, VNIW-A-076, VNIW-A-077, VNIW-A-078, VNIW-A-079, VNIW-A-080, VNIW-A-081, VNIW-A-082, VNIW-A-083, VNIW-A-084, VNIW-A-085, VNIW-A-091, VNIW-A-093, VNIW-A-094, VNIW-A-095, VNIW-A-096, VNIW-A-097, VNIW-A-098, VNIW-A-0235, VNIW-A-0236, VNIW-A-0237, VNIW-A-PAD013
MRC-SU12	H208	Not surveyed	Undulating plain & flood plain	Cropping & grazing	2726	200	545200	-	-	-	-	-

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
MRC-SU13	H217	Complete	Undulating plain & flood plain	Cropping & grazing	3371	200	674200	60	100	404520	60	VNIW-A-0252, VNIW-A-PAD023
MRC-SU14	H219	Not surveyed	Undulating plain	Grazing	3089	200	617800	-	-	-	-	-
MRC-SU15	H223	Complete	Undulating plain	Cropping & grazing	5685	200	1137000	60	10	68220	6	VNIW-A-020, VNIW-A-0259, VNIW-A-0260, VNIW-A-0261, VNIW-A-0276, VNIW-A-0284, VNIW-A-0285
MRC-SU16	H258	Complete	Undulating plain & flood plain	Cropping & grazing	2282	200	456400	0	0	0	0	-
MRC-SU17	H253	Complete	Undulating plain & flood plain	Grazing	1370	200	274000	80	30	65760	24	-
MRC-SU18	H246	Complete	Undulating plain	Cropping & grazing	4340	200	868000	30	70	182280	21	-
MRC-SU19	H278	Not surveyed	Undulating plain	Grazing	1814	200	362800	-	-	-	-	-
MRC-SU20	H283	Complete	Flood plain	Grazing	926	200	185200	0	0	0	0	-
MRC-SU21	H287	Not surveyed	Undulating plain	Grazing	2489	200	497800	-	-	-	-	-

Survey unit*	Property holding	Survey Status	Landform	Land Use	Survey unit length (m)	Survey unit width (m)	Survey unit area (sq m)	Visibility (%)	Exposure (%)	Effective coverage area (sq m)§	Effective coverage (%)¶	Aboriginal Sites
MRC-SU22	H328A	Not surveyed	Undulating plain	Grazing	1749	200	349800	-	-	-	-	-
MRC-SU23	H286	Not surveyed	Undulating plain	Grazing	714	200	142800	-	-	-	-	-
MRC-SU24	H307 North	Complete	Flood plain	Grazing	1677	200	335400	100	50	167700	50	-
MRC-SU25	H307 Central North	Complete	Undulating plain & flood plain	Cropping & Grazing	2653	200	530600	40	10	21224	4	-
MRC-SU26	H307 Central	Complete	Undulating plain & flood plain	Cropping & Grazing	1714	200	342800	50	50	85700	25	-
MRC-SU27	H307 Central South	Complete	Undulating plain	Cropping & Grazing	2147	200	429400	20	100	85880	20	-
MRC-SU28	H307 South	Complete	Undulating plain & flood plain	Cropping & Grazing	2574	200	514800	0	10	0	0	-

*MRC = Murrumbidgee River Council Area; ERC = Edward River Council area; MRC = Murray River Council area.

§Effective coverage area (sq m) = survey unit area x visibility x exposure

¶Effective Coverage (%) = effective coverage area /survey unit area x 100

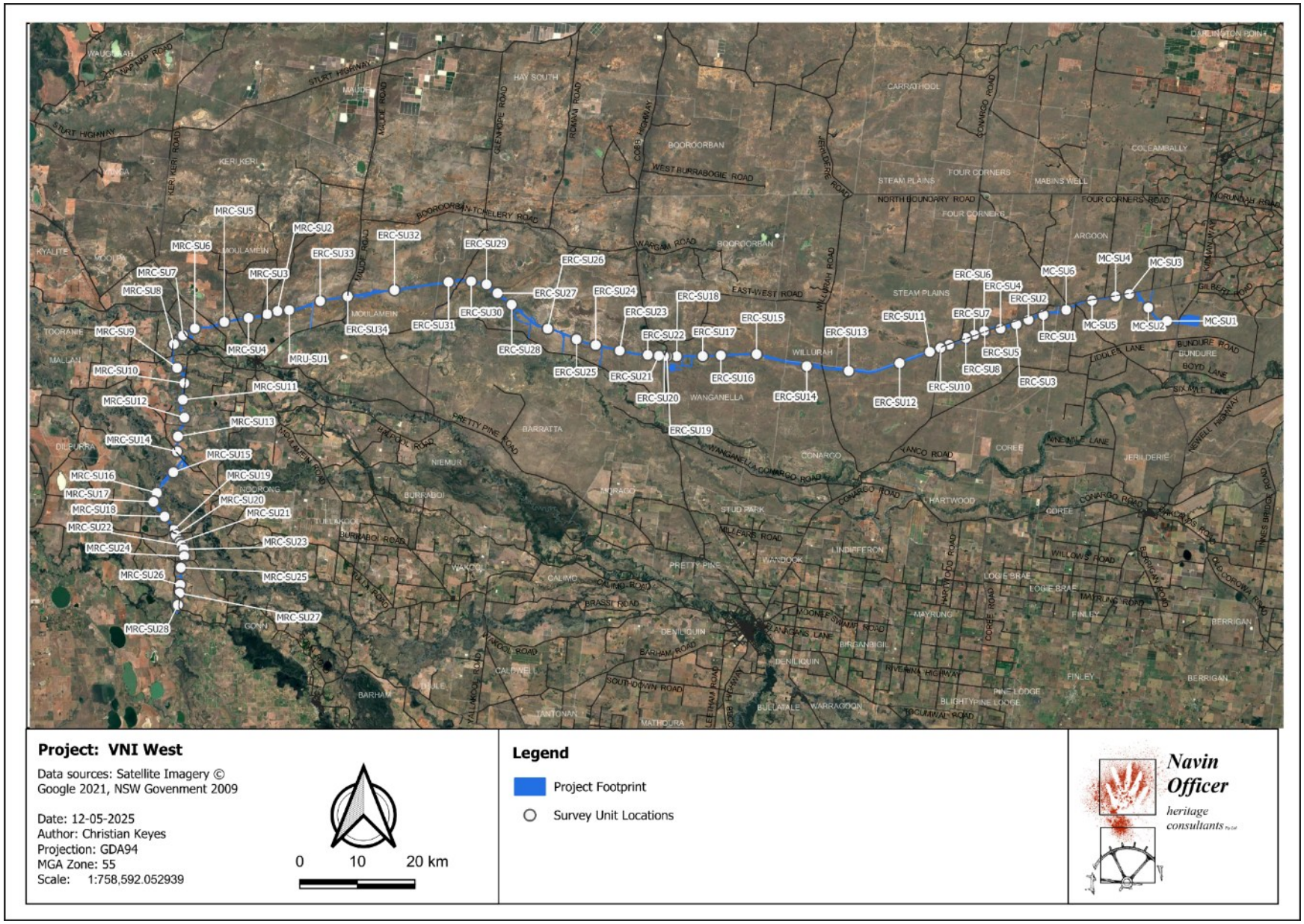


Figure 8-3 Survey units – NSW/Victorian border to Dinawan substation

8.2.3 Network augmentation works

A total of 100 per cent of the surveyed ground area was inspected during the survey, with 15 per cent providing useable archaeological exposures. Table 8-3 summarises estimates for the degree to which separate landforms within the project footprint were examined and also indicates the ground surface exposure incidence and average ground visibility present in each case. Figure 8-4 depicts the survey units recorded for the field survey.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the Effective Survey Coverage (ESC) was 9.5 per cent of the total surveyed area. The ESC attempts to provide an estimate of the proportion of the proposal project footprint that provided a net 100 per cent level of ground surface visibility to archaeological surveyors.

Table 8-3 Survey coverage across the project footprint – Network augmentation works

Survey Unit	Landform	Survey unit area (m^2)	Visibility (%)	Exposure (%)	Effective coverage area (m^2)*	Effective coverage (%)§
W-SU01	Plain	727,617	0	0	0	0
W-SU02	Slope	857,144	30	5	12858	2
W-SU03	Plain	789,132	90	80	568175	72
W-SU04	Plain	4,423,137	5	5	11058	0
VNI-NA01	Plain	256,647	30	10	7699	3
VNI-NA02	Plain	162,915	60	50	48874	30
VNI-NA03	Plain	254,287	50	50	63571	25

*Effective coverage area = survey unit area x visibility (%) x exposure (%)

§Effective coverage (%) = effective coverage / survey unit area x 100

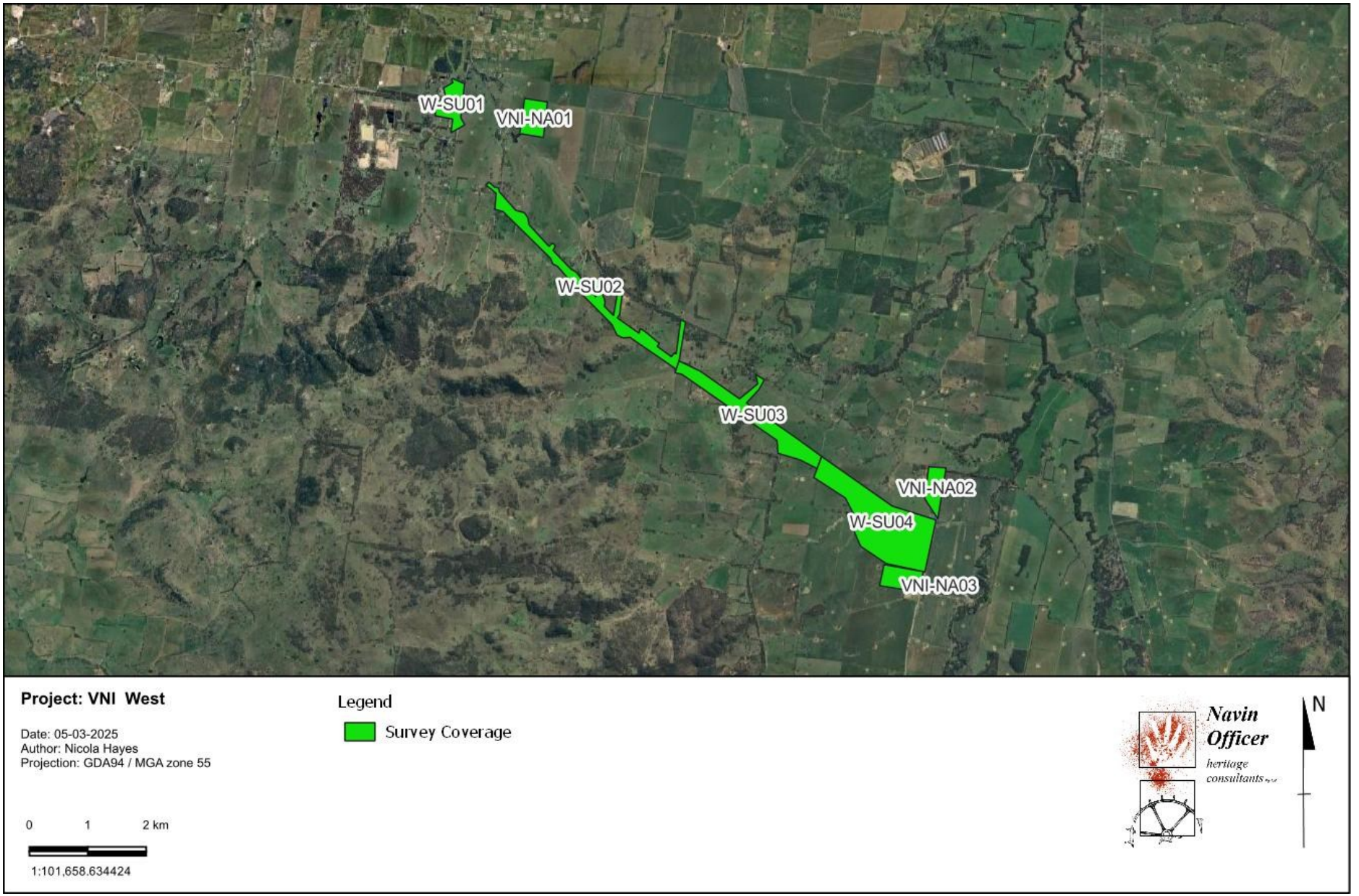


Figure 8-4 Survey units – Network augmentation works

8.3 Aboriginal objects and/or places

This section summarises and analyses the results of field survey across the project footprint. It describes all the Aboriginal objects and PADs recorded. In addition, Aboriginal objects will be placed in the context of their landscape features.

8.3.1 NSW/Victorian border to Dinawan substation

Table 8-4 summarises all newly recorded sites and Figure 8-5 indicates their location within the project footprint. A detailed list of newly recorded Aboriginal sites/objects is provided in Appendix 3.

A total of 146 new Aboriginal sites were recorded in the project footprint. Figure 8-6 provides a summary of the types of sites recorded in the project footprint. Forty-nine per cent of new sites comprise exposed hearths or clay heat retainers. The next most common site is isolated finds (24.8 per cent), and these were mostly flakes made using silcrete, with a small number fashioned from quartz, volcanic rock or mudstone. Rarer artefact types comprise cores and grinding stones. Modified trees were the third most common site (9.0 per cent), followed by artefact scatters (6.9 per cent).

Rare site types are earth mounds (3.4 per cent of site types), artefacts associated with hearths/heat retainers (2.1 per cent), shell middens which were in all instances associated with hearths/heat retainers (1.4 per cent), earth mounds associated with hearths/heat retainers (2.1 per cent), earth mounds associated with hearths/heat retainers and artefacts (0.7 per cent), a hearth/heat retainer associated with shell and an artefact (0.7 per cent) and a cultural resources site (less than 0.7 per cent).

Table 8-4 also summarises the landform, soil type and land use associated with each site to provide a context for them: 62.1 per cent of sites are located on undulating plains, 37.2 per cent in flood plain areas and less than 1 per cent (0.7 per cent) on dunes. Furthermore, 83.4 per cent of sites are contained within vertosols, about 15.96 per cent in rudosols and 0.7 per cent with calcarosol soils.

Figure 8-7 summarises the proportion of new sites recorded according to land use: 60.7 per cent of sites are located in areas used for grazing, dropping to 20.7 per cent on agricultural land containing a regrowth woodland, 6.9 per cent were exposed on dirt roads on grazing land and 2.8 per cent on dirt roads in cropped areas, 4.1 per cent are located on a dirt road in a Crown Land recreation area and 0.7 per cent on Crown Land recreation area away from a dirt road. Finally, 1.4 per cent of sites are associated with conservation area along creeks on agricultural land, 1.4 per cent on land used for growing crops (ploughed land) and a further 1.4 per cent associated with sediments exposed on the banks of an irrigation channel on grazing land.

Clusters of different site types within the landscape can reflect the use of resources by Aboriginal people in the past. In examining the recorded objects/sites, the most common site type (hearth/heat retainers) is found across the entire project footprint, although, such sites are clearly more common and somewhat more clustered in areas such as a sandy woodland northeast of Moulamein and near the Edward, Niemar and Wakool Rivers south of Moulamein. Isolated finds and artefact scatters, however, are much more commonly found on the eastern section of the project footprint in the open salt bush/scrub and grasslands of the Hay Plain. Modified trees are mostly found on the Hay Plain in the east-central part of the project footprint, northeast of Moulamein, and are perhaps counterintuitively less common in the southern section with its large number of creeks and rivers.

The best explanation for these patterns is likely to be the substantial disturbance and modification of the landscape that has occurred since European settlement of the region rather than Aboriginal resource use patterns. Along the creeks and rivers in the southern part of the project footprint large trees have been cleared and many of the agricultural fields have been levelled and ploughed for cultivating irrigated crops. On the central and eastern project footprint in the open Hay Plain, older trees are more common as they have been retained along creeks, although, there are few creeks in this section. These areas are also mostly used for grazing sheep and cattle rather than cropping and are comparatively less disturbed. Finally, across most of the project footprint duplex soils (vertosols) prevail and these are highly erodible and have been subject to substantial erosion over a long period.

Table 8-4 Newly recorded Aboriginal sites – NSW/Victorian border to Dinawan substation

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-03	Murrumbidgee	Griffith	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-05	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD019
VNIW-A-06	Edward River	Cummeragunja	Cultural resource site	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	-
VNIW-A-017	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-020	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-022	Edward River	Griffith	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-027	Murrumbidgee	Cummeragunja	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-028	Edward River	Griffith	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	-
VNIW-A-067	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-073	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-076	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-077	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-078	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-079	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-080	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-081	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-082	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-083	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-084	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-085	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-086	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	-
VNIW-A-087	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Irrigation Channel / Grazing	-
VNWI-A-092	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-093	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-094	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-095	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-096	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-097	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-098	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD013
VNIW-A-099	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Grazing	-
VNIW-A-0108	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD014
VNIW-A-0126	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0129	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD03B
VNIW-A-0132	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Calcarosol	Dirt Road & Grazing	-
VNIW-A-0135	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0140	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD019
VNIW-A-0142	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0143	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0144	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Grazing	-
VNIW-A-0145	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD03A
VNIW-A-0146	Edward River	Cummeragunja	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD09
VNIW-A-0148	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0149	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0152	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0157	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD019
VNIW-A-0158	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD012

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0163	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD05
VNIW-A-0168	Edward River	Griffith	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0172	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD06
VNIW-A-0173	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0175	Edward River	Cummeragunja	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0176	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road / Grazing	-
VNIW-A-0178	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD019
VNIW-A-0179	Edward River	Griffith	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0185	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0186	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0187	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0188	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0189	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0190	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Flood plain	Rudosol	Grazing	-
VNIW-A-0191	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Flood plain	Rudosol	Grazing	-
VNIW-A-0192	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Flood plain	Rudosol	Grazing	-
VNIW-A-0193	Murray River	Wamba Wamba	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Cropping	-
VNIW-A-0196	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0197	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0198	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Dune	Rudosol	Dirt Road & Cropping	VNIW-A-PAD07
VNIW-A-0210	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0211	Edward River	Deniliquin	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0214	Murrumbidgee	Griffith	Artefacts, hearths/heat	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD020
VNIW-A-0215	Edward River	Cummeragunja	Artefacts, hearths/heat	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD09
VNIW-A-0216	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD01
VNIW-A-0218	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Irrigation Channel / Grazing	VNIW-A-PAD019
VNIW-A-0220	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0221	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD016
VNIW-A-0222	Edward River	Deniliquin	Earth mounds, hearths/heat	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0223	Edward River	Deniliquin	Earth mounds	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0224	Edward River	Deniliquin	Earth mounds, hearths/heat	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0225	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Dirt Road & Grazing	-
VNIW-A-0226	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	-
VNIW-A-0227	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	-
VNIW-A-0228	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD012
VNIW-A-0229	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD012
VNIW-A-0230	Murray River	Wamba Wamba	Shell midden, hearths/heat	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	-
VNIW-A-0231	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	-

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0232	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD014
VNIW-A-0233	Murray River	Wamba Wamba	Earth mound, hearths/heat	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0234	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD015
VNIW-A-0235	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-0236	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-0237	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	VNIW-A-PAD013
VNIW-A-0238	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0239	Murrumbidgee	Cummeragunja	Modified tree	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0240	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0241	Murray River	Wamba Wamba	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0242	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Rudosol	Dirt Road & Grazing	VNIW-A-PAD029
VNIW-A-0243	Murray River	Wamba Wamba	Earth mound	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0244	Murray River	Wamba Wamba	Earth mound	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0245	Murray River	Wamba Wamba	Earth mound	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Conservation	VNIW-A-PAD021
VNIW-A-0249	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0250	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0251	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0252	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Conservation	-
VNIW-A-0255	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0256	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0257	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0258	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0259	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0260	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0261	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0262	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0269	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	-
VNIW-A-0270	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0271	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0272	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0273	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0274	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Grazing	VNIW-A-PAD022
VNIW-A-0275	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0276	Murray River	Wamba Wamba	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Agriculture / Regrowth Woodland	-

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0277	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Grazing	-
VNIW-A-0278	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Grazing	-
VNIW-A-0279	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Rudosol	Dirt Road & Grazing	
VNIW-A-0280	Murray River	Wamba Wamba	Modified tree	[redacted]	[redacted]	Undulating plain	Rudosol	Cropping	-
VNIW-A-0283	Murray River	Wamba Wamba	Modified tree	[redacted]	[redacted]	Flood plain	Vertosol	Recreation	-
VNIW-A-0284	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0285	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Agriculture / Regrowth Woodland	-
VNIW-A-0286	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Grazing	VNIW-A-PAD027
VNIW-A-0287	Edward River	Deniliquin	Artefacts, hearths/heat	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD028
VNIW-A-0288	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0289	Murray River	Wamba Wamba	Shell middens, hearths/heat	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024
VNIW-A-0290	Edward River	Deniliquin	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD02
VNIW-A-0293	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD016
VNIW-A-0294	Edward River	Deniliquin	Hearth/heat retainers, shell, artefact	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD016
VNIW-A-0299	Edward River	Deniliquin	Hearth/heat retainers, artefact	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0301	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Rudosol	Grazing	VNIW-A-PAD017
VNIW-A-0303	Edward River	Deniliquin	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0304	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-

Site Number	LGA	LALC	Site Type / Feature	Location: Latitude	Location: Longitude	Landform	Soil Type	Land Use	Associated PAD*
VNIW-A-0305	Murray River	Wamba Wamba	Hearth/heat retainers	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD07, - VNIW-A-PAD025
VNIW-A-0306	Murrumbidgee	Griffith	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0307	Murrumbidgee	Griffith	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0308	Murrumbidgee	Griffith	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNIW-A-0309	Edward River	Cummeragunja	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Cropping	-
VNIW-A-0310	Edward River	Cummeragunja	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Cropping	-
VNIW-A-0311	Edward River	Cummeragunja	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Dirt Road & Cropping	-
VNIW-A-0312	Edward River	Deniliquin	Isolated find	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	VNIW-A-PAD019
VNIW-A-0313	Murray River	Wamba Wamba	Artefact scatter	[redacted]	[redacted]	Undulating plain	Vertosol	Grazing	-
VNW-A-0314	Murray River	Wamba Wamba	Earth mound	[redacted]	[redacted]	Flood plain	Vertosol	Dirt Road & Recreation	VNIW-A-PAD024

*An explanation of why each PAD was identified is provided in Section 8.4.1

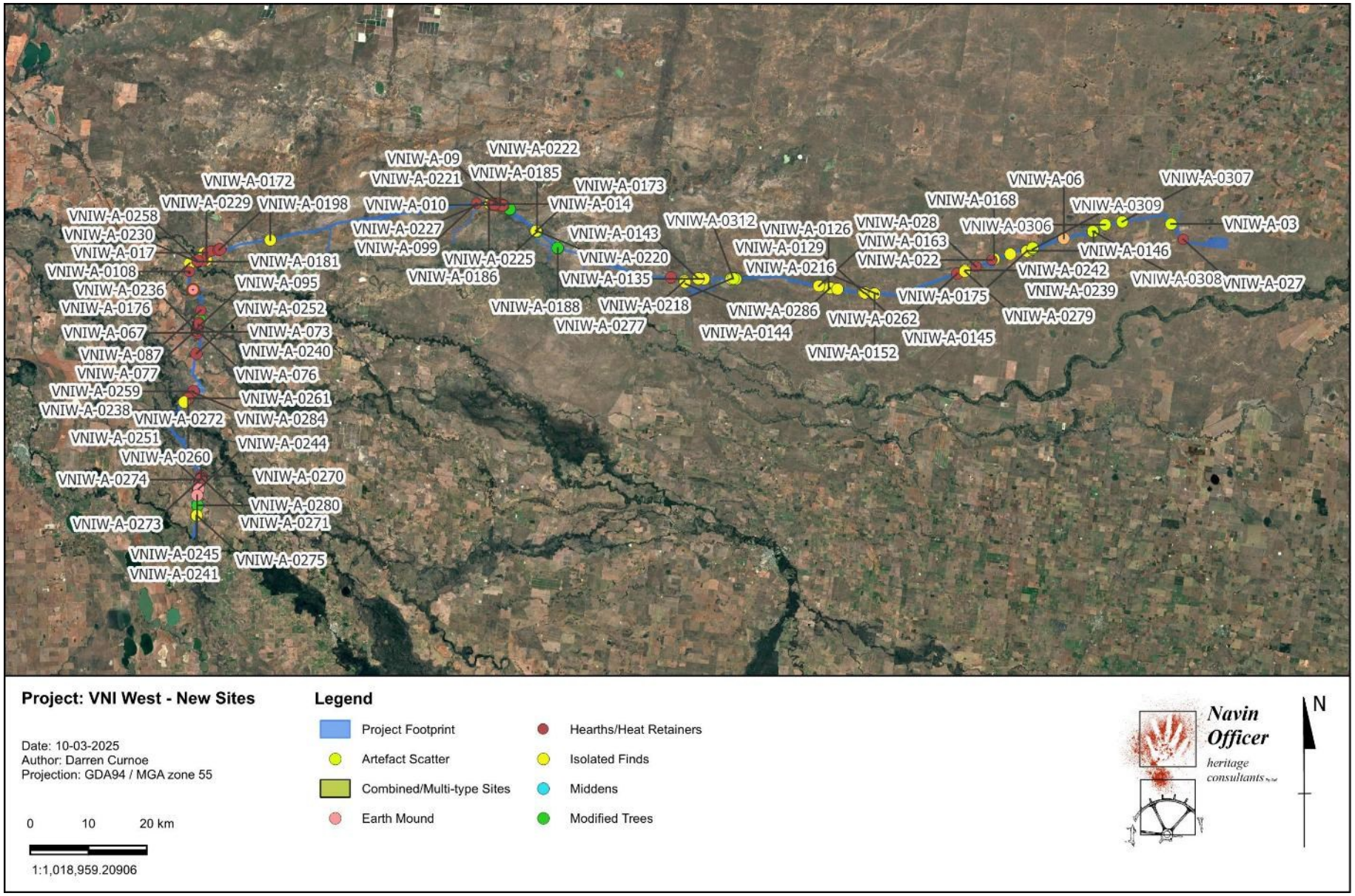


Figure 8-5 New Aboriginal objects/sites within the project footprint – NSW/Victorian border to Dinawan substation

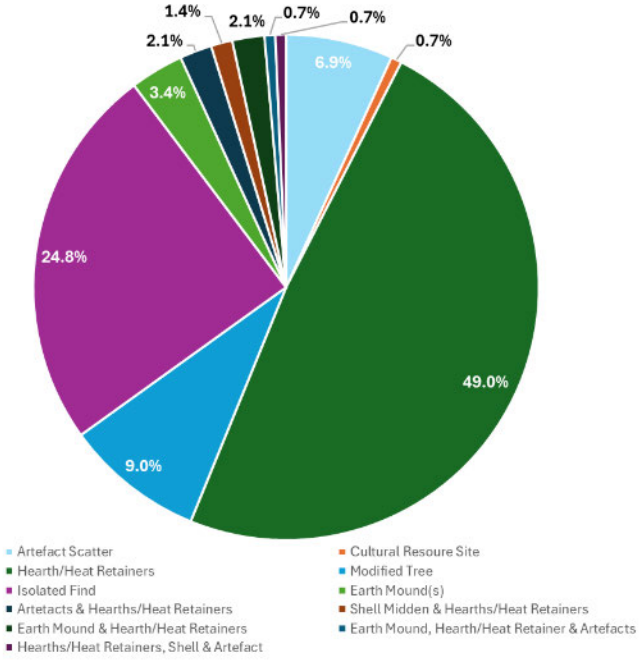


Figure 8-6 Summary of new Aboriginal objects/sites by type

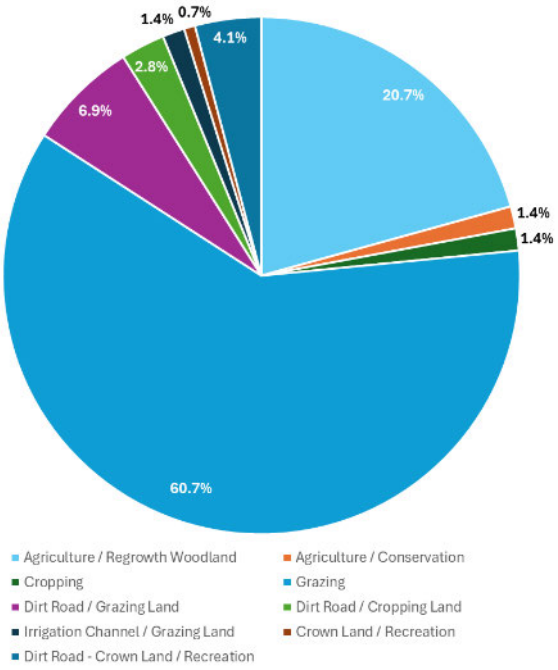


Figure 8-7 Summary of land use associated with the new Aboriginal objects/sites

Artefacts are likely to be sitting on the surface long after topsoils have blown away and will have themselves be transported by water or moved by livestock or vehicles on unsealed road and thus could be located far from their original burial location.

In addition, 26 areas of PAD were defined and 14 of them were subject to text excavations. These are described and the results of testing provided in section 8.4.

Table 8-5 Potential Archaeological Deposits (PADs) totally or partially within the project footprint – NSW/Victorian border to Dinawan substation*

Site Number	LGA	LALC	Area (sq m)	Location: Latitude	Location: Longitude	Associated Sites
VNIW-A-PAD01	Edward River	Deniliquin	1662	[redacted]	[redacted]	VNIW-A-0216
VNIW-A-PAD02	Edward River	Deniliquin	9,778	[redacted]	[redacted]	VNIW-A-0151, VNIW-A-0171
VNIW-A-PAD03A	Edward River	Deniliquin	10095	[redacted]	[redacted]	VNIW-A-0145
VNIW-A-PAD03B	Edward River	Deniliquin	6202	[redacted]	[redacted]	VNIW-A-0129
VNIW-A-PAD05	Edward River	Deniliquin	1421	[redacted]	[redacted]	VNIW-A-0163
VNIW-A-PAD06	Edward River	Deniliquin	46289	[redacted]	[redacted]	VNIW-A-0172
VNIW-A-PAD07	Edward River	Deniliquin	974	[redacted]	[redacted]	VNIW-A-0198
VNIW-A-PAD08	Edward River	Deniliquin	30806	[redacted]	[redacted]	-
VNIW-A-PAD09	Edward River	Cummeragunja	11408	[redacted]	[redacted]	VNIW-A-0146, VNIW-A-0175, VNIW-A-0215
VNIW-A-PAD012	Murray River	Wamba Wamba	657909	[redacted]	[redacted]	VNIW-A-0158, VNIW-A-0228, VNIW-A-0229
VNIW-A-PAD013	Murray River	Wamba Wamba	1768584	[redacted]	[redacted]	VNIW-A-067, VNIW-A-073, VNIW-A-076, VNIW-A-077, VNIW-A-078, VNIW-A-079, VNIW-A-080, VNIW-A-081, VNIW-A-082, VNIW-A-083, VNIW-A-084, VNIW-A-085, VNIW-A-091, V VNIW-A-093, VNIW-A-094, VNIW-A-095, VNIW-A-096, VNIW-A-097, VNIW-A-098, VNIW-A-0235, VNIW-A-0236, VNIW-A-0237
VNIW-A-PAD015	Edwad River		178460	[redacted]	[redacted]	VNIW-A-0234
VNIW-A-PAD014	Murray River	Wamba Wamba	29006	[redacted]	[redacted]	VNIW-A-0232
VNIW-A-PAD016	Edward River	Deniliquin	363070	[redacted]	[redacted]	VNIW-A-0221
VNIW-A-PAD017	Edward River	Deniliquin	388615	[redacted]	[redacted]	VNIW-A-0148, VNIW-A-0222, VNIW-A-0223, VNIW-A-0224

Site Number	LGA	LALC	Area (sq m)	Location: Latitude	Location: Longitude	Associated Sites
VNIW-A-PAD019	Edward River	Deniliquin	195861	[redacted]	[redacted]	VNIW-A-05, VNIW-A-0140, VNIW-A-0157, VNIW-A-0178, VNIW-A-0218
VNIW-A-PAD020	Murrumbidgee	Griffith	1611	[redacted]	[redacted]	VNIW-A-0214
VNIW-A-PAD021	Murray River	Wamba Wamba	77462	[redacted]	[redacted]	VNIW-A-0246
VNIW-A-PAD022	Murray River	Wamba Wamba	1932761	[redacted]	[redacted]	VNIW-A-0243, VNIW-A-0244, VNIW-A-0249, VNIW-A-0250, VNIW-A-0251, VNIW-A-0270, VNIW-A-0271, VNIW-A-0272, VNIW-A-0273, VNIW-A-0274, VNIW-A-0281
VNIW-A-PAD023	Murray River	Wamba Wamba	279397	[redacted]	[redacted]	-
VNIW-A-PAD024	Murray River	Wamba Wamba	113895	[redacted]	[redacted]	VNIW-A-0255, VNIW-A-0256, VNIW-A-0257, VNIW-A-0258, VNIW-A-0288, VNIW-A-0289
VNIW-A-PAD025	Murray River	Wamba Wamba	289762	[redacted]	[redacted]	-
VNIW-A-PAD026	Edward River	Deniliquin	897064	[redacted]	[redacted]	-
VNIW-A-PAD027	Edward River	Deniliquin	33189	[redacted]	[redacted]	VNIW-A-0286
VNIW-A-PAD028	Edward River	Deniliquin	77241	[redacted]	[redacted]	VNIW-A-0287
VNIW-A-PAD029	Edward River	Deniliquin	30841	[redacted]	[redacted]	VNIW-A-0242

*VNIW-A-PAD04 was reassessed as being a natural feature; VNIW-A-PAD010 and VNIW-A-PAD018 lie outside of the project footprint; and site number VNIW-A-PAD011 was not allocated to a site.



Figure 8-8 Potential archaeological deposits (PADs) within the project footprint – NSW/Victorian border to Dinawan substation

8.3.2 Network augmentation works

A total of three new Aboriginal sites, both artefact scatters, were recorded in the project footprint. In addition, one area of PAD was defined (refer to Table 8-6 and Figure 8-9). Full descriptions of all sites are provided in Appendix 3.

Table 8-6 Aboriginal sites and areas of archaeological potential recorded during archaeological survey – Network augmentation works

Site Number	Site Type(s)	Latitude	Longitude	Landform	Soil Type	Land Use	Associated PAD*
NA-A-01	Artefact scatter	[redacted]	[redacted]	Flat plain	Gravelly sand	Grazing	NA-PAD-01
NA-A-02	Artefact scatter	[redacted]	[redacted]	Plain	Gravelly sand	Grazing	NA-PAD-01
NA-A-03	Artefact scatter	[redacted]	[redacted]	Plain	Gravelly silt	Ploughed	-
NA-PAD-01	PAD	[redacted]	[redacted]	Flat plain	Gravelly sand	Grazing	-

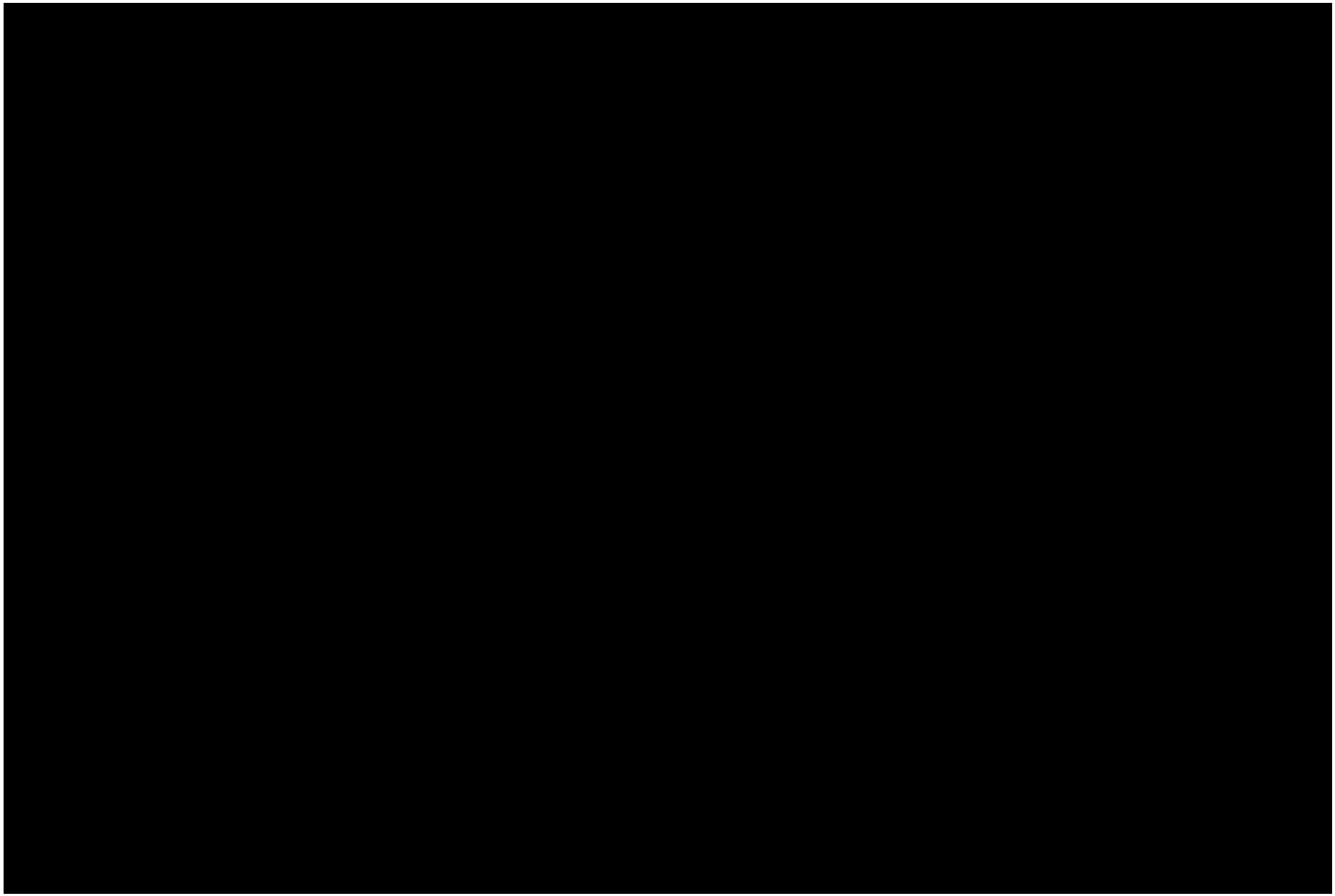


Figure 8-9 Aboriginal sites and areas of archaeological potential within the project footprint – Network augmentation works

8.4 Archaeological test excavation

8.4.1 Investigation of PADs

A total of 26 PADs were identified in the NSW/Victoria border to Dinawan substation section of the project footprint (refer to Table 8-5). Fourteen (56 per cent) of them were subject to further investigation including subsurface text excavations. The remainder of the PADs were not available for testing either because they comprise dunes (which may not be tested prior to project approval: refer to DECCW 2010b) or access approval for testing had not been provided by the proponent. Sediment descriptions and section profiles for all test pits in the PADs subject to test excavation are provided in Appendix 4.

Soil colours were identified using the Munsell soil colour system and soil types or textures identified using the “ribboning technique” (DPIE 2014). The semi-arid zone including much of the Riverina comprises duplex soils and these comprise a clear texture contrast between A Horizon (non-clay) soils and hard setting B Horizon (clay) soils (Prescott 1931; Krull et al. 2006). Australia’s soils are known to be very old with soil formation rates in semi-arid and arid Australia being very low (Stockman et al. 2014). Therefore, the B Horizon clays of the semi-arid Riverina predate the occupation of the area by Aboriginal people and Aboriginal objects will not occur in them unless disturbed by human activity.

The aims of the sub-surface testing were to:

1) Assess the extent of any in situ topsoil with archaeological potential at the PAD,
2) Understand the recent environmental history of the location and its impact on the PAD,
3) Assess the overall archaeological potential and scientific significance of the PAD, and
4) Determine the spatial boundaries of the remaining PAD post-testing.

8.4.1.1 VNIW-A-PAD01

VNIW-A-PAD01 (refer to Figure 8-10 and Figure 8-11) was identified during field survey owing to its proximity to several surface finds which together form an artefact scatter (VNIW-A-0216), its proximity to Delta Creek, and the presence of surface exposures of possible A horizon soils. Subsurface testing of PAD01 was undertaken on 9 and 10 September 2024 and consisted of the excavation of 500 millimetres x 500 millimetres test pits within two transects (refer to Figure 8-10). The first transect was oriented along the longest (north-south) axis of the PAD and contained eight test pits spaced 20 metres apart (refer to Figure 8-10). The second transect was oriented along the widest (east-west) extent of the recorded PAD and contained six pits spaced 20 metres apart.



Figure 8-10 VNIW-A-PAD01 and VNIW-A-PAD02– boundaries and test pits



Figure 8-11 Landscape surrounding VNIW-A-PAD01



Figure 8-12 Test Pit 1 of VNIW-A-PAD01

8.4.1.1.1 Landscape and land use

PAD01 is located on a flat treeless plain 50 metres west a non-perennial waterway (Delta Creek). The soil type is a vertosol and the vegetation type Dillon bush (nitre) shrubland of the semi-arid and arid zone. The area has historically been used for sheep grazing and is currently used for his activity.

8.4.1.1.2 Disturbance and soils

The flatness of the landscape surrounding PAD01 and its extensive coverage by vegetation means the amount of erosion from historic agricultural activities is visually difficult to assess. Isolated small exposures of clay (scalds) showing signs of aeolian erosion, water surface transportation and livestock

impacts occur in the landscape. Soil characteristics for PAD01 are summarised in Table 8-7 and soil textures by excavation spit are summarised in Table 8-8.

Across the 13 test pits, 47 per cent of Spit 1 soils comprised a non-clay (A horizon) soil with the remainder (53 per cent) a clay (sandy clay–heavy clay or B horizon soils). In contrast, the Spit 2 soils were entirely clay. In total, about 77 per cent of all the excavated spits contained a clay soil and this suggests extensive long-term topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 2.5YR and 5YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-7).

Table 8-7 VNIW-A-PAD01 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 140 mm
	Munsell: 2.5YR 5/3
	Description: Present in a single pit - light sandy clay loam or sandy clay loam. Few grass roots and no bioturbation.
A3 Horizon	Depth: 70–140 mm
	Munsell: 2.5YR 3/1, 3/4, 4/4, 4/6 or 5/4
	Description: Present in three pits - clay loam. Few grass roots and no bioturbation.
B Horizon	Depth: 70–140 mm
	Munsell: 2.5YR 3/2, 4/4, 5/3 and 5YR 4/2 or 5/2
	Description: Present in all pits - sandy clay or medium clay. No grass roots nor bioturbation.

Table 8-8 VNIW-A-PAD01 – summary of soil types by spit

	Spit 1		Spit 2	
	Count	%	Count	%
Light Sandy Clay Loam	1	8	0	0
Sandy Clay Loam	1	8	0	0
Clay Loam	4	31	0	0
Clay	7	53	13	100

8.4.1.1.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD01. Thus, all 13 test pits were archaeologically sterile, and on this basis, PAD01 can be considered of low archaeological potential. Based on the distribution and density of artefacts on the ground surface, site VNIW-A-0216 background scatter cannot be ruled out as the explanation for their occurrence.

8.4.1.2 VNIW-A-PAD02

VNIW-A-PAD02 (refer to Figure 8-10 and Figure 8-13) was identified during field survey owing to its proximity to Delta Creek and PAD01 (110 metres northwest), and the presence of possible A horizon soils exposed in the landscape. Subsurface testing of PAD02 was undertaken on 10–12 September 2024 and consisted of the excavation of 21 test pits measuring 500 millimetres x 500 millimetres within three north-northeast aligned transects placed about 20 metres apart and which followed the long axis of the PAD.

The first transect was the central axis of the PAD and contained ten test pits spaced 20 metres apart (Test Pits 1–10; refer to Figure 8-10 and Figure 8-14). The second and third transects were selected in-field and were placed to avoid areas of surface heavy clay exposure and to test for the possible presence of in situ A horizon soils particularly associated with vegetation.

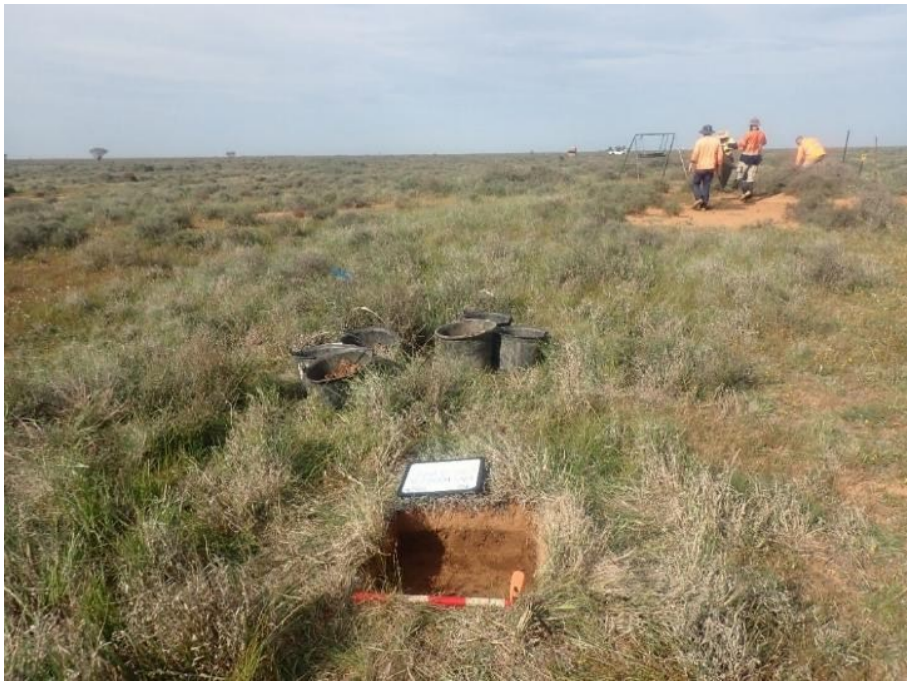


Figure 8-13 Landscape surrounding VNIW-A-PAD02



Figure 8-14 Test Pit 1 of VNIW-A-PAD02

8.4.1.2.1 Landscape and land use

PAD02 is located on flat treeless plain 170 metres west of a non-perennial waterway (Delta Creek). Soil type is a vertosol and vegetation type Dillon bush (nitre) shrubland of the semi-arid and arid zone. The area has historically been used for sheep grazing and is presently used for his activity.

8.4.1.2.2 Disturbance and soils

The flatness of the landscape surrounding PAD02 and its extensive coverage by vegetation means the amount of erosion from historic agricultural activities is visually difficult to assess. Isolated small exposures of unvegetated clay (scalds) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics for PAD02 are summarised in Table 8-9 and soil textures by excavation spit are summarised in Table 8-10.

As found at PAD01, the soils in PAD02 were overwhelmingly clay in their composition with 87 per cent of Spit 1 soils and 100 per cent of Spit 2 soils comprising sandy clay through to heavy clay (refer to Table 8-10). An A1 Horizon soil was found in Spit 1 of two pits (Pit 7 and Pit 13) while an A2 Horizon soil was found in the Spit 1 of a single pits (Pit 12). The remainder comprised surface exposed clays. In total, only 7 per cent of all the excavated spits contained an A Horizon soil and this indicates there has been extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 2.5YR and 5YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-9).

Table 8-9 VNIW-A-PAD02 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 300–900 mm
	Munsell: 2.5YR 3/6 or 5YR 4/3
	Description: Present in two pits - sandy clay loam. Few grass roots and no bioturbation.
A3 Horizon	Depth: 100–170 mm
	Munsell: 2.5YR 4/3
	Description: Present in one pit - clay loam. Few grass roots and no bioturbation.
B Horizon	Depth: 50–200 mm
	Munsell: 2.5YR 3/4, 4/2 or 4/3 and 5YR 3/4, 4/3, 4/6, 5/3 or 5/4
	Description: Present in all pits - sandy clay or medium clay. No grass roots nor bioturbation.

Table 8-10 VNIW-A-PAD02 – summary of soil types by spit

	Spit 1		Spit 2	
	Count	%	Count	%
Sandy Clay Loam	2	9	-	-
Clay Loam	1	4	-	-
Clay	19	87	22	100

8.4.1.2.3 Aboriginal objects

A single Aboriginal object was recovered during excavations at PAD02 (refer to Figure 8-15 and Table 8-11). The object was recovered in the upper 50 millimetre of Spit 1 of Pit 7 within an A Horizon soil. The small quartz flake measures 16.3 millimetres in length, 11.2 millimetres in width and 7.3 millimetres in thickness, and weighs 1.3 grams. There are several modifications which are noteworthy including edge damage and retouch indicating reuse along its distal margin.

The remaining 22 test pits were found to be archaeologically sterile, and on this basis, PAD02 can be considered of low archaeological potential. Based on the distribution and density of the artefacts on the ground surface (sites VNIW-A-0151 and VNIW-A-0171) at PAD02 background scatter cannot be ruled out as the explanation for their occurrence.

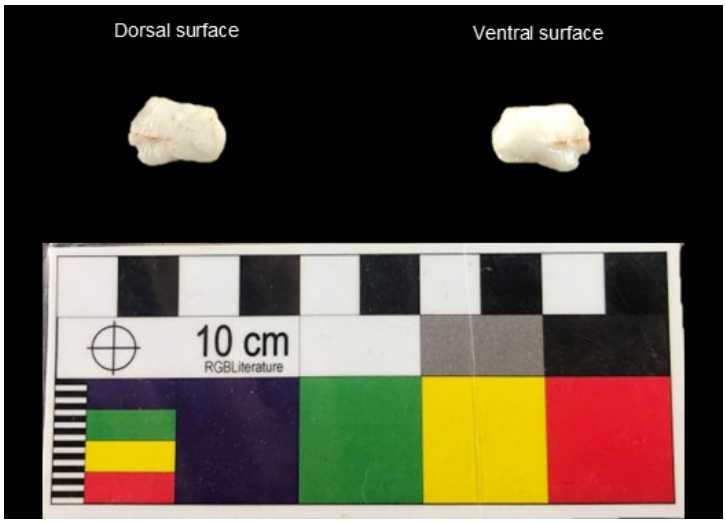


Figure 8-15 Aboriginal object from Pit 7 of VNIW-A-PAD02

Table 8-11 VNIW-A-PAD02 – artefact attributes

Type	Colour / Raw Material	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)	Weight (g)
Complete Flake	White / Milky Quartz	16.3	11.2	7.3	1.3

8.4.1.3 VNIW-A-PAD03A and VNIW-A-PAD03B

VNIW-A-PAD03A was identified during field survey owing to its proximity to several palaeochannels of Delta Creek which today form seasonal swamps, surface scalding suggesting possible A horizon soil exposures and the existence of a surface finds in the landscape (refer to Figure 8-16, Figure 8-17 and Figure 8-18). PAD03B was identified at the time of subsurface testing of PAD03A owing to its proximity to this PAD and its associated landscape attributes (refer to Figure 8-16).

Subsurface testing of PAD03A and PAD03B was undertaken on 12,13 and 16 September 2024 and consisted of the excavation of 500 millimetres x 500 millimetres test pits within five transects: three transects in PAD03A and two in PAD03B (refer to Figure 8-16). Pits were spaced 20 metres apart. The transects were placed in the landscape to sample a variety of contexts such as vegetated versus unvegetated and various micro-topological contexts. The first test pit in each transect was excavated in 50 millimetre spits and subsequent pits in 100 millimetre spits (refer to Figure 8-19 and Figure 8-20).



Figure 8-16 VNIW-A-PAD03A and PAD03B – boundaries, test pits and isolated finds

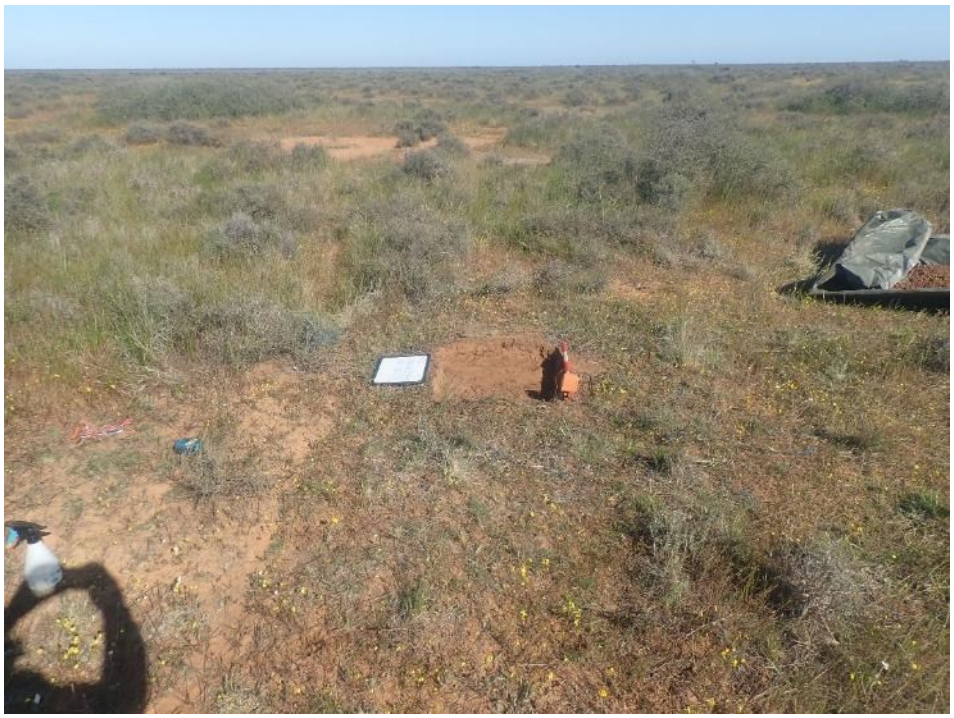


Figure 8-17 Landscape surrounding VNIW-A-PAD03A



Figure 8-18 Landscape surrounding VNIW-A-PAD03B



Figure 8-19 Test Pit 1 of VNIW-A-PAD03A



Figure 8-20 Test Pit 1 of VNIW-A-PAD03B

8.4.1.3.1 Landscape and land use

Both PAD03A and PAD03B are located on a flat treeless plain about 1.3 kilometres north of a non-perennial waterway (Delta Creek). Soil type is a vertosol and the vegetation type is cotton bush open shrubland of the semi-arid (warm) zone. The area has historically been used for sheep grazing and is currently used for his activity.

8.4.1.3.2 Disturbance and soils

The flatness of the landscape surrounding PAD03A and PAD03B and their extensive coverage by vegetation means the amount of erosion from historic agricultural activities is visually difficult to assess. Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics for PAD03A and PAD03B are summarised in Table 8-12. Soil textures by excavation spit are summarised by spit in Table 8-13 and Table 8-14.

Table 8-12 VNIW-A-PAD03A and PAD03B – summary of soil characteristics

Soil Horizon	Description	
	PAD03A	PAD03B
B Horizon	Depth: 100 mm	Depth: 100 mm
	Munsell: 5YR 3/4, 4/3, 4/4, 4/5 or 4/6	Munsell: 5YR 4/3, 4/4 or 5/3
	Description: Present in all pits - sandy clay, medium clay or heavy clay. Few grass roots no bioturbation.	Description: Present in all pits - sandy clay or medium clay. Few grass roots no bioturbation.

Table 8-13 VNIW-A-PAD03A – summary of soil types by spit

	Spit 1		Spit 2	
	Count	%	Count	%
Sandy clay	1	8	10	77
Medium/heavy clay	-	-	2	15

Table 8-14 VNIW-A-PAD03B – summary of soil types by spit

	Spit 1		Spit 2	
	Count	%	Count	%
Sandy Clay	4	40	-	-
Medium/heavy clay	4	40	2	20

All of the pits in PAD03A and PAD03B were comprised entirely of B Horizon soils (clays), ranging from sandy clay to heavy clay. The complete absence of A Horizon soil indicates there has been extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 5YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-12).

8.4.1.3.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD03A and PAD03B. Thus, all 19 test pits were archaeologically sterile, and on this basis, PAD03A and PAD03B can be considered of low archaeological potential. The density of artefacts on the ground surface (sites VNIW-A0129 and VNIW-A-0145) are likely to be representative of background scatter.

8.4.1.4 VNIW-A-PAD05

VNIW-A-PAD05 was identified during field survey owing to its location beside a large (approx. area 122,823 square metres) dry swamp, which is part of a palaeochannel of Delta Creek (part of the Coleambally system: refer to Section 5.1.4), and the presence of a surface find (refer to Figure 8-21 and Figure 8-22).

Subsurface testing of PAD05 was undertaken on 16 September 2024 and consisted of the excavation of seven test pits measuring 500 millimetres x 500 millimetres placed 20 metres apart and which followed the north-south and east-west axes of the PAD (refer to refer to Figure 8-21 and Figure 8-23).

8.4.1.4.1 Landscape and land use

VNIW-A-PAD05 is located on a flat treeless plain about 480 metres north of a non-perennial waterway (Delta Creek). Soil type is a vertosol and the vegetation type cotton bush open shrubland of the semi-arid (warm) zone. The area has historically been used for sheep grazing and is currently used for his activity.



Figure 8-21 VNIW-A-PAD05 – boundaries, test pits and isolated finds

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Figure 8-22 Landscape surrounding VNIW-A-PAD05



Figure 8-23 Test Pit 1 of VNIW-A-PAD05

8.4.1.4.2 Disturbance and soils

The flatness of the landscape surrounding PAD05 and its extensive coverage by vegetation means the amount of erosion from historic agricultural activities is visually difficult to assess. Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics for PAD05 are summarised in Table 8-15. Soil textures by excavation spit are summarised by spit in Table 8-16.

All pits in PAD05 contained only B Horizon soils (clays), ranging from medium clay to heavy clay. The complete absence of A Horizon soil indicates there has been a complete loss of topsoil loss due to aeolian erosion caused by overgrazing and periodic drought.

All soils excavated in the PAD had relatively increased amounts of iron (red oxide) compared with PAD01, PAD02, PAD03A and PAD3B and their colour lay only within the 7.5 YR hues (yellow-red browns) in accordance with the Munsell soil colour system. This would mostly likely be due to compositional differences of the underlying bedrock. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-15).

Table 8-15 VNIW-A-PAD05 – summary of soil characteristics

Soil Horizon	Description
B Horizon	Depth: 100 mm.
	Munsell: 7.5YR 4/2, 4/3, 4/4, or 5/3.
	Description: Present in all pits - medium clay to heavy clay. Few grass roots and no bioturbation.

Table 8-16 VNIW-A-PAD05 – summary of soil types by spit for

	Spit 1		Spit 2	
	Count	%	Count	%
Medium clay	1	13	-	-
Heavy clay	7	87	1	100

8.4.1.4.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD05. Thus, all seven test pits were archaeologically sterile, and on this basis, PAD05 can be considered of low archaeological potential. The density of artefacts on the ground surface (sites VNIW-A0129 and VNIW-A-0145) indicates background scatter cannot be ruled out as the explanation for their occurrence.

8.4.1.5 VNIW-A-PAD06

VNIW-A-PAD06 was identified because it comprises an area of undisturbed land with possible intact A Horizon soils associated with a dry swamp and with an isolated find (VNIW-A-0172) recorded on the surface in an exposed sandy clay soil (refer to Figure 8-24 and Figure 8-25).

Subsurface testing was undertaken on 4 March 2025 and consisted of the excavation of 9 test pits within a two transects, each pit measuring 500 millimetres x 500 millimetres and placed at 20 metre intervals (refer to Figure 8-24 and Figure 8-26).



Figure 8-24 VNIW-A-PAD06 – boundaries and test pits



Figure 8-25 Landscape surrounding VNIW-A-PAD06



Figure 8-26 Test Pit 1 of VNIW-A-PAD06

8.4.1.5.1 Landscape and land use

PAD06 is located beside a dry swamp on a flat plain 980 metres south-east of The Forest Creek. Soil type is a vertosol and the vegetation type black box open woodland wetland with a chenopod understorey. The area has historically been used for sheep grazing and is currently used for his activity.

8.4.1.5.2 Disturbance and soils

The flatness of the landscape surrounding PAD06 and its extensive coverage by vegetation means the amount of erosion from historic agricultural activities is visually difficult to assess. Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics for PAD06 are summarised in Table 8-17. Soil textures by excavation spit are summarised by spit in Table 8-18.

Across the nine test pits, 34 per cent of Spit 1 soils comprised a non-clay soil with the remainder (66 per cent) composed of clay (medium–heavy clay). The soil in Spit 2 of Pit 1 comprised a sandy loam. All other spits contained clay. Thus, 50 per cent of all the excavated spits contained a clay soil and this suggests extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 5YR, 7.5YR and 10YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-17).

Table 8-17 VNIW-A-PAD06 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 50–150 mm.
	Munsell: 10YR 3/3 or 5YR 5/6 and 4/4.
	Description: Present in five pits -dry and unconsolidated loamy sand, sandy loam or light sandy clay loam. Few grass roots and no bioturbation.
B Horizon	Depth: 50 mm–200 mm.
	Munsell: 10YR 3/3 or 7.5YR 3/3.
	Description: Present in all pits (5 pits from Spit 1) - medium or heavy clay. No grass roots nor bioturbation.

Table 8-18 VNIW-A-PAD06 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3		Spit 4	
	Count	%	Count	%	Count	%	Count	%
Loamy sand	2	17	1	8	-	-	-	-
Sandy loam	-	-	-	-	1	8	-	-
Light sandy clay loam	2	17	-	-	-	-	-	-
Medium-heavy clay	5	42	-	-	-		1	8

8.4.1.5.3 Aboriginal objects

No Aboriginal objects were found during test excavations of PAD06. Thus, all nine test pits may be regarded as archaeologically sterile. On this basis, PAD06 is unlikely to contain Aboriginal objects and can be considered to possess low archaeological potential. Regarding the occurrence of the isolated find (VNIW-A-0172), background scatter cannot be ruled out as the best explanation.

8.4.1.6 VNIW-A-PAD07

VNIW-A-PAD07 was identified because it comprises an area of undisturbed land with possible intact A Horizon soils adjacent to VNIW-A-0198 (refer to Figure 8-27 and Figure 8-28).

Subsurface testing of PAD07 was undertaken 5 March 2025 and consisted of the excavation of six test pits within two transects each pit measuring 500 millimetres x 500 millimetres and placed at 10 metre intervals (refer to Figure 8-27 and Figure 8-29).



Figure 8-27 VNIW-A-PAD07 – boundaries and test pits



Figure 8-28 Landscape surrounding VNIW-A-PAD07



Figure 8-29 Test Pit 1 of VNIW-A-PAD07

8.4.1.6.1 Landscape and land use

PAD07 is in a small area of land located beside (west) of a dirt track which adjoins a ploughed field. The area is about 560 metres northeast of a small (unnamed) creek which feeds into Berambong Creek and about 20 metres north of VNIW-A-PAD025 which is a dune area ploughed for cropping. The landform for PAD07 is an undulating plain and has principally been used for sheep grazing. However, a large irrigation channel has also been constructed 10 metres west of the PAD which feeds into a small dam to its north and into Berambong Creek in the south via the small unnamed creek. The soil type is a rudosol and the vegetation type Dillon bush (nitre) shrubland of the semi-arid arid zone.

8.4.1.6.2 Disturbance and soils

Despite is location adjacent to a ploughed field, PAD07 is undisturbed apart from tree removal in the past and land degradation and aeolian erosion precipitated by sheep grazing. Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics for PAD06 are summarised in Table 8-19. Soil textures by excavation spit are summarised by spit in Table 8-20.

Across the nine test pits, all spits contained only clay soils (light–medium clay). All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 7.5YR and 10YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-19).

Table 8-19 VNIW-A-PAD07 – summary of soil characteristics

Soil Horizon	Description
B Horizon	Depth: 100 mm.
	Munsell: 7.5YR 3/2 and 3/4/ or 10YR 2/2 and 3/2.
	Description: Present in all pits - light or medium clay. Few grass roots and no bioturbation.

Table 8-20 VNIW-A-PAD07 – summary of soil types by spit for

	Spit 1		Spit 2	
	Count	%	Count	%
Light clay	4	57	-	-
Medium clay	2	29	1	14

8.4.1.6.3 Aboriginal objects

No Aboriginal objects were found during test excavations of PAD07. Thus, all none test pits may be regarded as archaeologically sterile. On this basis, PAD07 is unlikely to contain Aboriginal objects and can be considered to possess low archaeological potential. On this basis, background scatter cannot be ruled out as the best explanation for their occurrence of the isolated find (VNIW-A-0198).

8.4.1.7 VNIW-A-PAD08

VNI-A-PAD08 was identified during field survey owing to its location within a rudosol containing remnant vegetation and in proximity to palaeochannel branchings of the Coleambally Creek (part of the Kerarbury system: refer to Section 5.1.4; also refer to Figure 8-30 and Figure 8-31). Subsurface testing of PAD08 was undertaken 18–20 September 2024 and consisted of the excavation of 27 test pits within three transects, placed around 20 metres apart, each pit measuring 500 millimetres x 500 millimetres and placed at 20 metre intervals. The first pit in each transect (Pits 1, 12 and 18; refer to Figure 8-32) were excavated in 50 millimetre spits to an end depth of 400 millimetres (i.e. eight spits in each). The remaining pits were excavated in 100 millimetre spits with three spits excavated in each to an end depth of 300 millimetres. Pits were placed to largely avoid areas disturbed by rabbits (Figure 8-33) and a dry swamp located in the northwest of the PAD.



Figure 8-30 VNIW-A-PAD08 – boundaries and test pits



Figure 8-31 Landscape surrounding VNIW-A-PAD08



Figure 8-32 Test Pit 1 of VNIW-A-PAD08

8.4.1.7.1 Landscape and land use

PAD08 is located on a large dune 140 metres south of a non-perennial waterway (Coleambally Creek). Soil type is a rudosol and the vegetation type mixed: cotton bush open shrubland of the semi-arid (warm) zone, black box open woodland with chenopod understorey and not classified. The area has historically been used for sheep grazing and is presently used for his activity.

8.4.1.7.2 Disturbance and soils

Soil characteristics for PAD08 are summarised in Table 8-21 and soil textures Table 8-22. At least 40 per cent of the PAD has been disturbed in recent decades by rabbits which have created large burrows and soil mounds (refer to Figure 8-33). In addition, localised bioturbation was common with 16 (60 per cent) of test pits showing evidence of bioturbation from tree roots and five (19 per cent) from ant burrowing. Thus, a large proportion of the pits exhibited post-depositional disturbance.

All of the spits in PAD08 except one comprised B Horizon clays, all of which were identified as sandy clay (refer to Table 8-21 and Table 8-22). Only Spit 1 of Pit 2 was composed of an A1 Horizon (clayey sand) with no A2 Horizons present in any pit. Thus, the almost complete absence of A Horizon soil indicates there has been a near complete loss of topsoil loss due to aeolian erosion caused by land degradation from overgrazing and introduced pest species (rabbits) as well as periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 2.5YR and 5YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-21).



Figure 8-33 Active rabbit warren at VNIW-A-PAD08

Table 8-21 VNIW-A-PAD08 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 300-600 mm.
	Munsell: 5YR 4/4.
	Description: Present in a single pit - clayey sand. Few grass roots and no bioturbation.
B Horizon	Depth: 200–500 mm.
	Munsell: 2.5YR 4/4 and 5YR 3/2, 3/4, 4/2, 4/3, 4/4 or 5/4.
	Description: Present in all pits - sandy clay. Frequent grass roots and bioturbation (insect burrows, tree roots) common.

Table 8-22 VNIW-A-PAD08 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3		Spit 4	
	Count	%	Count	%	Count	%	Count	%
Clayey sand	1	1	-	-	-	-	-	-
Sandy clay	26	27	27	29	27	29	3	3
	Spit 5		Spit 6		Spit 7		Spit 8	
	Count	%	Count	%	Count	%	Count	%
Clayey sand	-	-	-	-	-	-	-	-
Sandy clay	3	3	3	3	3	3	3	3

8.4.1.7.3 Aboriginal objects

No Aboriginal objects were found during test excavations of PAD08. Thus, all 27 test pits may be regarded as archaeologically sterile. On this basis, PAD08 is unlikely to contain Aboriginal objects and can be considered to possess low archaeological potential.

8.4.1.8 VNIW-A-PAD09

VNIW-A-PAD09 (refer to Figure 8-34 and Figure 8-35) was identified during field survey owing to its location adjacent to a site containing a small artefact scatter and several disturbed hearth deposits (VNIW-A-0215). PAD09 is located on undisturbed beside a dry swamp within a palaeochannel of Delta Creek (part of the Coleambally system: refer to Section 5.1.4); the creek itself is located about 2 kilometres south of the PAD.

Subsurface testing of PAD09 was undertaken on 26 February 2025 and consisted of the excavation of 12 test pits, each 500 millimetres x 500 millimetres, within two transects (refer to Figure 8-34 and Figure 8-36). The placement of both transects was aimed primarily at testing the spatial extent of VNIW-A-0215 on its western and northern boundaries because its eastern boundary is marked by a ploughed field and southern boundary by two dirt tracks and an irrigation channel.



Figure 8-34 VNIW-A-PAD09 – boundaries and test pits



Figure 8-35 Landscape surrounding VNIW-A-PAD09



Figure 8-36 Test Pit 1 of VNIW-A-PAD09

8.4.1.8.1 Landscape and land use

PAD09 is located in an undisturbed area of land adjacent to two large, ploughed fields, east and south of the PAD, and a dirt track and large irrigation channel in the south. Soil type is a vertosol and the vegetation types are curly windmill grass – spear grass – wallaby grass grassland and not classified. The area has historically been used for sheep grazing and is presently used for his activity.

8.4.1.8.2 Disturbance and soils

The landscape adjacent to the PAD has been disturbed by the leveling and ploughing of fields, excavation of dams, and the construction of several unsealed roads and an irrigation channel. The landscape surrounding PAD09 is a remnant of undisturbed land surrounded by ploughed land areas

and with two dams located immediately north of the PAD (refer to Figure 8-34). It is largely covered by vegetation making erosion difficult to assess. Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape.

Soil characteristics for PAD09 are summarised in Table 8-23 and soil textures (types) in Table 8-24. Across the 12 test pits, only Spit 1 of Pit 12 comprised a non-clay soil with the remainder containing clay (sandy clay or medium clay. In total, about 94 per cent of all the excavated spits contained a clay soil and this suggests extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and were formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues 7.5 YR colour according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content (refer to Table 8-23).

Table 8-23 VNIW-A-PAD09 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 400 mm.
	Munsell: 7.5YR 2.5/2.
	Description: Present in a single pit - sandy clay loam. Few grass roots and some bioturbation from small tree roots.
B Horizon	Depth: 200–500 mm.
	Munsell: 7.5YR 4/3.
	Description: Present in all pits - sandy clay or medium clay. Sparse grass roots and no bioturbation.

Table 8-24 VNIW-A-PAD09 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3		Spit 4	
	Count	%	Count	%	Count	%	Count	%
Sandy clay loam	1	6	-	-	-	-	-	-
Sandy clay	5	29	-	-	-	-	-	-
Medium clay	6	35	3	18	1	6	1	6

8.4.1.8.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD09. Thus, all 12 test pits were archaeologically sterile, and on this basis, PAD09 can be considered of low archaeological potential. Test excavations thus indicate site VNIW-A-0215 is no larger than its present boundaries would suggest.

8.4.1.9 VNIW-A-PAD012

VNIW-A-PAD012 is a large PAD identified during field survey and GIS mapping owing to its location beside Berambong Creek, and within a broader landscape containing hearths and isolated finds (i.e. VNIW-A-0158, VNIW-A-0228 and VNIW-A-0229) and possible in situ A Horizon soils (refer to Figure 8-37 and Figure 8-38). It is located about 2 kilometres southwest of PAD07 and PAD025. A proposed compound area lies within the southern half of the PAD and this area was the subject of test excavations (refer to Figure 8-37 and Figure 8-39).

Subsurface testing of PAD012 was undertaken on 2–3 March 2024 and consisted of the excavation of 22 pits each 500 millimetres x 500 millimetres within three transects (refer to Figure 8-37). The first

transect was oriented in a north-south direction and contained six pits, the second transect was in the east-west direction and contained eight pits, and the third transect was plotted as 45 degrees to the first and second transects and contained seven pits. Each pit was placed 50 metres apart.



Figure 8-37 VNIW-A-PAD012 – boundaries and test pits

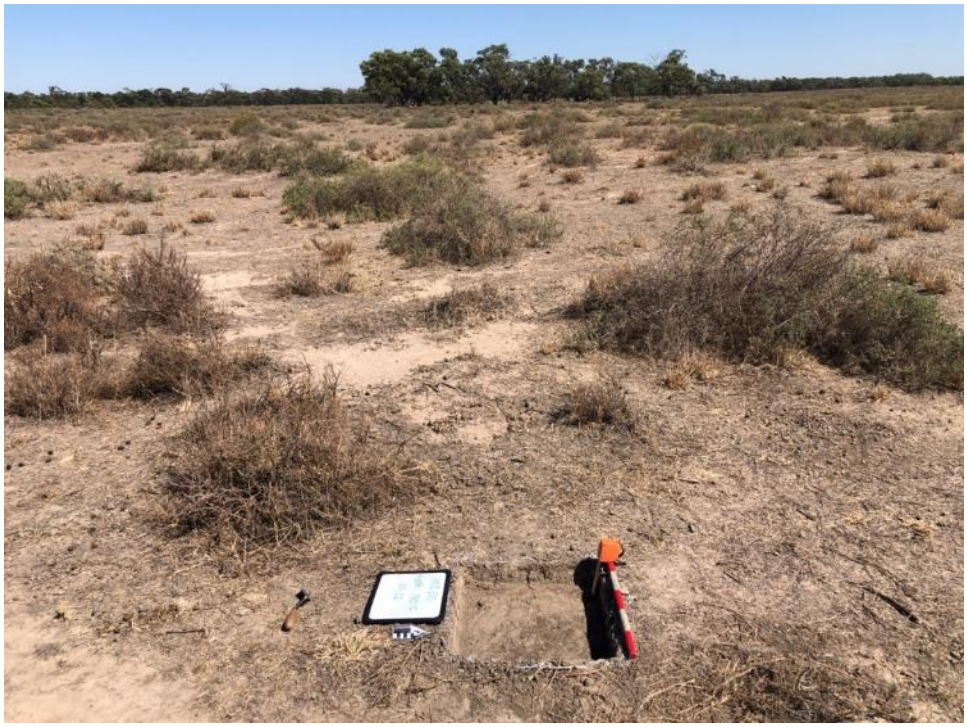


Figure 8-38 Landscape surrounding VNIW-A-PAD012



Figure 8-39 Test Pit 1 of VNIW-A-PAD012

8.4.1.9.1 Landscape and land use

PAD012 is located on a flat treeless plain surrounded on three sides by Berambong Creek which flows into the Edward River/Kolety about 4.5 kilometres southeast of the PAD. Soil types are partially within a vertosol (most of the PAD) and partially within a rudosol (southwest section) and the vegetation type is Dillon bush (nitre) shrubland of the semi-arid and arid zone. The area has historically been used for sheep grazing and is currently used for this activity.

8.4.1.9.2 Disturbance and soils

The landscape is undisturbed but has been impacted by overgrazing and contains numerous small exposures of clay (pans) with aeolian erosion, water surface transportation of clasts and livestock disturbance. Soil characteristics for PAD012 are summarised in and soil textures in Table 8-26.

Across the 22 test pits, clay soils were present from the ground surface ranging from sandy/light clays to medium-heavy clays. Thus, no A Horizon soils were present at PAD012. As result, apart from Pit 1, where two 50 millimetre spits were excavated, a single 10 millimetre spit was excavated in all pits. In total, 91 per cent of all the excavated spits contained a medium-heavy clay soil and this suggests extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 2.5YR, 5YR and 10YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil due to extensive weathering (refer to Table 8-25).

Table 8-25 VNIW-A-PAD012 – summary of soil characteristics

Soil Horizon	Description
B Horizon	Depth: 100–200 mm.
	Munsell: 5YR 2/2, 7.5YR 4/2, 2.5/2 and 10YR 3/2.
	Description: Present in all pits - sandy/light clay or medium-heavy clay. Few grass roots and no bioturbation.

Table 8-26 VNIW-A-PAD012 – summary of soil types by spit

	Spit 1	
	Count	%
Sandy/light clay	2	9
Medium-heavy clay	21	91

8.4.1.9.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD012. Thus, all 22 test pits were archaeologically sterile, and on this basis, PAD012 can be considered of low archaeological potential.

8.4.1.10 VNIW-A-PAD013

VNIW-A-PAD013 covers a large area of the landscape surrounded on three sides by the Niemur River (refer to Figure 8-40 and Figure 8-41).

Soil is type is a vertosol and the vegetation type mixed: black box – lignum woodland, lignum shrubland wetland and for-rich speargrass – windmill grass – white top grassland. It was identified during field survey and GIS mapping and contains a large number of surface exposed hearth materials (heat retainers) on a flood plain and within an area of regrowth closed woodland. Land use is agricultural activity.

PAD013 is associated with the following hearth/heat retainer sites: VNIW-A-067, VNIW-A-073, VNIW-A-076, VNIW-A-077, VNIW-A-078, VNIW-A-079, VNIW-A-080, VNIW-A-081, VNIW-A-082, VNIW-A-083, VNIW-A-084, VNIW-A-085, VNIW-A-091, VNIW-A-092, VNIW-A-093, VNIW-A-094, VNIW-A-095, VNIW-A-096, VNIW-A-097, VNIW-A-098, VNIW-A-0235, VNIW-A-0237 and VNIW-A-0240. While the area has been subject to occupation by Aboriginal people in the past, land clearance and flooding have resulted in the disturbance of many hearths. This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential.

[redacted]

Figure 8-40 VNIW-A-PAD013 – boundaries



Figure 8-41 Landscape surrounding VNIW-A-PAD013

8.4.1.11 VNIW-A-PAD014

VNIW-A-PAD014 was identified during field survey and GIS mapping owing to its location beside a palaeochannel, approximately 2 kilometres southwest of the Edward River, and within a broader landscape containing large and well -preserved surface exposed hearths, with VNIW-A-0232 10 metres south of its southern corner (refer to Figure 8-42 and Figure 8-43). Soil is vertosol and vegetation type cotton bush open shrubland of the semi-arid (warm) zone and not classified. The PAD is contained within an area of undisturbed landscape beside a ploughed field used for sheep grazing. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-42 VNIW-A-PAD014 – boundaries



Figure 8-43 Landscape adjacent to VNIW-A-PAD014

8.4.1.12 VNIW-A-PAD015

VNIW-A-PAD015 was identified during field survey owing to its location beside two palaeochannels deriving from Yarrein Creek, south of the Edward River, and within a broader landscape containing multiple surface exposed hearth materials on small clay pans (VNIW-A-0234) (refer to Figure 8-44 and Figure 8-45). Soil type is a vertosol and with a mixed vegetation type: curly windmill – speargrass – wallaby grass grassland, blackbox – lignum woodland wetland and river red gum – black box woodland wetland. The area has and continues to be used for sheep grazing. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-44 VNIW-A-PAD015 – boundaries



Figure 8-45 Landscape surrounding VNIW-A-PAD015

8.4.1.13 VNIW-A-PAD016

VNIW-A-PAD016 was identified during field survey 1.2 kilometres northwest of PAD08 and about 42 kilometres northeast of Moulamein (refer to Figure 8-46 and Figure 8-47). The PAD is associated with a site containing several surface exposed heat retainers (VNIW-A-0221) as well as two isolated hearth/heat retainer sites (VNIW-A-0293 and VNIW-A-0294). PAD016 is located 130 metres east of PAD017. Testing was undertaken in the only area in the landscape which contained A Horizon soils with the remainder comprising surface exposed clays.

Subsurface testing of PAD016 was undertaken on 25 February 2025 and consisted of the excavation of four pits measuring 500 millimetres x 500 millimetres on account of the likelihood they contained in situ A Horizon soils (refer to Figure 8-48). Each pit was placed 20 metres apart.



Figure 8-46 VNIW-A-PAD016 – boundaries



Figure 8-47 Landscape surrounding VNIW-A-PAD016



Figure 8-48 Test Pit 1 of VNIW-A-PAD016

8.4.1.13.1 Landscape and land use

PAD016 is located on a flat treeless plain 5.2 kilometres northwest of Coleambally Creek and about 650 metres north of a palaeochannel of the Kerarbury system (refer to Section 5.1.4). Soil is partially vertosol (northern half of the PAD) and partially rudosol (southern half) and the vegetation is mixed: type cotton bush open shrubland of the semi-arid (warm) zone and white Cypress pine open woodland of sand plains. The area has historically been used for sheep grazing and is currently used for his purpose.

8.4.1.13.2 Disturbance and soils

The landscape is undisturbed but has been impacted by overgrazing and contains exposures of small exposures of clay (pans) with aeolian erosion and the water surface transportation of clasts. Soil characteristics for the pits within PAD016 are summarised in Table 8-27 and soil textures in Table 8-28.

Across the four test pits, a consolidated clayey sand was present in all spits. Pits were excavated to their clay base which varied from about 200 mm to 500 mm in depth below ground surface.

All soils contained large amounts of iron (red oxide and yellow oxide) and formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 5YR and 7.5YR according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across pits resulted from differences in iron, organic and water content in the soil (refer to Table 8-28).

8.4.1.13.3 Aboriginal objects

Pit 2 contained a probable in situ hearth as evinced by circular areas of ash and dark soil staining within the pit floor, at the level of approximately 230 millimetres below surface, and evident also in the north section wall (refer to Figure 8-49). The hearth was left in situ, its thickness being >300 millimetres.

Table 8-27 VNIW-A-PAD016 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 200-500 mm.
	Munsell: 5YR 3/3, 4/6 or 5/6 and 7.5YR 4/6
	Description: Present in all pits - clayey sand. Extensive grass roots in upper 300 mm and some insect bioturbation in Pit 1.
B Horizon	Medium-heavy clay base in three of four pits, at depth of 300-800 mm.

Table 8-28 VNIW-A-PAD016 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3		Spit 4	
	Count	%	Count	%	Count	%	Count	%
Clayey sand	4	21	4	21	3	16	1	6
	Spit 5		Spit 6		Spit 7		Spit 8	
	Count	%	Count	%	Count	%	Count	
Clayey sand	1	6	1	6	1	6	1	6
	Spit 9		Spit 10					
	Count	%	Count	%				
Clayey sand	1	6	1	6				

Shell fragments were also recovered during the sieving of the sediments from Pit 3 (refer to Figure 8-50). The sample consists of 27 bivalve fragments, weighing 3.66g in total. The minimum number of individuals for this assemblage is one and the number of identifiable specimens (calculated by counting each individual fragment) is 27.

Few of the fragments possess diagnostic criteria for species identification, however, due to the elongated shape and horizontal striations present on select fragments it is likely that the shell fragments are a species of burrowing freshwater mussel, likely either *Alathyria jacksoni* or *Alathyria condola*. Both species are known to be present in the rivers of the Murray-Darling Basin (Sheldon and McCasker 2020). The shell fragments are highly fragile and are completely bleached white from prolonged sun exposure.

While there is no direct evidence on the shell fragments to suggest human consumption of the molluscs, the fact that the nearest likely source of the species is located many kilometres away from PAD016 implies they were subject to human transportation and likely consumption. Such mussels are known to be a high value food staple in past human subsistence patterns in the broader Riverina region. Jeanette Crew, chairperson of the Yarkuwa Indigenous Knowledge Centre at Deniliquin is quoted as saying “Mussels were highly significant for our people. Not only were they a major food source, their shells were also used as implements for cutting, scooping and fishing, and for ornamental purposes such as necklaces and that sort of thing” (Beemster 2024).

Test excavations confirm that the area of the PAD identified for subsurface testing is a site. Excavations revealed several Aboriginal objects and intact deposits and although the assemblage from test excavations was small and of moderate scientific significance, it is a strong indicator that further excavation is likely to yield more archaeological material. The PAD is also associated with intact hearth/heat retainer sites in the adjacent landscape. Following the results of the test excavation program, there is moderate to high potential to contain subsurface archaeological deposits within areas of remaining A Horizon soils and the site area has been redefined accordingly.

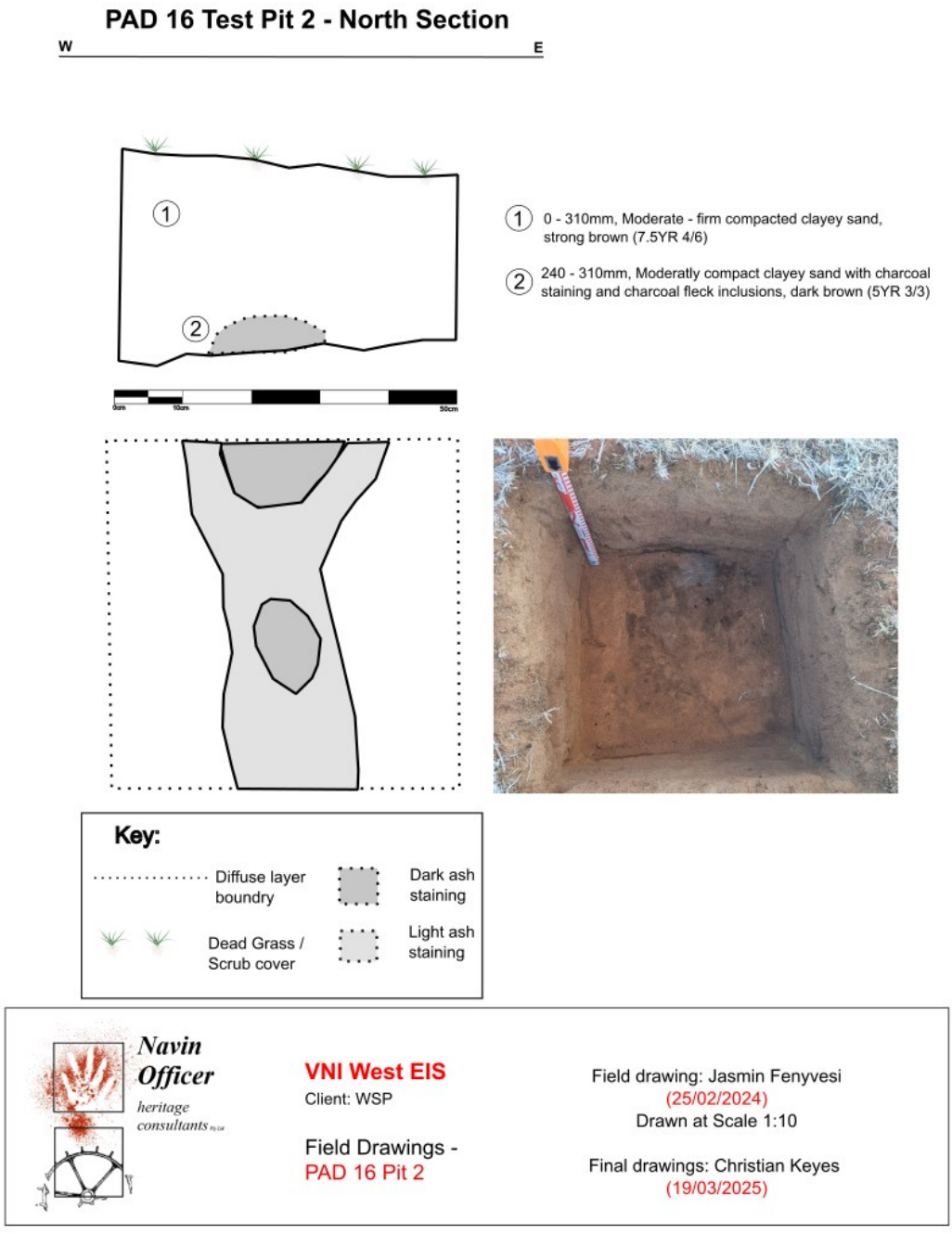


Figure 8-49 Probable hearth feature in Pit 2 of PAD016. Drawing of north section wall (above), drawing of hearth feature in pit floor (below left), and photograph of the pit upon completion of test excavations (below right)



Figure 8-50 Shell fragments recovered from Pit 3 of PAD016

8.4.1.14 VNIW-A-PAD017

VNIW-A-PAD017 was identified during field survey within a rudosol soil about 150 metres west of PAD016 and 42 kilometres northeast of Moulamein (refer to Figure 8-51 and Figure 8-52). The PAD is associated with sites recorded during survey containing earth mounds (VNIW-A-0222, VNIW-A-0223 and VNIW-A-0224), surface exposed hearths/heat retainers (VNIW-A-0229 and VNIW-A-0301) and surface artefacts (VNIW-A-0148).

Subsurface testing of PAD017 was undertaken on 26–27 February 2025 and consisted of the excavation of 500 millimetres x 500 millimetres test pits within six squares in two transects selected on account of the likelihood they contained in situ A Horizon soils and more than 50 metres from the earth mounds in the area (refer to Figure 8-51 and Figure 8-53). Each pit was placed 20 metres apart.



Figure 8-51 VNIW-A-PAD017 – boundaries



Figure 8-52 Landscape surrounding VNIW-A-PAD017



Figure 8-53 Test Pit 1 of VNIW-A-PAD017

8.4.1.14.1 Landscape and land use

PAD017 is located on a flat treeless plain 5.8 kilometres north of Coleambally Creek and about 640 metres north of a palaeochannel of the Kerarbury system (refer to Section 5.1.4). Soil type is a rudosol and the vegetation is mixed: type cotton bush open shrubland of the semi-arid (warm) zone and white Cypress pine open woodland of sand plains. The area has historically been used for sheep grazing and is presently used for his activity.

8.4.1.14.2 Disturbance and soils

The landscape is undisturbed but has been impacted by overgrazing and contains numerous small exposures of clay (pans) with aeolian erosion and water surface transportation of clasts. Soil characteristics from test pits are summarised in Table 8-29 and textures in Table 8-30.

Across the six test pits, sand was present in 98 per cent of spits with a clayey sand present in just a single spit (Spit 7 of Pit 3). Pits were excavated to their clay base which varied from about approximately 500–700 millimetres in depth below surface.

All soils contained large amounts of iron (red oxide and yellow oxide) and were formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 5YR. All soils were uniform in chemistry and weathering and exhibited the same Munsell colour (refer to Table 8-29).

Table 8-29 VNIW-A-PAD017 – summary of soil characteristics

Soil Horizon	Description
A2 Horizon	Depth: 350-600 mm.
	Munsell: 5YR 4/6.
	Description: Present in all pits - sand or clayey sand. Grass roots in all spits and bioturbation (tree roots) in the north wall of a single pit.
A3 Horizon	Depth: 30 mm.
	Munsell: 5YR 4/6.
	Description: in a single pit - clayey sand.

Table 8-30 VNIW-A-PAD017 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3		Spit 4	
	Count	%	Count	%	Count	%	Count	%
Sand	6	14	6	14	6	14	6	14
Clayey sand	-	-	-	-	-	-	-	-
	Spit 5		Spit 6		Spit 7		Spit 8	
	Count	%	Count	%	Count	%	Count	%
Sand	6	14	4	11	2	6	1	2
Clayey sand	-	-	-	-	1	2	-	-

	Spit 9		Spit 10		Spit 11		Spit 12	
	Count	%	Count	%	Count	%	Count	%
Sand	1	2	1	2	1	2	1	2
Clayey sand	-	-	-	-	-	-	-	-

8.4.1.14.3 Aboriginal objects

A single Aboriginal object was recovered during excavations at PAD 17 (refer to Figure 8-54). The object was found within from Spit 5 (400–500 millimetre depth) of Pit 5 within an A Horizon soil. The artefact is a small proximal flake the raw material being milky quartz (refer to Table 8-31). The flake measures 9.28 millimetres in length, 7.3 millimetres in width and 2.37 millimetres in thickness and weighs 0.16 grams. There is a small quantity of cortex (less than 5 per cent) on the distal margin of the dorsal surface.

The PAD is also associated with intact earth mounds, hearth/heat retainer and artefact sites in the landscape adjacent to the test pits. Following the test excavation program, there is moderate to high potential to contain subsurface archaeological deposits within areas of remaining A Horizon soils and the site area has been redefined accordingly.



Figure 8-54 Aboriginal object from Pit 5 of VNIW-A-PAD017

Table 8-31 VNIW-A-PAD017 – artefact attributes

Type	Colour / Raw Material	Maximum Length (mm)	Maximum Width (mm)	Maximum Thickness (mm)	Weight (g)
Proximal Flake	White / Milky Quartz	9.3	7.3	2.4	0.16

8.4.1.15 VNIW-A-PAD019

VNIW-A-PAD019 was identified during field survey within a landscape which contains surface exposed artefacts: sites VNIW-A-05 and VNIW-A-218 (artefact scatters) and VNIW-A-0140 (isolated find) and VNIW-A-0157 (artefact scatter) (refer to Figure 8-55 and Figure 8-56). It is located within a landscape

containing palaeochannels belonging to the Delta Creek network about 10 kilometres northeast of Wanganella. An irrigation channel cuts through the middle of the PAD and has exposed a low-medium density artefact scatter (VNIW-A-0218) on the surface.

Subsurface testing of PAD019 was undertaken on 28 February and 1 March 2025 and consisted of the excavation of 17 test pits each 500 millimetres x 500 millimetres within a single 800 metre long transect along the centre line of the project footprint (refer to refer to Figure 8-56 and Figure 8-57). Three additional test pits (Pits 17–19) were excavated near a large clay pan 20 metres north of the main transect and which is associated with an isolated find recorded during field survey (refer to Figure 8-55). Each pit in the main transect was placed 50 metres apart, while test pits 17–19 were placed 20 metres apart.



Figure 8-55 VNIW-A-PAD019 – boundaries



Figure 8-56 Landscape surrounding VNIW-A-PAD019



Figure 8-57 Test Pit 1 of VNIW-A-PAD019

8.4.1.15.1 Landscape and land use

PAD019 is located on a flat treeless plain approximately 850 metres north of Delta Creek and with a palaeochannel of this creek located around 200 metres to the north of the PAD. Soil type is a vertosol and the vegetation type curly windmill grass – speargrass – wallaby grass grassland. The area has historically been used for sheep grazing and is presently used for his activity.

8.4.1.15.2 Disturbance and soils

The landscape is undisturbed but has been impacted greatly by overgrazing and contains numerous small-medium size exposures of clay (pans) associated with aeolian erosion, the water surface transportation of clasts and livestock damage. Soil characteristics from the test pits are summarised in Table 8-32 and soil textures by excavation spit are summarised in Table 8-33.

Across the 20 test pits, clay soils were present in all pits, from the ground surface to pit base, ranging from sandy/light clays to medium-heavy clays. Thus, no A Horizon soils were present at the areas of PAD019 which were tested. In total, 32 per cent of all the excavated spits contained a medium-heavy clay soil, the remainder being light/sandy clay, and this suggests extensive topsoil loss through aeolian erosion due to overgrazing and periodic drought over a long period of time.

All soils contained large amounts of iron (red oxide and yellow oxide) and were formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 2.5YR and 5YR colour according to the Munsell soil colour system. Variation in the scale of the colour values and hues between spits and across the pits resulted from differences in iron, organic and water content most likely due to extensive weathering (refer to Table 8-33).

Table 8-32 VNIW-A-PAD019 – summary of soil characteristics

Soil Horizon	Description
B Horizon	Depth: 100–200 mm.
	Munsell: 2.5YR 4/4 and 5YR 3/2, 3/4, 4/2, 4/3, 4/4 or 5/4.
	Description: Present in all pits - sandy clay to medium/heavy clay. Frequent grass roots and bioturbation (insect burrows, tree roots) common.

Table 8-33 VNIW-A-PAD019 – summary of soil types by spit

	Spit 1		Spit 2		Spit 3	
	Count	%	Count	%	Count	%
Light/sandy clay	13	52	3	12	1	4
Medium-heavy clay	7	28	1	4	-	-

8.4.1.15.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD019. It is clear that the landscape surrounding PAD019 has been severely impacted by overgrazing and aeolian erosion. Thus, all 19 test pits were archaeologically sterile suggesting that VNIW-A-0218 is likely to be spatially restricted in their extent. The two artefact scatters (VNIW-A-05 and VNIW-A-0157) and isolated find (VNIW-A-0140) may represent either background scatter or surface finds which have be transported through livestock trampling and surface water erosion.

8.4.1.16 VNIW-A-PAD020

VNIW-A-PAD020 was identified during field survey owing to its location adjacent to a small dry swamp and a surface exposed site containing a small number of artefacts and hearth materials (VNIW-A-0214) (refer to Figure 8-58 and Figure 8-59). It is located approximately 19 kilometre west-northwest of the Dinawan Substation and 60 metres north of Delta Creek. Subsurface testing of PAD020 was undertaken on 25 February 2025 and consisted of the excavation of six test pits each 500 millimetres x 500 millimetres within a single transect (refer to Figure 8-61). Each pit was placed 20 metres apart. Two spits of 50 millimetre depth were excavated in Pit 1 and only a single 100 millimetre deep spit was excavated in Pits 2–6 owing to surface clay exposure.



Figure 8-58 VNIW-A-PAD020 – boundaries



Figure 8-59 Landscape surrounding VNIW-A-PAD020



Figure 8-60 Test Pit 1 of VNIW-A-PAD020

8.4.1.16.1 Landscape and land use

PAD020 is located beside a small open woodland next to a dry swamp which is fed by floodwaters from Delta Creek. Soil type is a vertosol and vegetation forb-rich speargrass – windmill grass – white top grassland. The area has historically been used for sheep grazing and is currently used for his activity.

8.4.1.16.2 Disturbance and soils

Isolated small exposures of clay (pans) showing signs of aeolian erosion, water surface transportation and livestock impacts occur in the landscape. Soil characteristics from test pits are summarised in Table 8-34 and soil textures by excavation spit are summarised in Table 8-35.

All soils excavated from all spits in all pits was composed of a medium/heavy clay. No bioturbation was observed, and grass roots were sparse in all spits.

All soils contained large amounts of iron (red oxide and yellow oxide) and were formed under dry and well oxygenated conditions, as indicated by their yellow red (YR) hues or 5YR colour according to the Munsell soil colour system. Soil colours (implied chemistry/weathering) were uniform within and across all pits with no variation observed.

Table 8-34 VNIW-A-PAD020 – summary of soil characteristics

Soil Horizon	Description
B Horizon	Depth: 100 mm.
	Munsell: 5YR 3/3.
	Description: Present in all pits - medium clay to heavy clay. Few grass roots and no bioturbation.

Table 8-35 VNIW-A-PAD020 – summary of soil types by spit

	Spit 1	
	Count	%
Medium clay	7	100

8.4.1.16.3 Aboriginal objects

No Aboriginal objects were recovered from within the sediments during test excavations of PAD020. The landscape surrounding PAD020 has been severely impacted by overgrazing and aeolian erosion with no evident A Horizon soils present in the landscape. All six test pits were archaeologically sterile, and on this basis, PAD020 can be considered of low archaeological potential.

8.4.1.17 VNIW-A-PAD021

VNIW-A-PAD021 is a dune located approximately 4 kilometres north of the Murray River. Dunes have the potential to contain Aboriginal objects making this an archaeologically sensitive landscape (refer to Figure 8-61 and Figure 8-62). Soil is rudosol and vegetation type not classified.

The soil has been impacted by agricultural activities, specifically ploughing, suggesting the upper 10-15 centimetres of soil is disturbed and contains extensive rabbit burrowing (warrens). No Aboriginal objects were recorded in the landscape. The dune has been disturbed by rabbit burrowing in sections. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-61 VNIW-A-PAD021 – boundaries



Figure 8-62 Landscape surrounding VNIW-A-PAD021

8.4.1.18 VNIW-A-PAD022

VNIW-A-PAD022 is a large PAD (approx. 2.4 kilometres in length) in an area east of Bullockhide Creek and west of Merran Creek (refer to Figure 8-63 and Figure 8-64). Soil is vertosol (dune rudosol) and mixed vegetation type: dillon bush (nitre) shrubland of the semi-arid and arid zone, Cypress pine woodland of source-bordering dunes and forb rich speargrass – windmill grass – white top grassland. Land use is agricultural activity specifically cropping.

The landscape is archaeologically sensitive as it contains four earth mounds, numerous surface exposed hearths/heat retainers surrounding dry swamps within the catchment area for a feeder creek for Bullockhide Creek, as well as a small east-west dune. The dune contains extensive rabbit burrowing (warrens) and is covered with relatively large amount of wooded vegetation.

The AHIMS Gonn Road (Nacurrie 6) burial is also located about 780 metres east of the PAD and Gonn Rd 1–2 burials are about 1.7 kilometres east of PAD022. Their proximity to PAD022 adds to the picture of this archaeolgically sensitive landscape including possible burials. This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential.

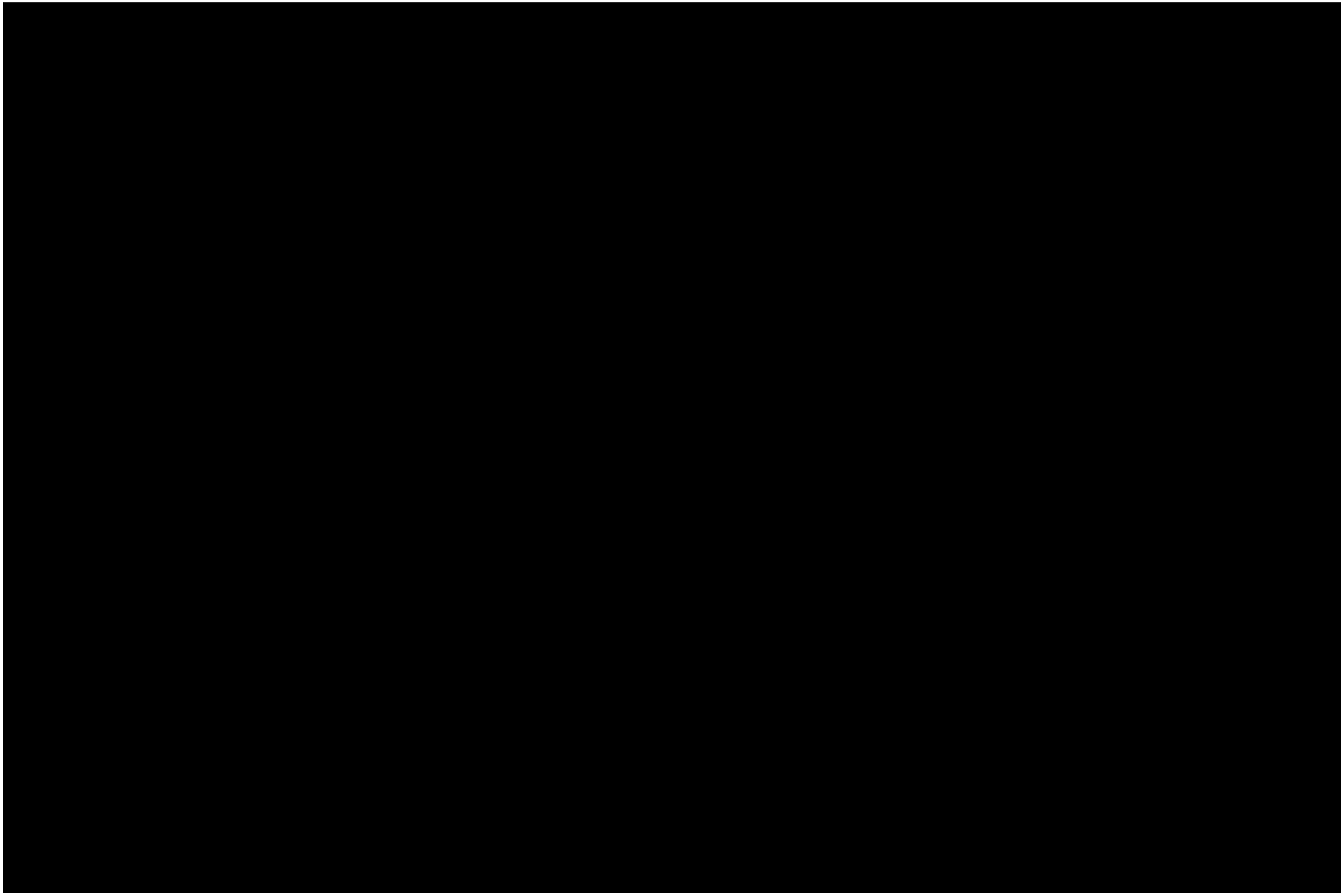


Figure 8-63 VNIW-A-PAD022 – boundaries



Figure 8-64 Landscape surrounding VNIW-A-PAD022

8.4.1.19 VNIW-A-PAD023

VNIW-A-PAD023 is a dune located approximately 600 metres south of Cunninyeuk Creek. Dunes have the potential to contain Aboriginal objects making this an archaeologically sensitive landscape (refer to Figure 8-65 and Figure 8-66). Soil is rudosol and vegetation type not classified. The soil has been impacted by agricultural activities, specifically ploughing, suggesting the upper 10-15 centimetres of soil is disturbed. No Aboriginal objects were recorded in the landscape. The dune has been disturbed by rabbit burrowing in sections. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-65 VNIW-A-PAD023 – boundaries



Figure 8-66 Landscape surrounding VNIW-A-PAD022

8.4.1.20 VNIW-A-PAD024

VNIW-A-PAD024 was identified during field survey and comprises a large PAD located immediately north of the Edward River in a flood plain and spanning part of the powerline easement and an access track (refer to Figure 8-67 and Figure 8-68). Soil is vertosol and vegetation type mixed: Dillon bush (nitre) shrubland of the semi-arid and arid zone, nitre goosefoot shrubland wetland on clays, black box wetland with chenopod understorey and river red gum-sedge dominated very tall open forest and black box – lignum wetland of the inner floodplains of the semi-arid zone.

It is located in areas which is exceptionally rich in archaeological sites of significant diversity of site types. Sites recorded within or adjacent to the PAD area during field survey include: an earth mound (VNIW-A-0314), shell middens (VNIW-A-0289), hearth/heat retainer sites (VNIW-A-0255, VNIW-A-0256, VNIW-A-0257, VNIW-A-0283, VNIW-A-0288 and VNIW-A-0289) and an isolated find (VNIW-A-0288). In the adjacent landscape also in a modified tree (VNIW-A-0283).

The PAD is undisturbed apart from a dirt track and is located on Crown Land designated recreation area. This PAD has not been subject to test excavations but exhibits moderate to high archaeological potential.

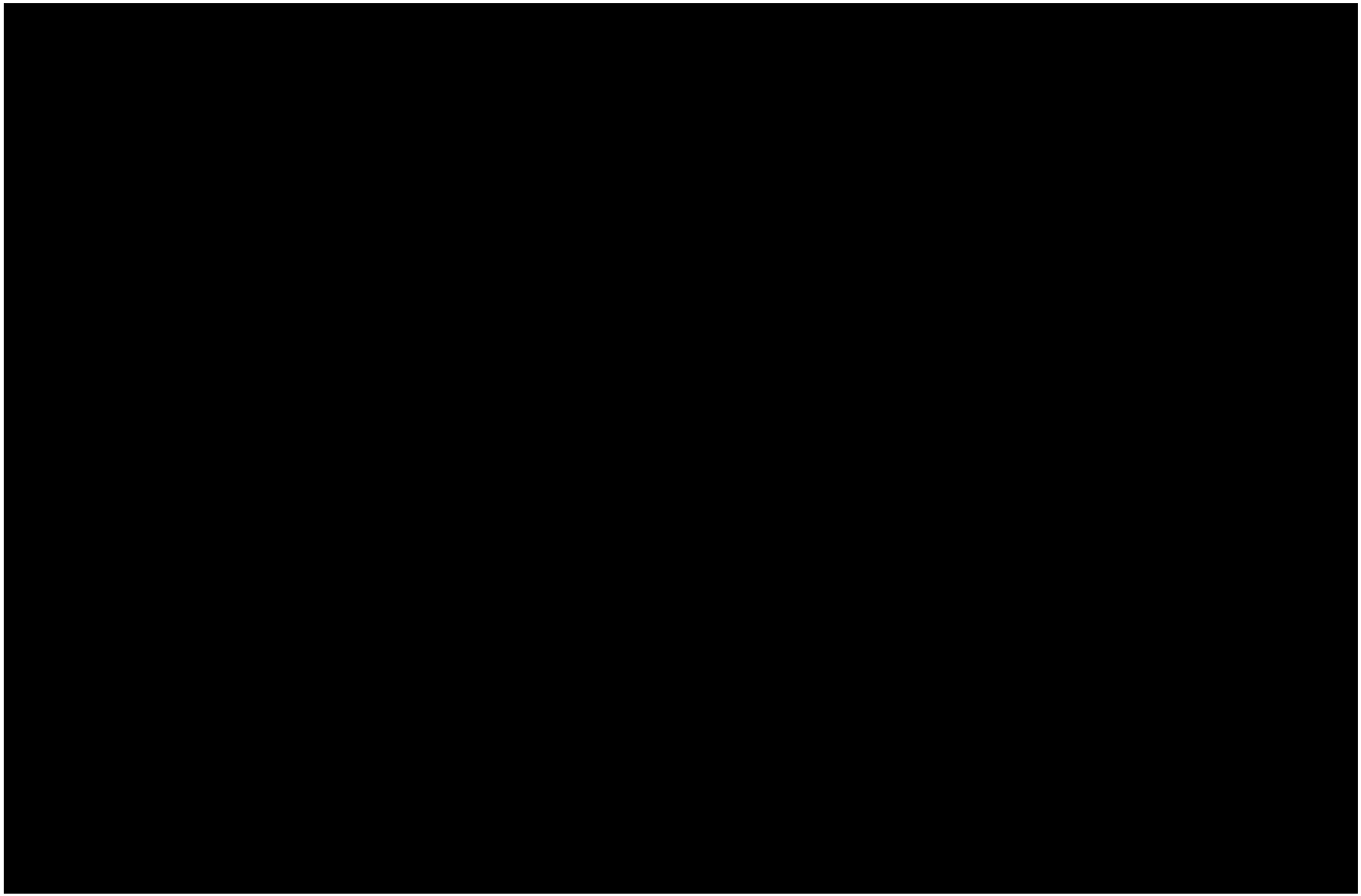


Figure 8-67 VNIW-A-PAD024 – boundaries



Figure 8-68 Landscape surrounding VNIW-A-PAD024

8.4.1.21 VNIW-A-PAD025

VNIW-A-PAD025 is a dune located immediately south of PAD07, 1.8 kilometres north of Berambong Creek and 3.3 kilometres north of the Edward River/Kolety (refer to Figure 8-69 and Figure 8-70). Dunes have the potential to contain Aboriginal objects making this an archaeologically sensitive landscape. Soil is rudosol and vegetation types white Cypress pine open woodland of sand plains and not classified. The soil has been impacted by agricultural activities, specifically ploughing, suggesting the upper 10-15 centimetres of soil is disturbed. Several hearths/heat retainers and an isolate find have been recorded in the immediate landscape. The dune has been disturbed by rabbit burrowing in sections. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-69 VNIW-A-PAD025 – boundaries



Figure 8-70 Landscape surrounding VNIW-A-PAD025

8.4.1.22 VNIW-A-PAD026

VNIW-A-PAD026 is a dune and as such is identified as a deposit with archaeological potential (refer to Figure 8-71 and Figure 8-72). It is located approximately 300 metres south of a palaeochannel of the Coleambally system, 3.6 kilometres north of Billabong Creek and 5.6 kilometres west of the Cobb Highway in a broader landscape of seemingly low archaeological sensitivity. Soil is rudosol and mixed vegetation types: Cypress pine woodland on sandy loams and white Cypress pine open woodland of sand plains, prior streams and dunes. Land use if sheep grazing. The dune has been disturbed by rabbit burrowing in large sections. This PAD has not been subject to test excavation but exhibits moderate-high archaeological potential.



Figure 8-71 VNIW-A-PAD026 – boundaries



Figure 8-72 Landscape surrounding VNIW-A-PAD026

8.4.1.23 VNIW-A-PAD027

VNIW-A-PAD027 was identified during field survey and is a PAD associated with an artefact scatter beside a palaeochannel of Delta Creek immediately west of the Cobb Highway which has been exposed by a dirt road (refer to Figure 8-73 and Figure 8-74). Soil is vertosol and vegetation types bladder saltbush shrubland on alluvial plains and lignum shrubland wetland of the semi-arid (warm) plains. Land use is livestock grazing (travelling stock route). This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential with undisturbed deposits beside the road.



Figure 8-73 VNIW-A-PAD027 – boundaries



Figure 8-74 Landscape surrounding VNIW-A-PAD027

8.4.1.24 VNIW-A-PAD028

VNIW-A-PAD028 was identified during field survey and comprises part pf a dune containing rudosol soil and as such is identified as a deposit with archaeological potential (refer to Figure 8-75 and Figure 8-76). Soil is rudosol and mixed vegetation types: white Cypress woodland on sandy loams in central NSW and white Cypress pine open woodland of sand plains, prior streams and dunes. Land use is sheep grazing. It is associated with a site (VNIW-A-0287) which contains hearths/heat retainers and artefacts. The dune has been disturbed by rabbit burrowing in large sections. This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential.



Figure 8-75 VNIW-A-PAD028 and VNIW-A-PAD029 – boundaries



Figure 8-76 Landscape surrounding VNIW-A-PAD028

8.4.1.25 VNIW-A-PAD029

VNIW-A-PAD029 was identified during field survey as an area of an undisturbed Crown Land associated with a regrowth open woodland adjacent to a dune (refer to Figure 8-75 and Figure 8-77). Soil is rudosol and vegetation white Cypress pine open woodland of sand plains, prior streams and dunes. It is located beside Carrathool Road and has been impacted by road construction on its eastern side. It is associated with a small artefact scatter (VNIW-A-0242). This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential.



Figure 8-77 Landscape surrounding VNIW-A-PAD029

8.4.1.26 NA-PAD-01

NA-PAD-01 was identified during field survey as an area of archaeological potential associated with sites NA-A-01 and NA-A02 (refer to Figure 8-78). The PAD is located above Cox's Creek and is within Wagga Compound A in an area of flood plains and low undulating hills. Soil types are kandosols with a small area of natric kurosol and the vegetation is not classified. Land use of agricultural fields combining grazing and cropping. This PAD has not been subject to test excavation but exhibits moderate to high archaeological potential.



Figure 8-78 NA-PAD-01 – boundaries

8.4.2 Summary and analysis of PADs

8.4.2.1 Summary of PADs

A total of 26 PADs were identified during archaeological survey within the project footprint, 25 within the NSW/Victoria border to the Dinawan substation and one within the network augmentation works section. An additional PAD within the network augmentation works section was identified and tested under the HumeLink project and this is further discussed below (refer to Section 10.3.1).

PADs within the NSW/Victoria border to the Dinawan substation are located within areas containing vertosol or rudosol soils, in a variety of vegetation communities covering grassland, woodland and shrubland communities, and adjacent to two rivers (Edward/Kolety and Niemur rivers) and several creeks (Delta Creek, Coleambally Creek, The Forest Creek, Berambong Creek, Yarrein Creek and Bullockhide Creek) and/or their palaeochannels.

The single PAD within the network augmentation works section of the project footprint (NA-PAD-01) is contained within a landscape of unclassified vegetation beside Cox's Creek.

The landscape surrounding six PADs (see Appendix 6 for locations of all PADs) is disturbed land as defined by DECCW (2010a) including ploughed fields and a large irrigation canal (refer to Table 8-36). However, all of them have been impacted by long term agricultural activities, especially land clearance and in most instances, livestock grazing over more than a century, and as such have been subject to a long period of surface modification and erosion.

Test excavations were undertaken in 14 PADs (52 per cent of the total) and all of them are located within the eastern portion of the NSW/Victoria border to the Dinawan substation section of the project footprint and in landscapes used primarily for livestock (sheep) grazing.

Table 8-37 provides a summary of each excavated PAD and the results of subsurface testing. Eight PADs (40 per cent) were contained in landscapes predicted to be of high sensitivity by the archaeological predictive model.

While some PADs were located beside a waterway (creek or palaeochannel) or water body (swamp), the mean distance to water was 174 metres.

The PADs were associated with a total of 86 surface finds which were recorded during field survey or located on the surface at the time of excavation.

Table 8-36 PADs located in disturbed land

PAD Number	Type of Disturbance	Partially or Completely within Disturbed Land
VNIW-A-PAD014	Ploughed field	Partially
VNIW-A-PAD019	Irrigation canal	Partially
VNIW-A-PAD021	Ploughed field	Completely
VNIW-A-PAD023	Ploughed field	Completely
VNIW-A-PAD025	Ploughed field	Completely
NA-PAD-01	Ploughed field	Partially

Table 8-37 Summary of PAD testing results

PAD Number	Sensitivity Modelling Result	Distance From Water[$]	Number of Surface Finds^	Number of Test Pits Excavated	Number of Pits Containing A Horizon Soils	Number of Spits Excavated	Number of Spits Containing A Horizon Soils	Number of Aboriginal Objects Recovered	PAD Archaeological Sensitivity Post Testing
VNIW-A-PAD01	High	50 m	4	13	4	26	5	0	Low
VNIW-A-PAD 2	Mod/High[#]	170 m	2	21	3	44	3	1	Low
VNIW-A-PAD 3A	Low	30 m	1	10	0	0	0	0	Low
VNIW-A-PAD 3B	Low	16 m	1	8	0	0	0	0	Low
VNIW-A-PAD 5	Low	2 m	1	7	0	0	0	0	Low
VNIW-A-PAD 6	High	40 0	1	9	4	13	0	0	Low
VNIW-A-PAD 7	High	560 m	1	6	0	0	0	0	Low
VNIW-A-PAD 8	High	140 m	0	27	1	96	1	0	Low
VNIW-A-PAD 9	Low	20 m	10	12	1	17	1	0	Low
VNIW-A-PAD 12	High	5 m	7	22	0	23	0	0	Low
VNIW-A-PAD 16	Low/High[#]	510 m	7	4	4	18	18	2*	Moderate-High
VNIW-A-PAD 17	High	660 m	29	6	6	41	41	1	Moderate-High
VNIW-A-PAD 19	Low/Mod[#]	220 m	18	20	0	36	0	0	Low
VNIW-A-PAD 20	Mod	7 m	4	6	0	7	0	0	Low

[$]Distance to the nearest named creek/river or unnamed creek, palaeochannel or swamp visible in the landscape and prominent on GIS maps.

^Total count of all isolated Aboriginal objects and individual objects within combined sites.

*The sample of 27 fragments of mussel shell is counted as a single object.

[#]PAD spans multiple sensitivity landscape areas.

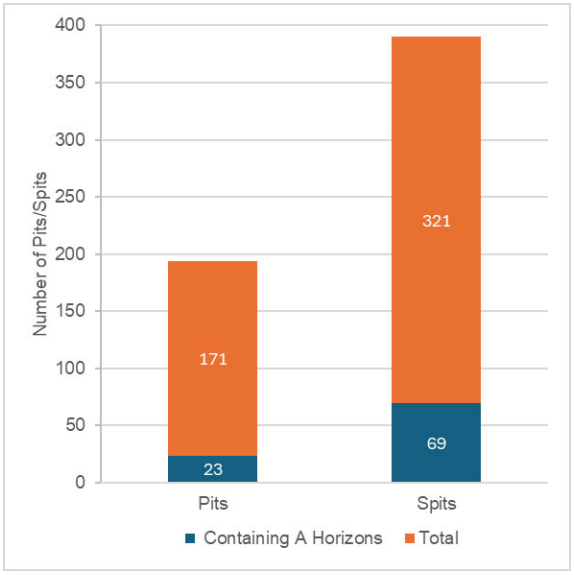


Figure 8-79 Summary of pit and spit results – number containing A Horizon soils

A total of 171 test pits were excavated across the 14 PADs (refer to Table 8-37 and Figure 8-79). Only about 13 per cent of them contained A Horizon soils. Indeed, the soil contained within most test pits comprised clay with few or no inclusions (clasts), with minimal grass root penetration and little evidence

of bioturbation except for the occasional tree root (about 8 per cent of pits), signs of insect bioturbation (around 4 per cent) or rabbit burrowing (about 2 per cent).

All A Horizon soils were contained in just six PADs (about 40 per cent), the remainder being B Horizon soils (clays). Thus, only six PADs (PAD01, PAD02, PAD06, PAD09, PAD016 and PAD017) contained potential archaeological deposits according to the results of subsurface testing.

Of the 321 spits excavated across all PADs, approximately 21 per cent of them contained A Horizon soils (refer to Figure 8-79). From this we can conclude that about 21 per cent of all spits excavated possessed archaeological potential and these represented just 13 per cent of all excavated test pits.

Overall, only four test pits/spits, or about two per cent of all test pits and about one per cent of spits, contained Aboriginal objects.

8.4.2.2 Analysis of PAD testing results

The following conclusions can be drawn from PAD testing:

- PADs are located in both of the two main soil types (vertosols and rudosols) found across the project footprint. Note that all the dunes within the project footprint were recorded as PADs and these are found only within rudosols.
- PADs are found within a wide variety of vegetation types with no obvious association between them.
- In taking account of the watercourses (rivers and creeks) and water bodies (swamps) associated with these PADs, including palaeochannels clearly observable in the landscape and on GIS maps, their mean distance from water is 173 metres (refer to Table 8-37). Distance from water is the most commonly cited variable for determining site location (DECCW 2010a) including in the southern Riverina (Pardoe and Martin 2011). Pardoe and Martin found, for example, that, “The pattern of site distribution is typically greatest concentration near water sources, falling away quickly in the manner of an exponential decrease” (p. 105). This is consistent with ethnographic data about Aboriginal land use which demonstrate that water was the main limiting factor on Aboriginal land use and economic activity in arid areas (Peterson 1976). A frequency histogram of PAD distance from water (refer to Figure 8-80) is consistent with these findings with about 79 per cent PADs located within 300 metres of water and 100 per cent within 660 metres of water. The bimodality of the moving average trend line is likely to be an artefact of sampling bias.

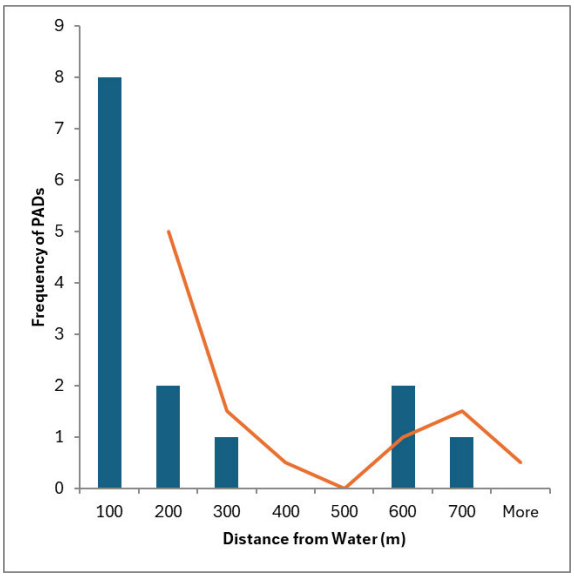


Figure 8-80 Frequency histogram and moving average trend line of PAD distance from water

Table 8-38 Comparison of eastern and southern section – PADs and relative length of the transmission line corridor

	Eastern Section*	Southern Section
Number of PADs identified	22	7
%-PADs	76	24
%-Total transmission line corridor	63	37
%-Transmission line corridor surveyed	59	90

*Division between the two sections taken as the point of change from north-south to east-west located approximately 1.2 kilometres north of the Edward River/Kolety

- Approximately 76 per cent of all PADs are located in the eastern section of the transmission line corridor (refer to Table 8-38). This section comprises about 63 per cent of the total transmission line corridor suggesting it contains more areas of higher archaeological sensitivity than the southern section of this corridor. We can rule out sampling bias because more of the southern section has been subject to pedestrian survey than the eastern section (90% versus 59%). This is important because the southern section contains several rivers and many more creeks than the eastern section (refer to Section 5.1.4) and should contain, archaeologically speaking, a richer/denser/more sensitive landscape. The best explanation seems to be differences in land use with many areas of the southern section containing “disturbed land” (as defined by DECCW 2010a), such as fields levelled and ploughed for irrigated cropping, whereas the eastern section comprises mostly undisturbed land used for livestock grazing.
- The results of subsurface testing found that 98 per cent of all test pits were archaeologically sterile. Thus, the 14 excavated PADs are contained in sediments with low archaeological potential and comprise mostly B Horizon clays. Moreover, the number and density of Aboriginal objects artefacts recovered during PAD testing is extremely low reinforcing the finding that across most of the eastern section of the project footprint subsurface deposits are likely to have low archaeological potential.

There is no obvious relationship between the number of surface finds and number of subsurface finds at these PADs. Two examples serve to illustrate this point:

1) PAD017 contains 29 surface finds including earth mounds, hearths/heat retainers and isolated finds, yet only one Aboriginal object was found during subsurface testing; and PAD019 contains 18 surface finds (isolated finds and artefacts scatters) yet no Aboriginal objects were

found during text excavations. In the case of PAD017, this may in part be due to the fact that test pits were not excavated within 50 m of earth mounds in compliance with the *Code of practice for archaeological investigation of Aboriginal objects in New South Wales* (DECCW 2010b). Whereas with PAD019, every pit contained only clay (B Horizon) soils, and although artefacts are present on the surface of the PAD, they are of an extremely low density (0.0001 artefact/square metre).

8.4.2.3 Strategy for untested PADs

Table 8-39 presents the archaeological sensitivity and strategy for the future investigation of the PADs which have not be subject to test excavation (as outlined in Section 8.4.1, Chapter 13 and Appendix 7). Five of them are planned to be subject to subsurface testing during the project design stage. The other seven will be subject to test excavations within their dunes and within 50 metres of earth mounds or shell middens during the post-approval or final design stage.

Table 8-39 Archaeological sensitivity and future strategy for untested PADs

PAD Number	Sensitivity Modelling Result	Number of Surface Finds^	Future Assessment Strategy
VNIW-A-PAD013	Low-high	38	To be assessed further including subsurface testing during design stage.
VNIW-A-PAD014	Moderate-high	1	To be assessed further including subsurface testing during design stage.
VNIW-A-PAD021	Low	2	To be assessed further. Subsurface testing to occur post-approval/final design stage.
VNIW-A-PAD022	Low-high	11	To be assessed further. To be subject to subsurface testing including within 50 m of earth mounds and in dune area post-approval/final design stage.
VNIW-A-PAD023	Low	0	To be assessed further. To be subject to subsurface testing post-approval/final design stage.
VNIW-A-PAD024	Moderate-high	12	To be assessed further. To be subject to subsurface testing including within 50 m of middens and earth mounds post-approval/final design stage.
VNIW-A-PAD025	Low & High	0	To be assessed further. Subsurface testing to occur post-approval/final design stage.
VNIW-A-PAD026	Low & High	0	To be assessed further. Subsurface testing to occur post-approval/final design stage.
VNIW-A-PAD027	Moderate-high	11	To be assessed further including subsurface testing during design stage.
VNIW-A-PAD028	High	6	To be assessed further. Subsurface testing to occur post-approval/final design stage.
VNIW-A-PAD029	High	2	To be assessed further including subsurface testing during design stage.
NL-PAD-01	High	8	To be assessed further including subsurface testing during design stage.

8.5 Archaeological sensitivity model results for unsurveyed areas

The remaining unsurveyed portions of the NSW/Victoria border to the Dinawan substation section of the project footprint have been categorised by their surface archaeological sensitivity. Note that the network augmentation works section has been fully surveyed. As the model has been tested both by field survey and test excavation the use of the model to predict the archaeological sensitivity of the areas unsurveyed provides an indication of the likelihood of their being un-recorded Aboriginal objects within those areas.

As discussed in Section 3.2.2, the aims of the model are to use landscape criteria to identify areas of high and moderate sensitivity that contain the highest number of archaeological sites within the smallest footprint while producing areas of low sensitivity that contain the lowest number of archaeological sites with the largest footprint. The model cannot predict the number of sites in an area but can be used to predict that there will be a greater number of sites within the area of high sensitivity compared to the moderate and low. This is because visibility and disturbance have an influence on site identification which cannot be accurately predicted by the model and is likely to change over time. These values were calculated using the most recent surface archaeological sensitivity model produced by NOHC.

Table 8-40 shows the approximate percentage of the survey unit sensitivity for each unsurveyed area within the transmission line corridor (refer to Figure 8-81 to Figure 8-99). Table 8-41 presents the approximate sensitivity percentage in each unsurveyed area within the access tracks, compounds and other areas. Areas with a greater percentage of high archaeological sensitivity will generally have more areas that are close to water sources. Moderately sensitive areas will generally be further away from water. Areas of low sensitivity are typically far away from water sources.

Table 8-40 Archaeological sensitivity model results for unsurveyed/partially surveyed sections of the transmission line corridor*

Survey unit*	Sensitivity approximate percentage (%)		
	High	Moderate	Low
MC-SU4	23	51	26
ERC-SU6	39	0	61
ERC-SU7	0	0	100
ERC-SU28	11	36	53
ERC-SU32	43	6	51
ERC-SU33	0	2	98
MRC-SU12	55	25	20
MRC-SU14	59	33	8
MRC-SU19	87	13	0
MRC-SU21	36	0	64
MRC-SU22	13	3	84
MRC-SU23	100	0	0

*Details of survey unit, refer to Table 8-2

Table 8-41 Archaeological sensitivity model results for unsurveyed/partially surveyed sections of access track, compounds and other areas

Survey unit*	Sensitivity approximate percentage (%)		
	High	Moderate	Low
MC-SU2	7	20	73
MC-SU5	0	0	100
ERC-SU1	71	27	2
ERC-SU2	18	22	60
ERC-SU3	29	0	71
ERC-SU11	0	0	100
ERC-SU12	0	0	100
ERC-SU13	17	43	40
ERC-SU14	0	0	100
ERC-SU15	21	46	33
ERC-SU18	40	9	51
ERC-SU21	46	46	8
ERC-SU24	0	4	96
ERC-SU25	0	16	84
ERC-SU26	19	29	52
ERC-SU27	100	0	0
ERC-SU28	39	19	42
ERC-SU29	96	4	0
ERC-SU30	92	8	0
ERC-SU31	11	0	89
ERC-SU32	65	8	27
ERC-SU33	30	17	53
MRC-SU2	51	23	26
MRC-SU9	71	25	4
MRC-SU10	12	88	0

Survey unit*	Sensitivity approximate percentage (%)		
	High	Moderate	Low
MRC-SU11	58	42	0
MRC-SU14	99	1	0
MRC-SU15	40	57	3
MRC-SU16	100	0	0
MRC-SU18	88	12	0

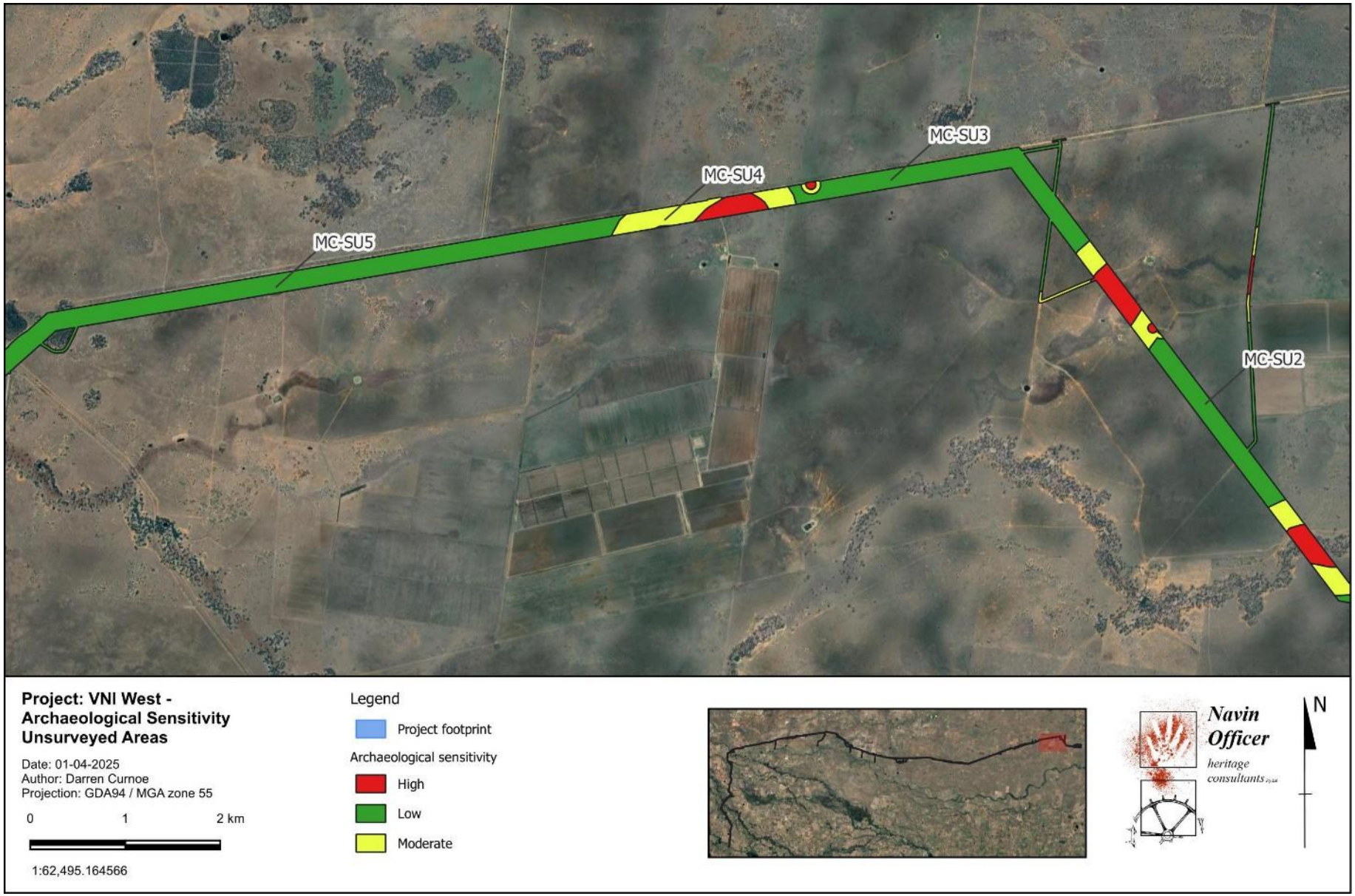


Figure 8-81 Archaeological sensitivity of unsurveyed areas – MC-SU2, SU4 & SU5

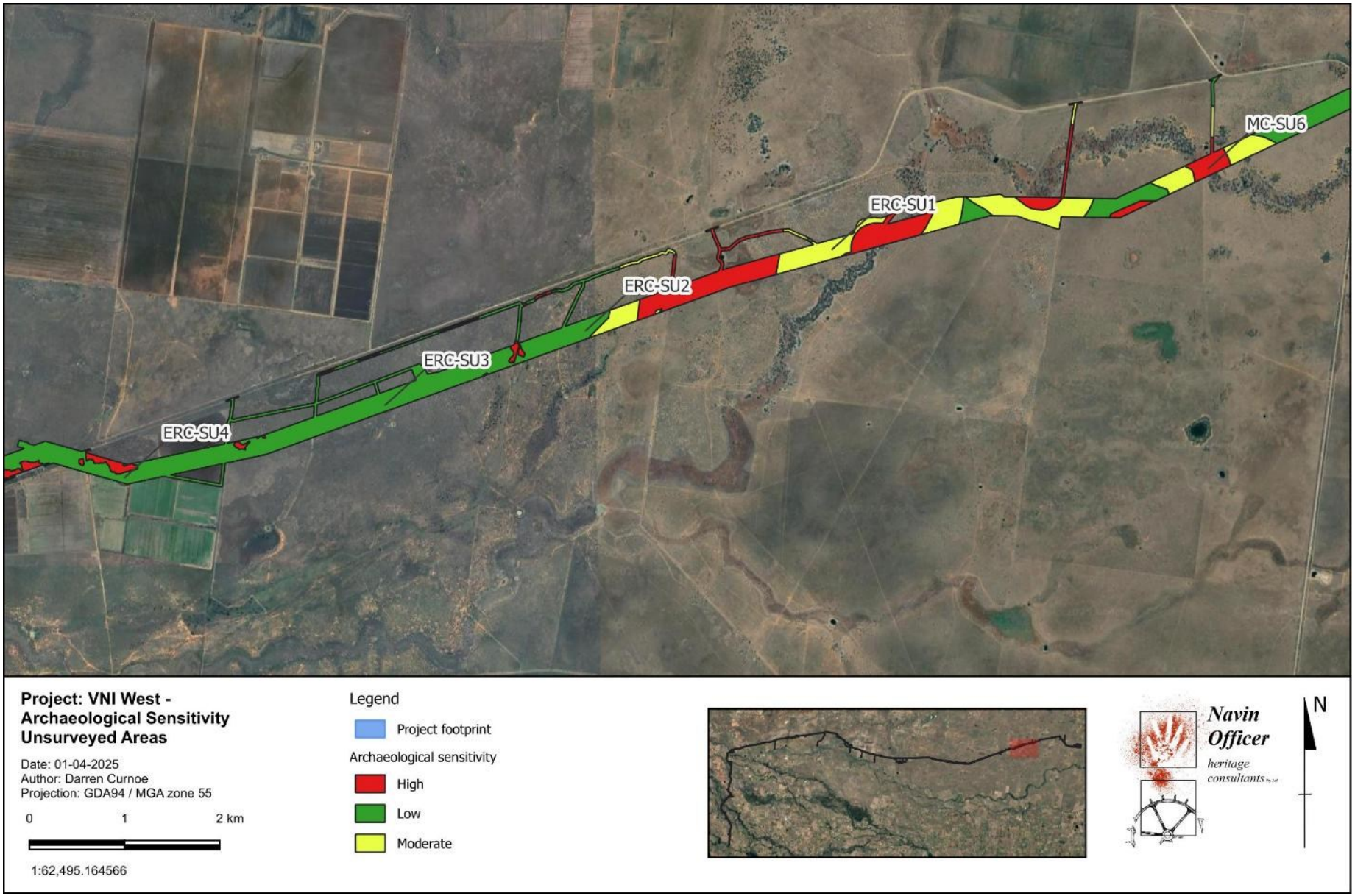


Figure 8-82 Archaeological sensitivity of unsurveyed areas – MC-SU6 & SU7, ERC-SU2 & SU4

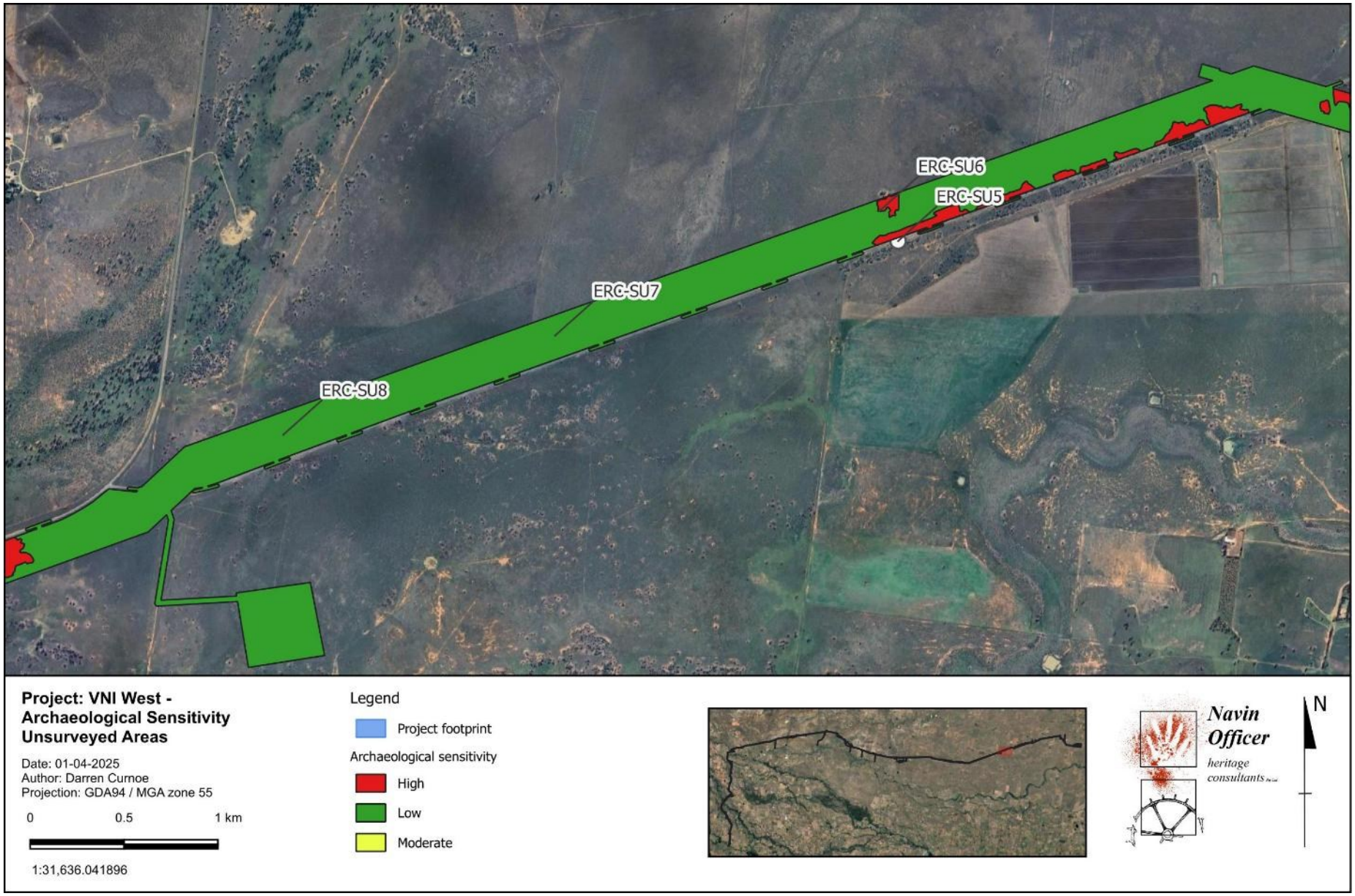


Figure 8-83 Archaeological sensitivity of unsurveyed areas – ERC-SU6 & SU7

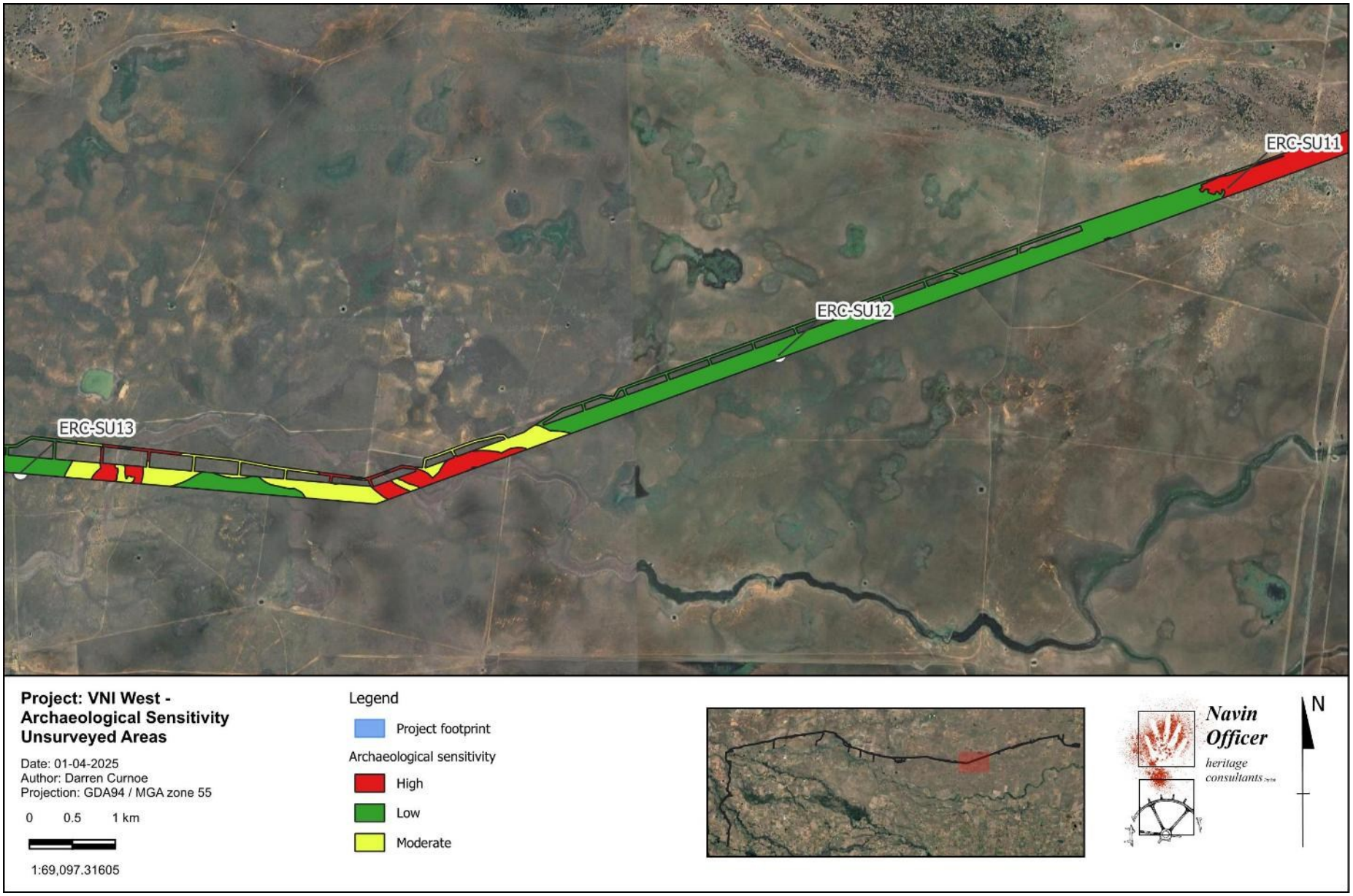


Figure 8-84 Archaeological sensitivity of unsurveyed areas – ERC-SU11 & SU12

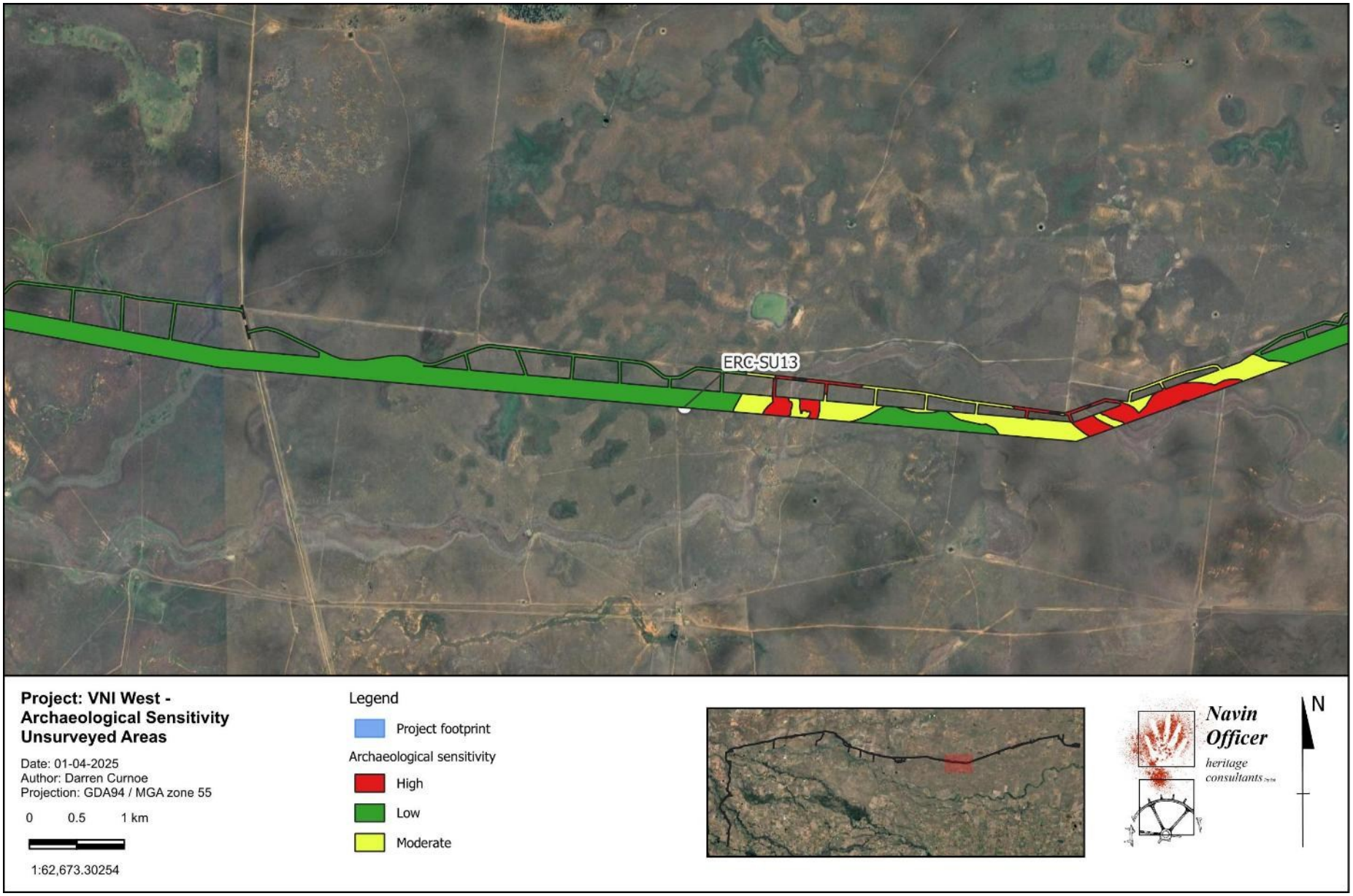


Figure 8-85 Archaeological sensitivity of unsurveyed areas – ERC-SU13

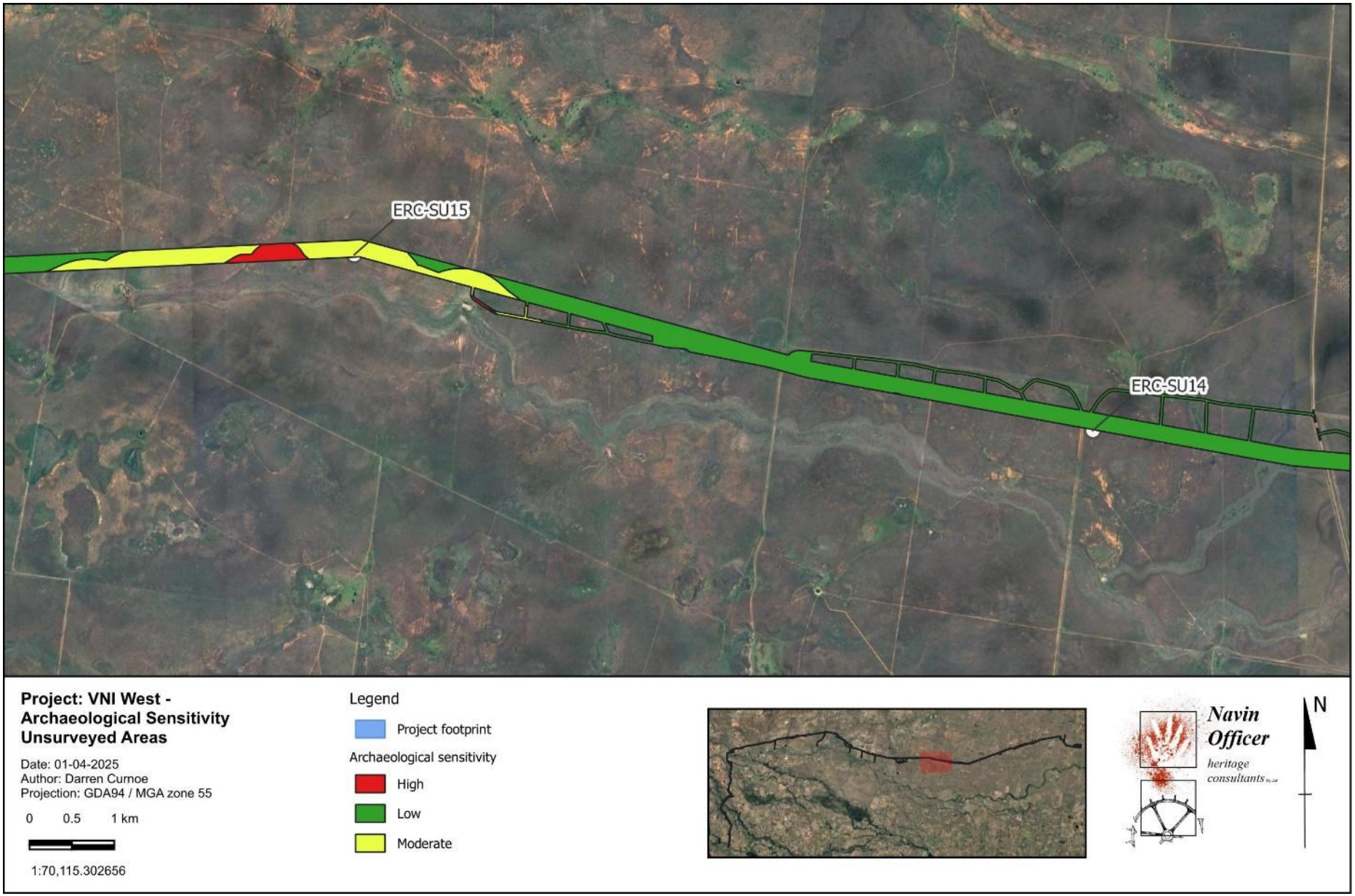


Figure 8-86 Archaeological sensitivity of unsurveyed areas – ERC-SU14 & SU15

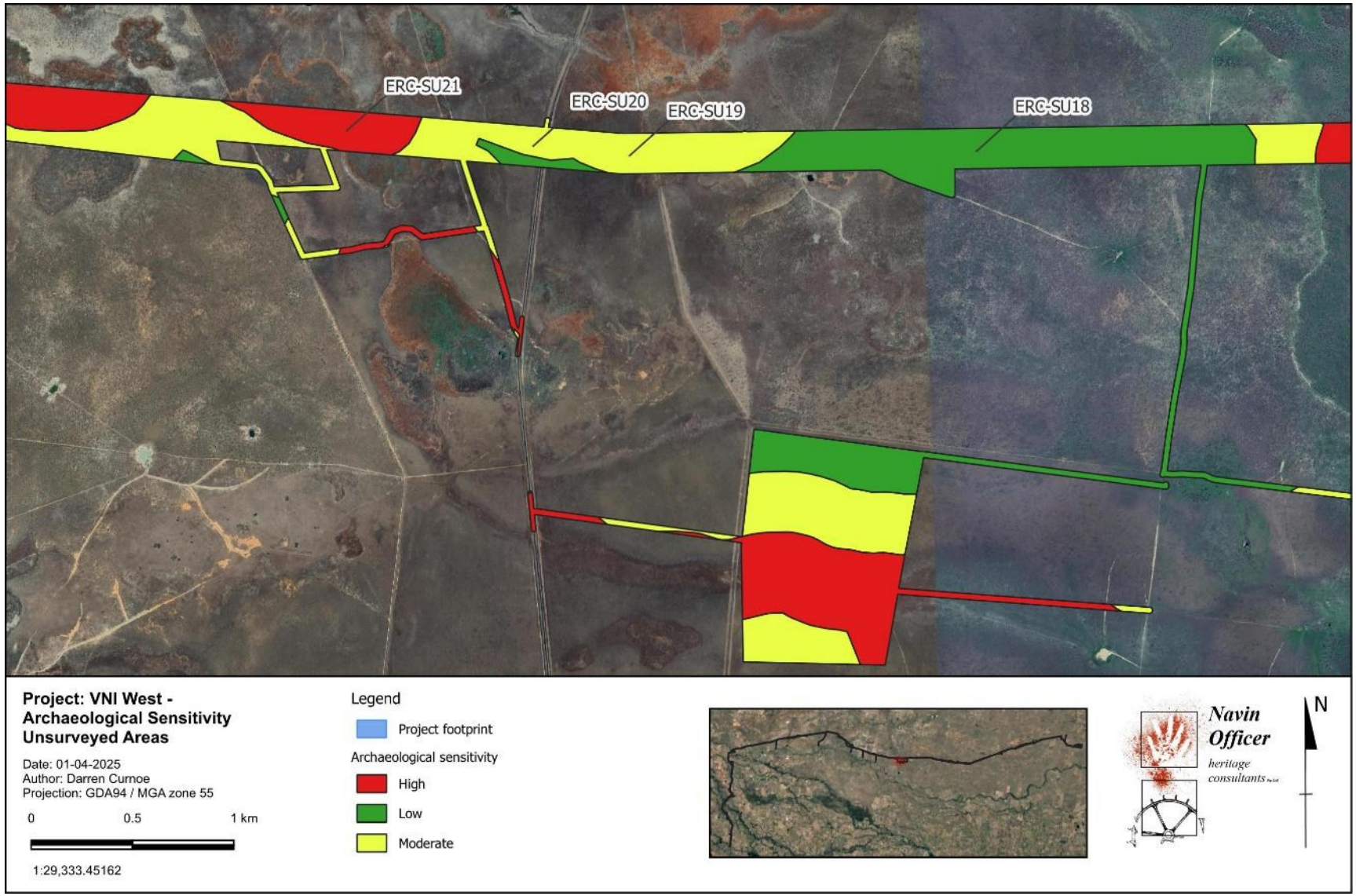


Figure 8-87 Archaeological sensitivity of unsurveyed areas – ERC-SU18 & SU21

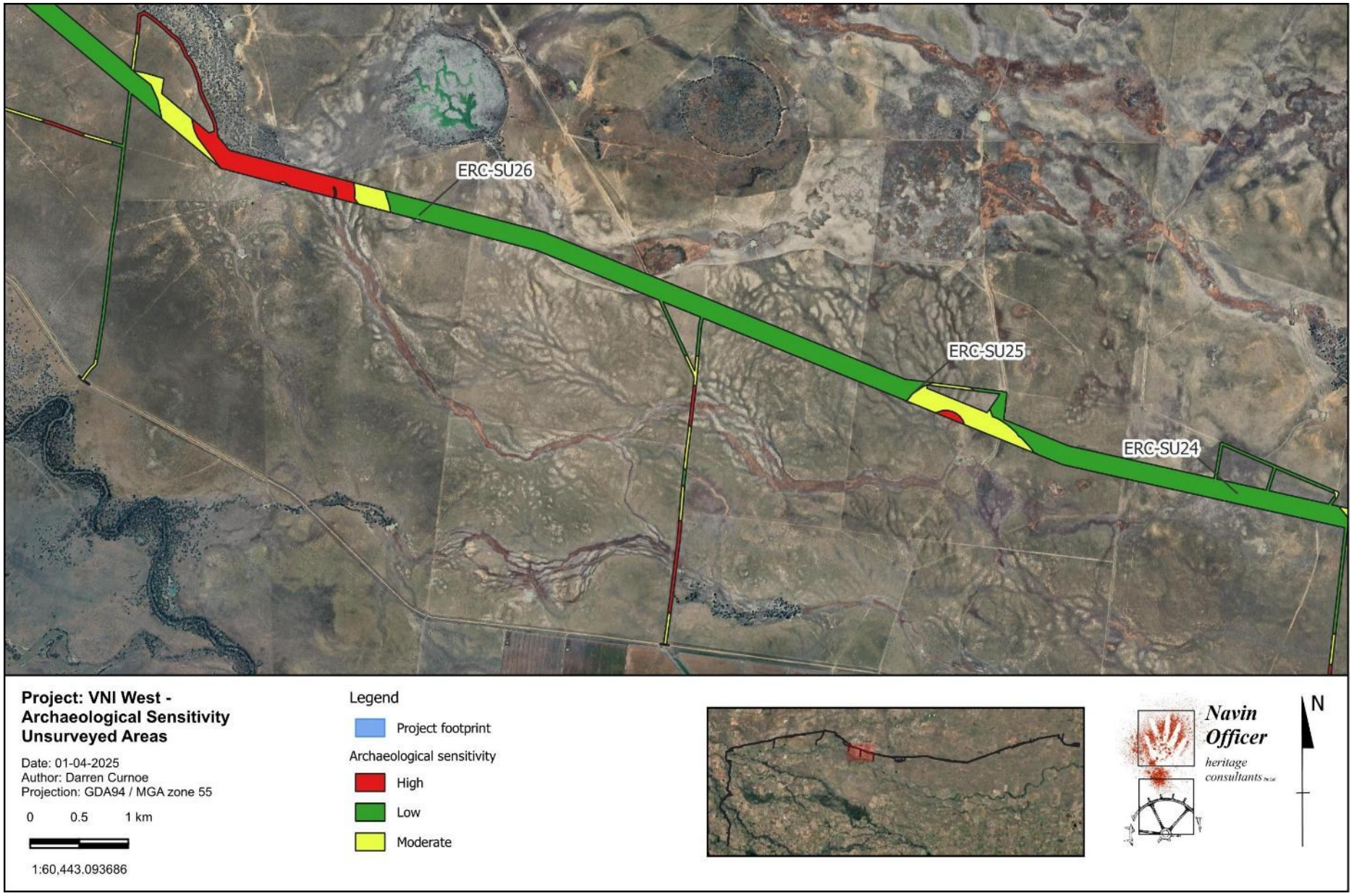


Figure 8-88 Archaeological sensitivity of unsurveyed areas – ERC-SU24–SU26

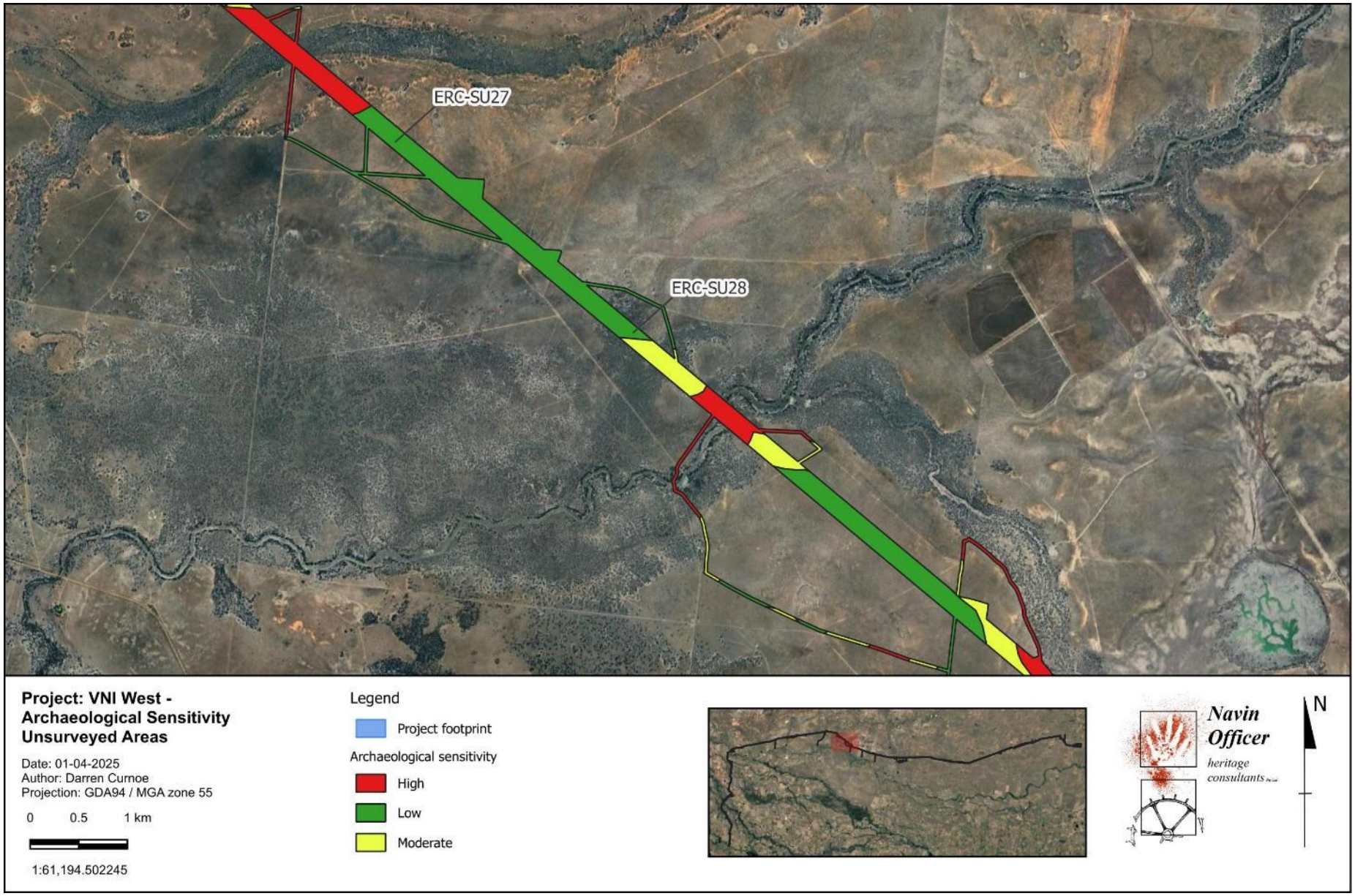


Figure 8-89 Archaeological sensitivity of unsurveyed areas – ERC-SU27–SU28

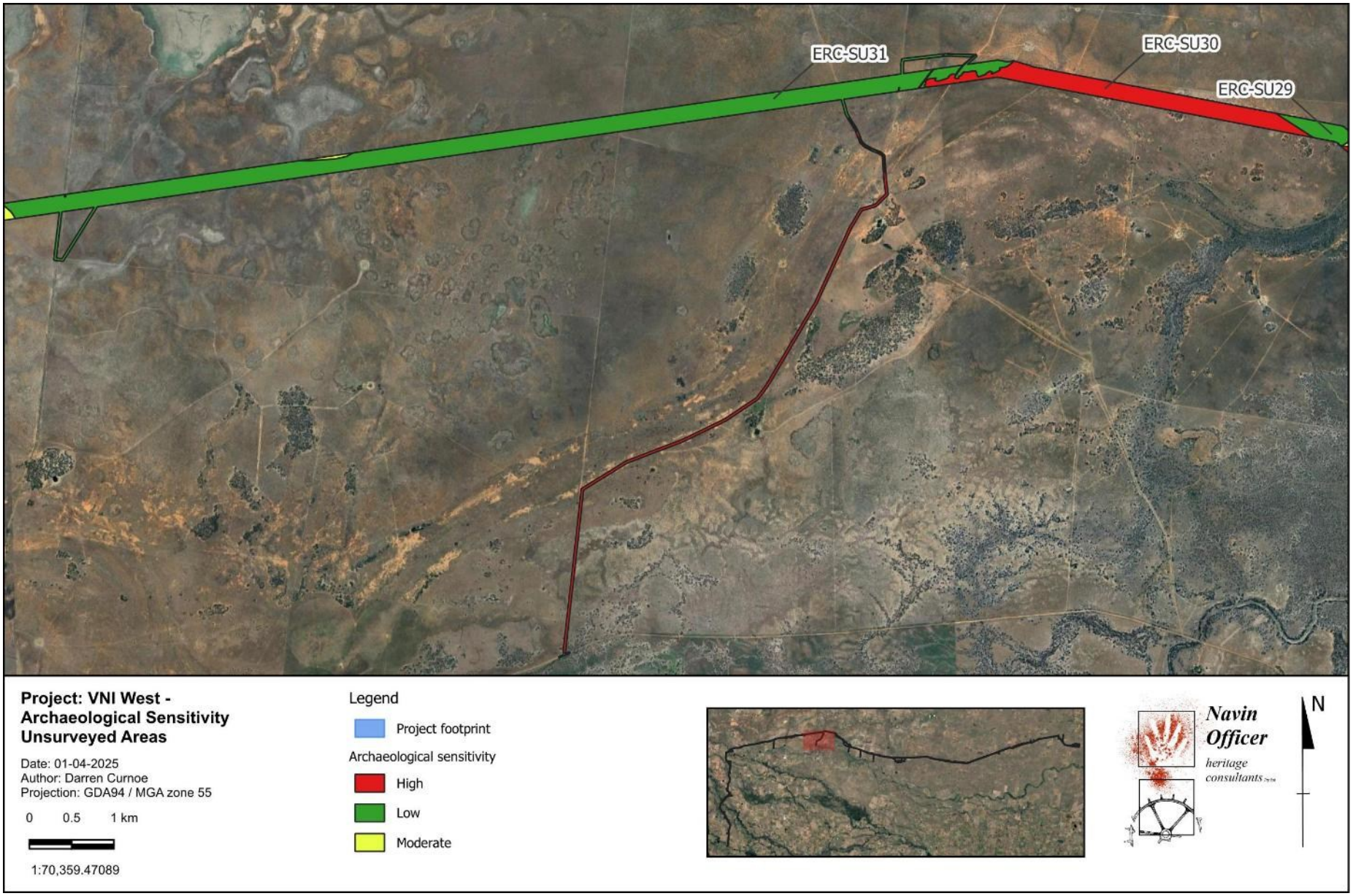


Figure 8-90 Archaeological sensitivity of unsurveyed areas – ERC-SU29–SU31

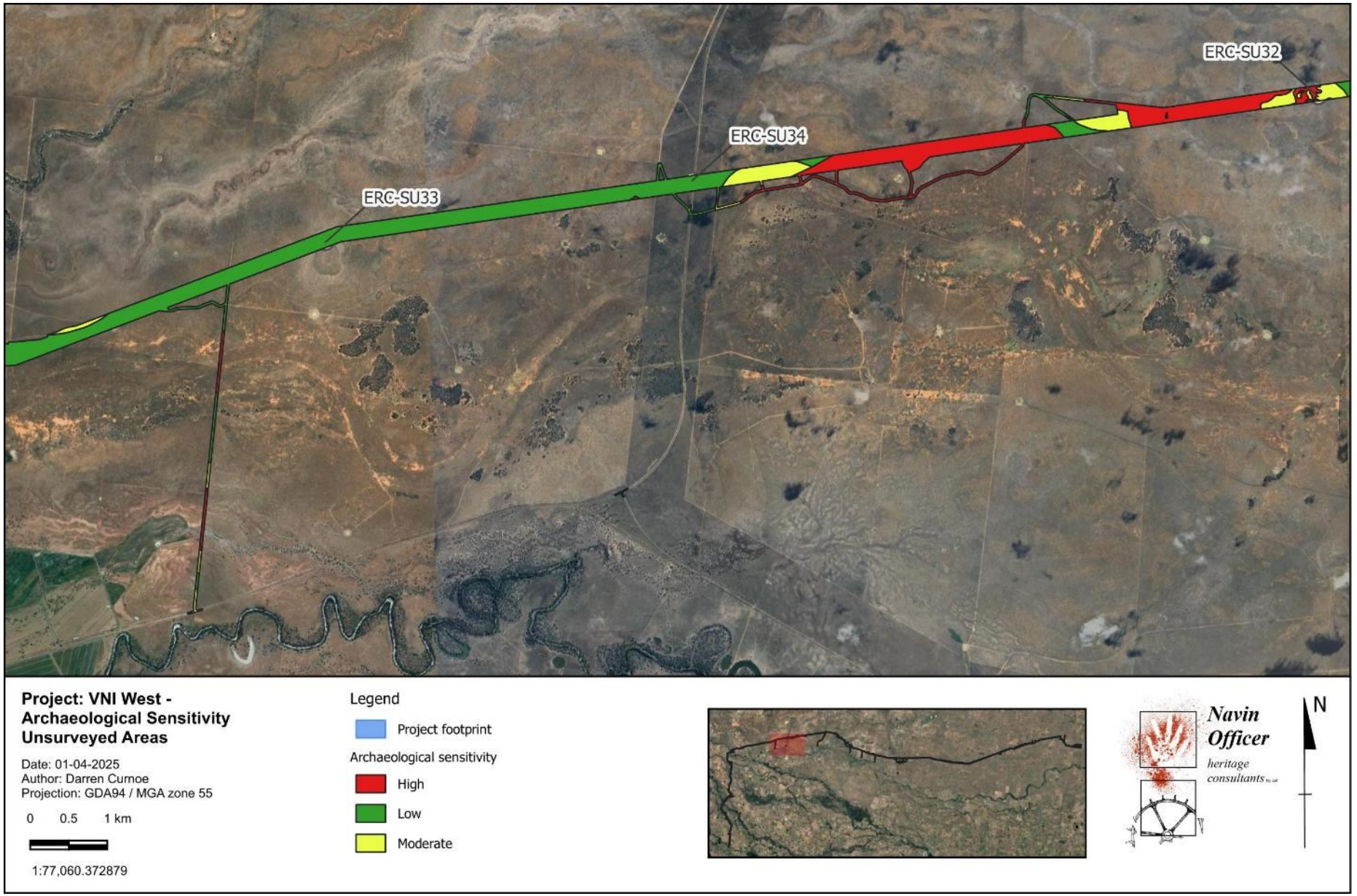


Figure 8-91 Archaeological sensitivity of unsurveyed areas – ERC-SU32 & SU33

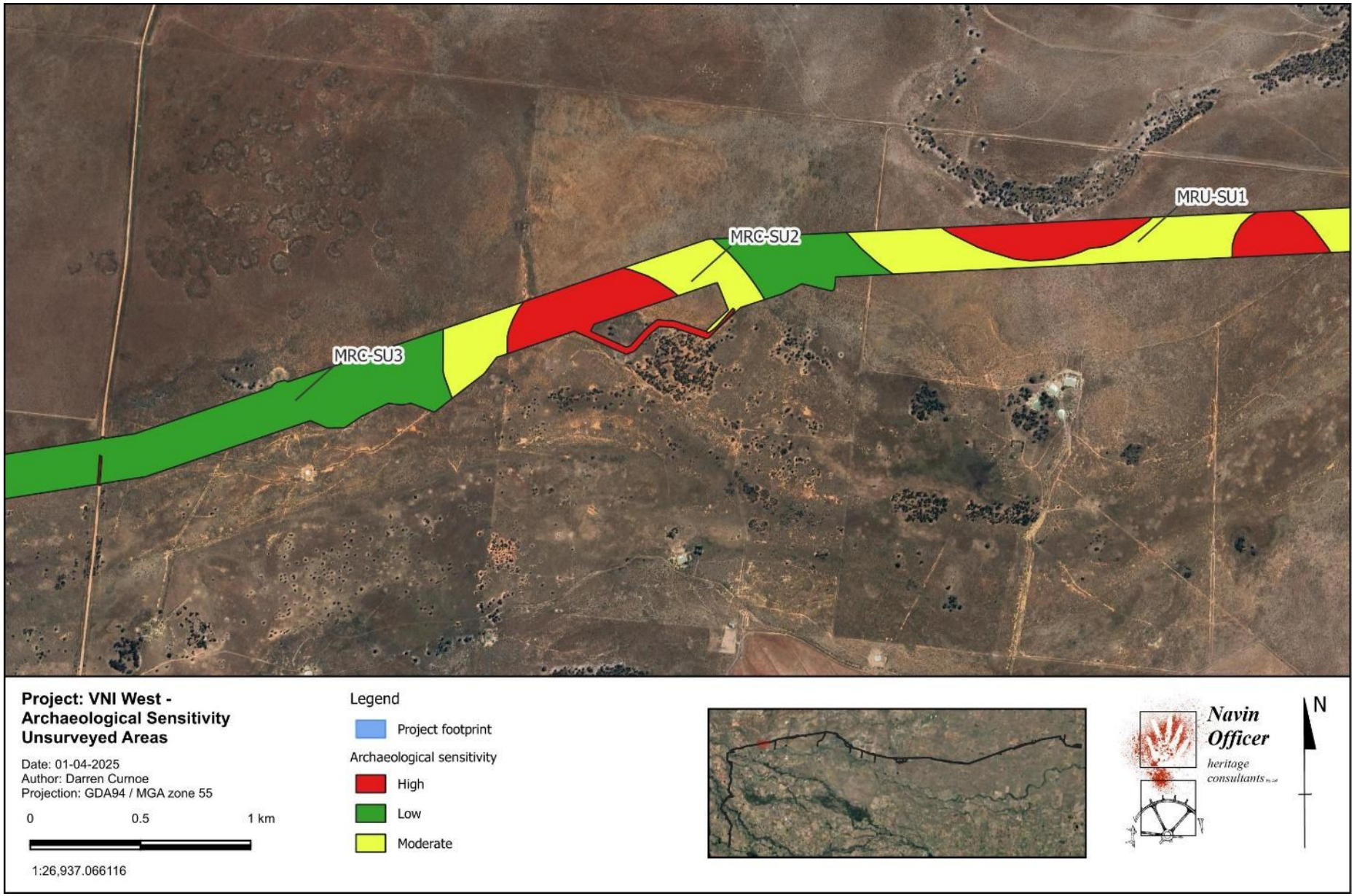


Figure 8-92 Archaeological sensitivity of unsurveyed areas – MRC-SU2

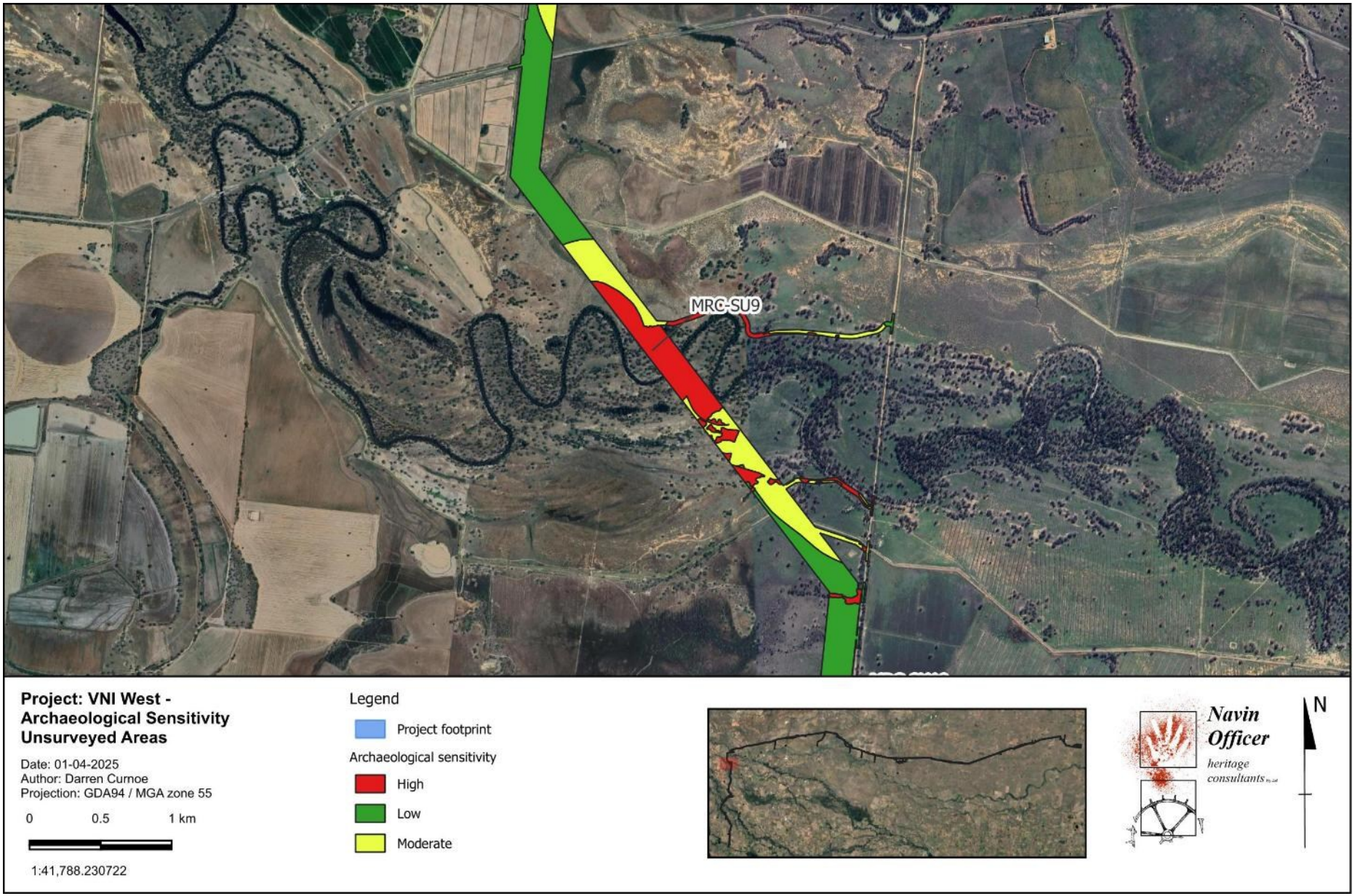


Figure 8-93 Archaeological sensitivity of unsurveyed areas – MRC-SU9



Figure 8-94 Archaeological sensitivity of unsurveyed areas – MRC-SU10

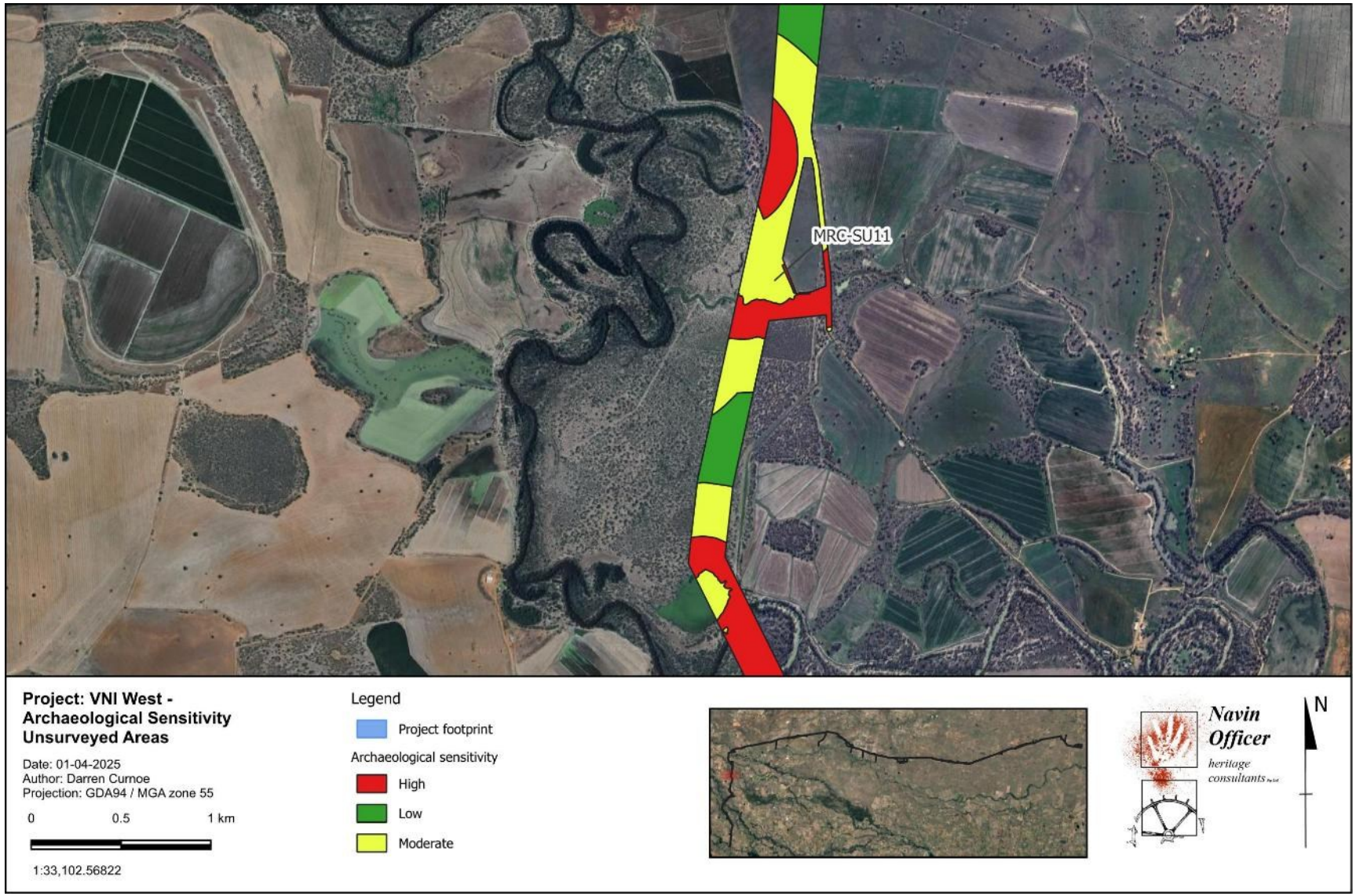


Figure 8-95 Archaeological sensitivity of unsurveyed areas – MRC-SU11

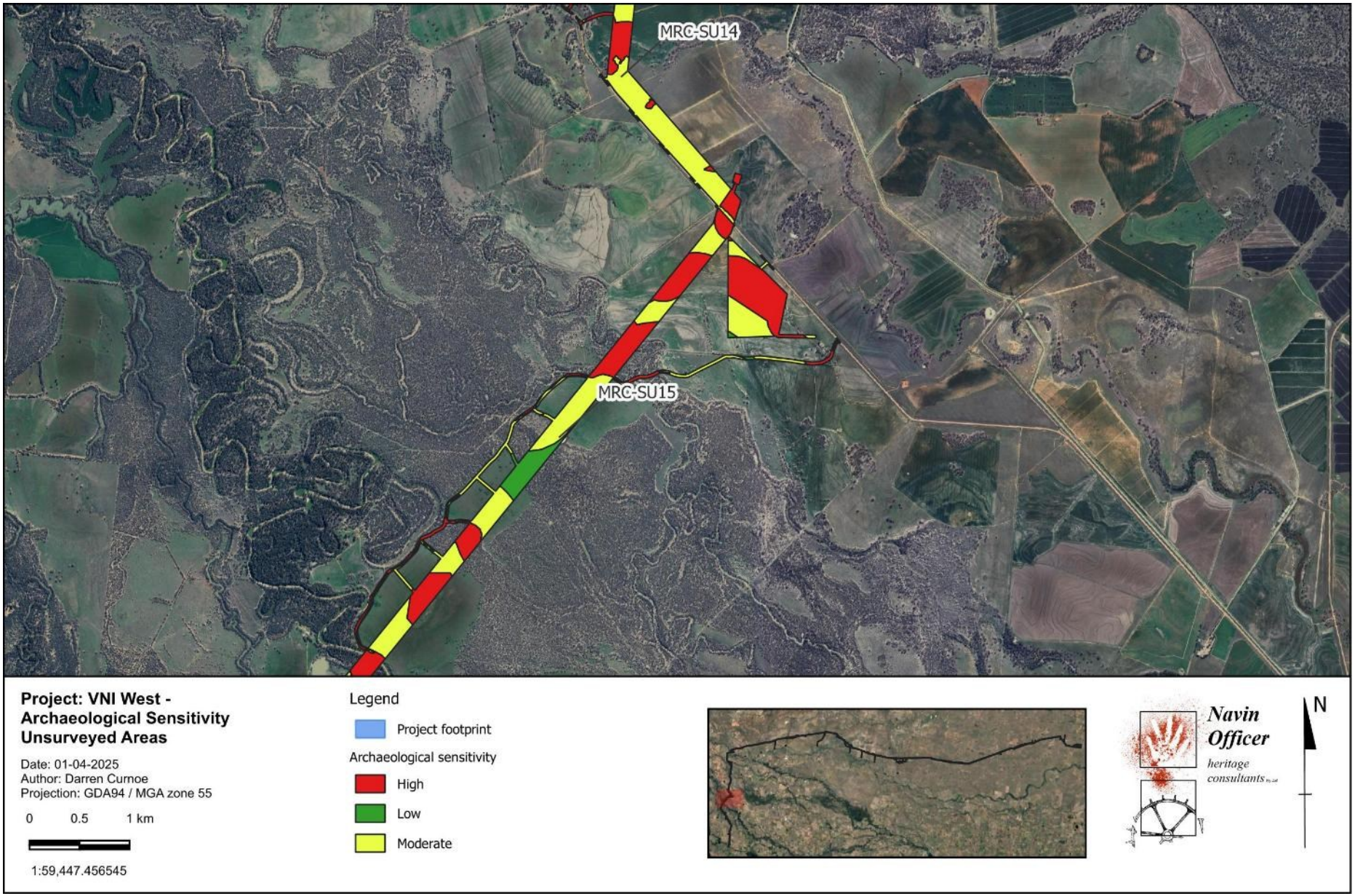


Figure 8-96 Archaeological sensitivity of unsurveyed areas – MRC-SU14 & SU15

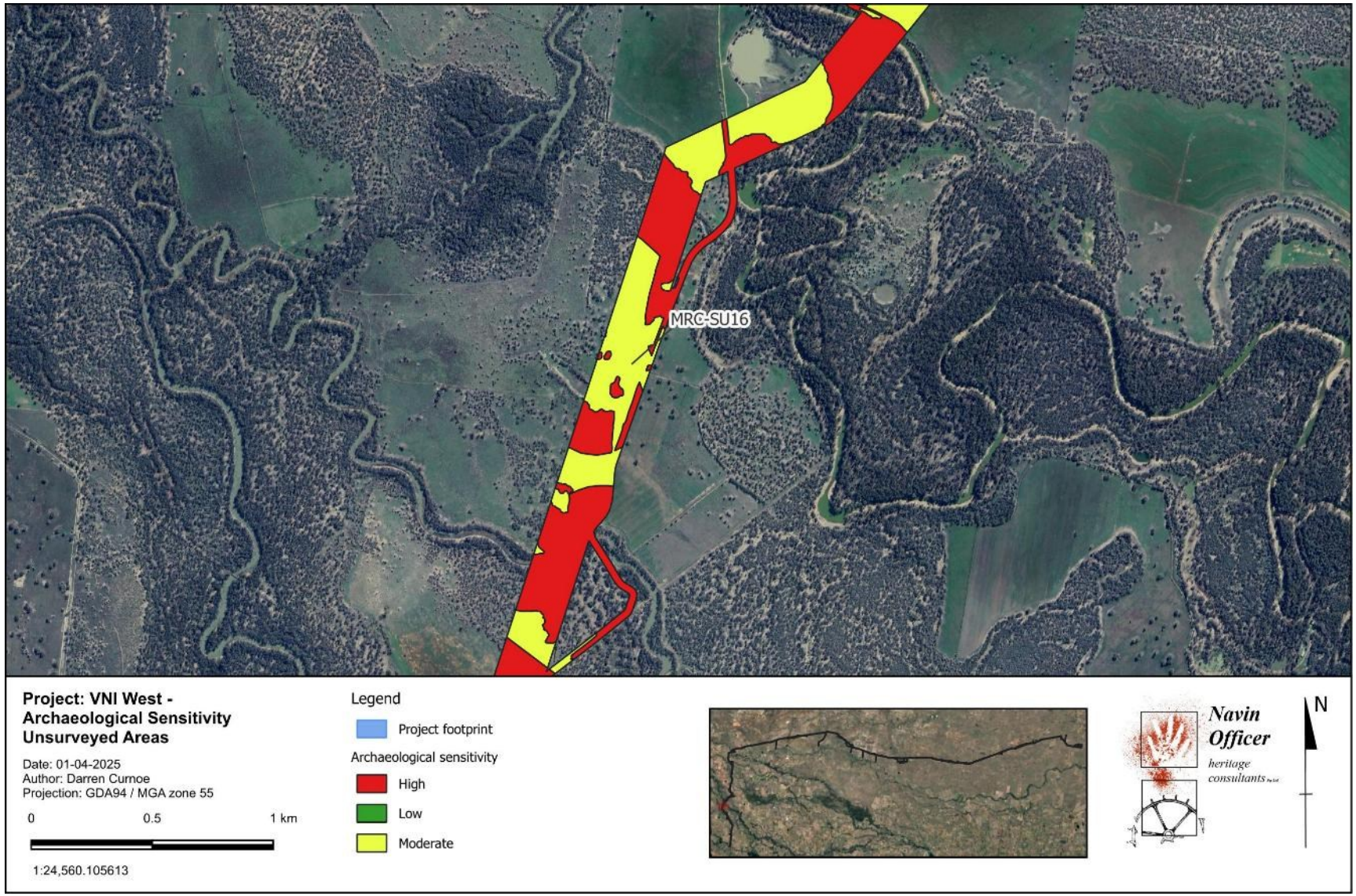


Figure 8-97 Archaeological sensitivity of unsurveyed areas – MRC-SU16

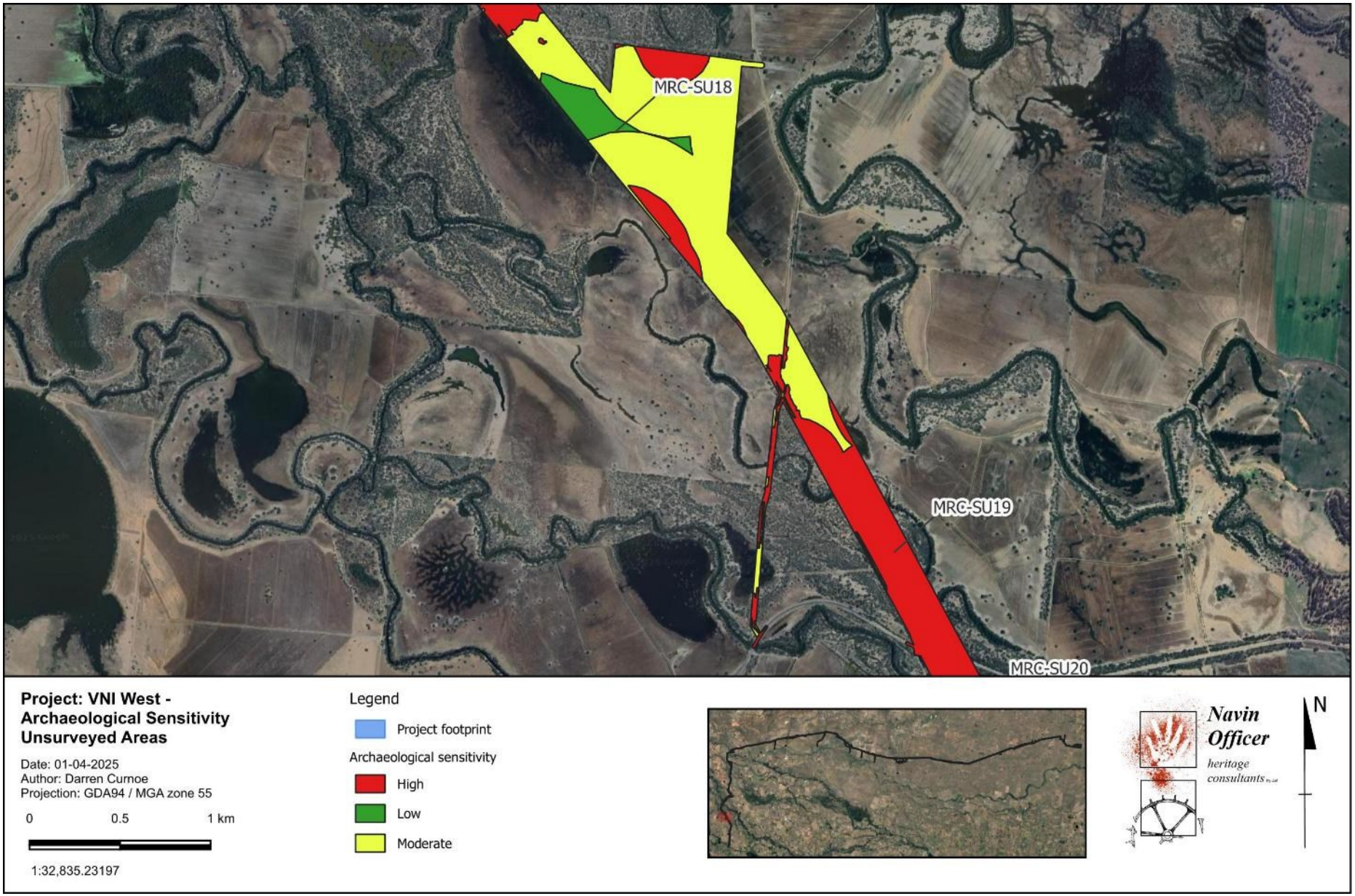


Figure 8-98 Archaeological sensitivity of unsurveyed areas – MRC-SU18 & SU19

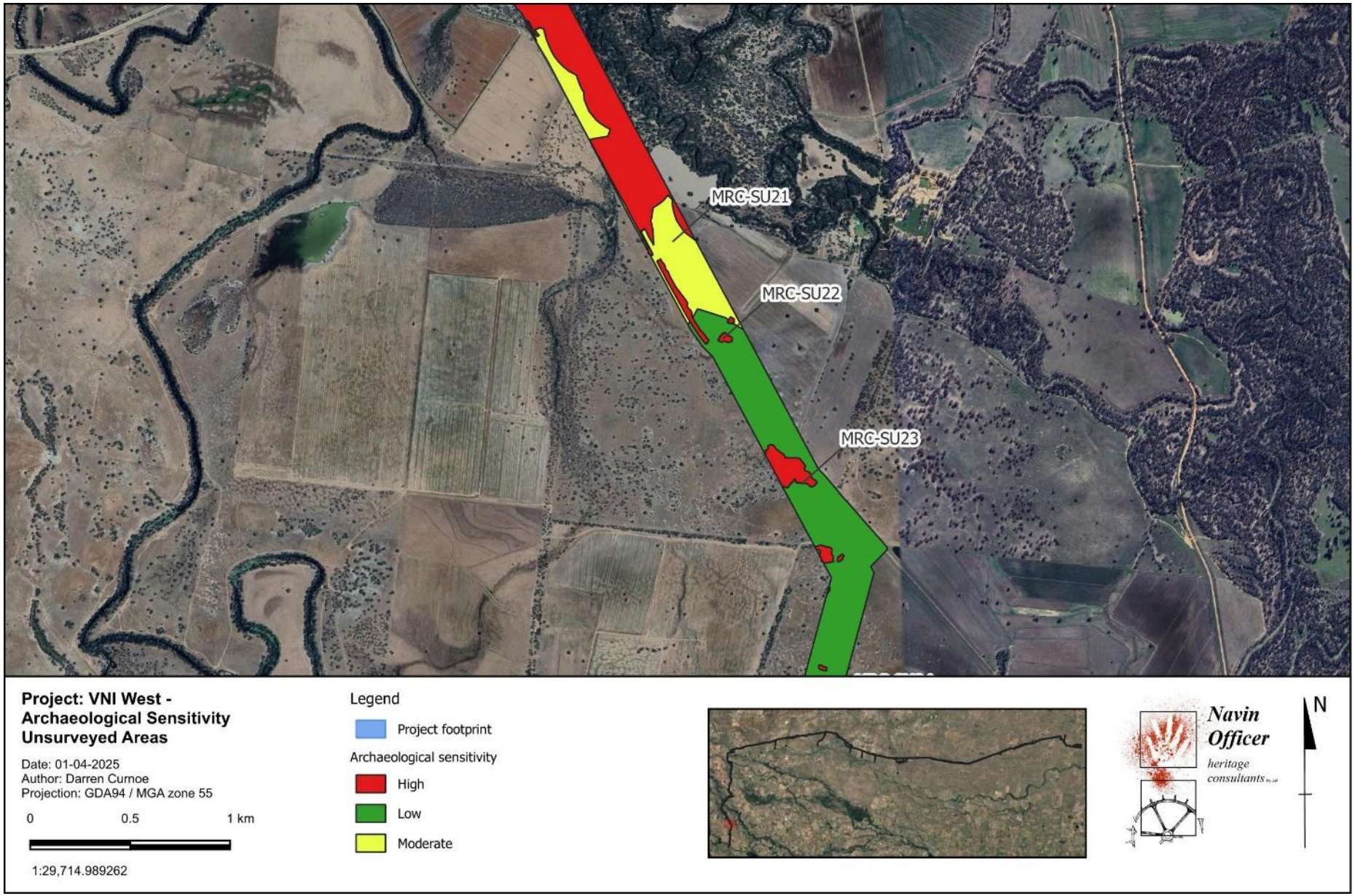


Figure 8-99 Archaeological sensitivity of unsurveyed areas – MRC-SU21–23

9 CULTURAL VALUES ASSESSMENT

The following summarises the Aboriginal cultural values assessment, see Technical Paper 2A for the full assessment.

9.1 Methodology

This study is informed by desktop research and field consultation with a number of Aboriginal Elders, knowledge-holders and/or organisations identified as relevant to the project footprint. The consultation methodology takes the form of semi-structured interview-style conversations in relation to intangible Aboriginal cultural heritage values within, and throughout the broad environs of, the project study area. This methodology is informed by NSW Heritage guidelines and involves participant-led consultation models and a participant review process.

9.2 Existing environment

Ethnohistorical records indicate that the broader project study area is characterised by a variety of traditions, items of Aboriginal history and other social and cultural values. No intangible cultural values were identified within the project footprint during the pre-fieldwork desktop review.

9.3 Consultation outcomes and potential impacts

Consultation with Elders and knowledge-holders identified several areas of cultural value within and in the vicinity of the project footprint. These principally relate to watercourses, including the Edward River/Kolety, the Murray River, and Delta, Yanco, Coxs and Boiling Down Creeks. Participants identified concerns about the project in relation direct or indirect impacts to these cultural values during both the construction and operational phases of the project.

Concerns were identified regarding potential visual impacts at the proposed transmission line crossings of the Edward River/Kolety and the Murray River. The potential impacts to the Edward River/Kolety and the Murray River were expressed as cultural concerns, as the project may impact how these watercourses are perceived and seen by Elders and knowledge-holders.

Cultural values are associated with Delta, Yanco, Coxs and Boiling Down Creeks. The potential impacts relating to these watercourses were identified principally in environmental or ecological terms.

9.4 Management and mitigation

Direct impacts

- Ongoing consultation with the participants in this study to be undertaken during the project design to gain a more informed understanding of participants' concerns relating to visual impacts of the project construction activities where the project intersects with the Edward River/Kolety and the Murray River. Where impacts are considered likely, as indicated by the participants, the project would aim to avoid and minimise impacts on such places where possible. In addition, and in line with mitigations outlined in the project *Technical Paper 3 – LCVIA*, the project design and construction methodology would continue to be refined with an aim to minimise visual impacts wherever practicable.
- For the non-site-specific values identified within the cultural landscape and as outlined in the project ACHAR, the locations of such Aboriginal heritage sites within and adjacent to the project footprint and the relevant controls or protocols to avoid and manage any potential harm to the items will be communicated through the Heritage Management Plan to all relevant construction workers prior to construction commencing in that area.



Indirect impacts

- Potential indirect impacts identified at these watercourses relate to incidental spillages or similar events that might contaminate or otherwise impact their environmental or ecological integrity during the project construction. Incident response procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during construction and environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in incident response procedures.
- An Aboriginal and Torres Strait Islander peoples' participation plan will be prepared and implemented to enhance and maximise opportunities for employment, procurement, education and other potential project related benefits. The plan will include:

  - strategies for maximising training and employment opportunities
  - identify the capacity of Aboriginal and Torres Strait Islander businesses and suppliers to be ready for potential additional demand
  - provide Aboriginal and Torres Strait Islander procurement targets
  - identify tailored 'meet-the-contractor' events for Aboriginal and Torres Strait Islander businesses to learn about potential opportunities associated with the delivery of the project.

  The plan will be informed by an Aboriginal and Torres Strait Islander peoples' advisory group. Members of the Aboriginal and Torres Strait Islanders liaison group will include representatives from Local Aboriginal Land Councils and Aboriginal Representative Organisations. The following stakeholders will also be invited to participate as needed

  - relevant social, health and support services
  - educational organisations and services
  - employment agencies
  - relevant business organisations/groups.
- Establishing a Working Group of Elders, to work with the Aboriginal and Torres Strait Islander peoples' advisory group to build positive, meaningful relationships and inform communities on progress, construction and operations of the project.

10 CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

10.1 Assessment criteria

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance defines cultural significance as 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' (Australia ICOMOS Burra Charter, 2013a).

Assessing the Aboriginal cultural significance of a place involves identifying the range of values that are present and assessing them against relevant criteria, in order to define why a place is important and inform future planning and management. Table 10-1 provides definitions of these values and outlines the criteria for assessment.

Table 10-1 Criteria used to assess the cultural significance of a place

Definition of value	Assessment criteria (after OEH 2011, p. 10)
Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community (OEH 2011, p. 9).	Are the Aboriginal objects in the project footprint important to the cultural or natural history of the local area and/or region and/or state?
Scientific (or archaeological) value refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques (Australia ICOMOS, 2013b). Sites may meet this criterion because they: contain intact archaeological deposits, have potential to answer research questions on past human behaviour, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, are well preserved, or form part of a larger site complex or cultural landscape.	Do any of the sites and Aboriginal objects in the project footprint have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?
Aesthetic value refers to the sensory and perceptual experience of a place—that is, how we respond to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals (Australia ICOMOS, 2013b:3).	Are the sites and Aboriginal objects the project footprint important in demonstrating aesthetic characteristics in the local area and/or region and/or state?
Social (or cultural) value refers to the spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them (OEH 2011, p. :8). Spiritual value is included in the definition of social value, and refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art and practices of Aboriginal people (Australia ICOMOS, 2013b, p. 4).	Do any of the sites and Aboriginal objects in the project footprint have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

The *Aboriginal cultural heritage consultation requirements for proponents 2010* identify that 'Aboriginal people are the primary determinants of the cultural significance of their heritage' (DECCW 2010b: iii). The significance of a place can be the result of a number of factors including:

- continuity of tradition
- occupation or action
- historical association
- custodianship or concern for the protection and maintenance of places
- the value of sites as tangible and meaningful links with the lifestyle and values of ancestors.

Aboriginal cultural significance may or may not parallel the archaeological significance of a site.

The following assessment of significance is made with reference to the criteria outlined above.

10.2 Historic value

Historical and ethnographic research (refer to Section 6.2) and the CVAR (refer to Chapter 9) did not identify any Aboriginal reserves or early historical properties where documented significant historical interactions with Aboriginal people occurred. Discussions were also held with RAPs during archaeological survey regarding the existence of any such places within the project footprint or adjacent areas and none were identified. If evidence of historically significant information relevant to the amended project footprint became available, it would be shared and discussed with relevant Aboriginal stakeholders including RAPs.

10.3 Scientific (archaeological) value

Archaeological sites recorded during the archaeological survey were assigned to one of the following assessment categories:

- potential archaeological deposits
- low scientific significance
- moderate (local) scientific significance
- high (local) scientific significance

Mapping of all of the sites within the project footprint is located in Appendix 6.

10.3.1 Potential Archaeological Deposits

A total of 26 PADs have been identified across the project footprint. Areas of PAD that are not associated with surface artefacts can only be assessed for archaeological significance through subsurface archaeological testing. In terms of significance, the assessment of a PAD relates to its potential or likelihood of yielding significant cultural information through archaeological research.

Archaeological subsurface test excavation has been undertaken at 14 PAD sites. Following the results of the archaeological test excavation program, any portions of the PADs that yield artefacts or cultural material have been able to be assessed from a scientific perspective. Parts of PADs which have not been tested or PADs not subject to archaeological test excavations at all are still considered a PAD (refer to Table 10-2).

Table 10-2 PAD site status

Site Number	Characteristics relevant to significance assessment	Assessment following archaeological subsurface testing	Potential to yield significant cultural information through further excavation
VNIW-A-PAD01	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD01. The findings indicate a low potential for subsurface archaeological deposits within PAD01 and construction is considered suitable within this location.	Low
VNIW-A-PAD02	Potential for subsurface archaeological deposits	A single Aboriginal object was identified during the test excavations within PAD02. The findings indicate a low potential for subsurface archaeological deposits within PAD02 and construction is considered suitable within this location.	Low
VNIW-A-PAD03A	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD03A. The findings indicate a low potential for subsurface archaeological deposits within PAD03 and construction is considered suitable within this location.	Low
VNIW-A-PAD03B	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD03B. The findings indicate a low potential for subsurface archaeological deposits within PAD03 and construction is considered suitable within this location.	Low
VNIW-A-PAD05	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD05. The findings indicate a low potential for subsurface archaeological deposits within PAD05 and construction is considered suitable within this location.	Low
VNIW-A-PAD06	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD06. The findings indicate a low potential for subsurface archaeological deposits within PAD06 and construction is considered suitable within this location.	Low
VNIW-A-PAD07	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD07. The findings indicate a low potential for subsurface	Low

Site Number	Characteristics relevant to significance assessment	Assessment following archaeological subsurface testing	Potential to yield significant cultural information through further excavation
		archaeological deposits within PAD07 and construction is considered suitable within this location.	
VNIW-A-PAD08	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD08. The findings indicate a low potential for subsurface archaeological deposits within PAD08 and construction is considered suitable within this location.	Low
VNIW-A-PAD09	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD09. The findings indicate a low potential for subsurface archaeological deposits within PAD09 and construction is considered suitable within this location.	Low
VNIW-A-PAD012	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD012. The findings indicate a low potential for subsurface archaeological deposits within PAD012 and construction is considered suitable within this location.	Low
VNIW-A-PAD013	Potential for subsurface archaeological deposits	VNIW-A-PAD013 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD014	Potential for subsurface archaeological deposits	VNIW-A-PAD014 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD016	Potential for subsurface archaeological deposits	Test excavation confirmed that the excavated area of the PAD is a site i.e. contains evidence of Aboriginal occupation/objects protected under the NPW Act. Excavations revealed an artefact and shell and intact deposits although the assemblage from test excavations were small and moderate scientific significance, they are a strong indicator that further excavation is likely to yield more archaeological material. The PAD is also associated with intact hearth/heat retainer sites in the adjacent landscape. Following the results of the test excavation program, there is moderate to high potential to contain subsurface archaeological deposits within areas of remaining A Horizon soils of PAD016. Further investigation and salvage excavations as per the	Moderate to high

Site Number	Characteristics relevant to significance assessment	Assessment following archaeological subsurface testing	Potential to yield significant cultural information through further excavation
		mitigation measures should be undertaken prior to any impacts proposed within PAD016.	
VNIW-A-PAD017	Potential for subsurface archaeological deposits	Test excavation confirmed that the excavated area of the PAD is a site i.e. contains evidence of Aboriginal occupation/object protected under the NPW Act. Excavations revealed an Aboriginal object and intact deposits and although the assemblage from test excavations was small and of low scientific significance, it is a strong indicator that further excavation is likely to yield more archaeological material. The PAD is also associated with intact earth mounds and hearth/heat retainer sites in the adjacent landscape. Following the results of the test excavation program, there is moderate to high potential to contain subsurface archaeological deposits within PAD017. Further investigation and salvage excavations as per the mitigation measures should be undertaken prior to any impacts proposed within PAD017.	Moderate to high
VNIW-A-PAD019	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD019. The findings indicate a low potential for subsurface archaeological deposits within PAD019 and construction is considered suitable within this location.	Low
VNIW-A-PAD020	Potential for subsurface archaeological deposits	No Aboriginal objects were identified during the test excavations within PAD020. The findings indicate a low potential for subsurface archaeological deposits within PAD020 and construction is considered suitable within this location.	Low
VNIW-A-PAD021	Potential for subsurface archaeological deposits	VNIW-A-PAD021 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD022	Potential for subsurface archaeological deposits	VNIW-A-PAD022 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD023	Potential for subsurface archaeological deposits	VNIW-A-PAD023 was not subject to test excavations. The site remains a PAD.	Moderate to high

Site Number	Characteristics relevant to significance assessment	Assessment following archaeological subsurface testing	Potential to yield significant cultural information through further excavation
VNIW-A-PAD024	Potential for subsurface archaeological deposits	VNIW-A-PAD024 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD025	Potential for subsurface archaeological deposits	VNIW-A-PAD025 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD026	Potential for subsurface archaeological deposits	VNIW-A-PAD026 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD027	Potential for subsurface archaeological deposits	VNIW-A-PAD027 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD028	Potential for subsurface archaeological deposits	VNIW-A-PAD028 was not subject to test excavations. The site remains a PAD.	Moderate to high
VNIW-A-PAD029	Potential for subsurface archaeological deposits	VNIW-A-PAD029 was not subject to test excavations. The site remains a PAD.	Moderate to high
NA-PAD-01	Potential for subsurface archaeological deposits	NA-PAD-01 was not subject to test excavations. The site remains a PAD.	Moderate to high
HL-01	Potential for subsurface archaeological deposits.	Test excavation confirmed that the PAD is a site i.e. contains evidence of Aboriginal occupation/object protected under the NPW Act. Excavations revealed Aboriginal objects and intact deposits and although the assemblage from test excavations was small and of low scientific significance, it is a strong indicator that further excavation is likely to yield more archaeological material that may yield important cultural material. Following the results of the test excavation program, there is moderate to high potential to contain subsurface archaeological deposits within HL-01. Further investigation and salvage excavations as per the mitigation measures should be undertaken prior to any impacts proposed within HL- 01.	Moderate to high
WAS02-1	Subsurface artefact scatter	The test excavations identified a moderate to high density of lithic material within WAS02-1. As the proposed work has the potential to	High

Site Number	Characteristics relevant to significance assessment	Assessment following archaeological subsurface testing	Potential to yield significant cultural information through further excavation
		impact substantial subsurface archaeological deposits that may prove to be of high archaeological significance within WAS02-1, following detailed design, mitigation measures may be required prior to construction, which may include salvage excavations.	

10.3.2 Low scientific significance

Low scientific significance has been attributed to all surface sites that have been identified as either highly disturbed (relative to the surrounding landscape) or have been assessed as having low or low–moderate subsurface archaeological potential (refer to Table 10-4). These sites have low numbers of artefacts (less than five), comprise a single (isolated) hearth or are cultural resources sites with species commonly found in the landscape. All these sites have little potential to provide data that would substantially add to our understanding of Aboriginal occupation and land-use in the local area, beyond the information they have already provided through being discovered and recorded during this study. Some sites are located with this PADs; these areas are indicated in the Table 10-3. When the site is assessed on its own, the PAD and the site may have different significance, for example an isolated find in a PAD may have significance as that artefact on its own may not be able to provide data as with the other low significance sites.

Table 10-3 Sites with low scientific significance

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-06	Cultural resources site	Not associated with other Aboriginal objects, common species
VNIW-A-017	Hearth/heat retainers (1)*	Common site type, low count, low archaeological potential
VNIW-A-020	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-022	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-027	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-028	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-086	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-087	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-099	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0126	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0129	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0132	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0135	Isolated find	Common site type, low count, low archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0140	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0142	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0143	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0144	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0145	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0146	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0149	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0152	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0163	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0168	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0172	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0173	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0175	Isolated find, PAD	Common site type, low count, low archaeological potential
VNIW-A-0176	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0178	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0179	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0196	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0197	Isolated find	Common site type, low count, low archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0198	Isolated find (1), PAD	Common site type, low count, low archaeological potential
VNIW-A-0210	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0216	Isolated finds (4), PAD	Common site type, low count, low archaeological potential
VNIW-A-0241	Artefact scatter (2)	Common site type, low count, low archaeological potential
VNIW-A-0252	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0259	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0260	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0261	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0262	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0269	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0275	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0276	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0277	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0278	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0279	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0290	Artefact scatter	Common site type, low count, low archaeological potential
VNIW-A-0303	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0304	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0305	Hearth/heat retainers (1)	Common site type, low count, low archaeological potential
VNIW-A-0306	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0307	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0308	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0309	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0310	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0311	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0312	Isolated find	Common site type, low count, low archaeological potential
VNIW-A-0313	Artefact scatter	Common site type, low count, low archaeological potential
NA-A-03	Artefact scatter	Common site type, low count, low archaeological potential

*Numbers in parentheses refer to the number of the item i.e. heat retainer (1) is one heat retainer

10.3.3 Moderate scientific significance

Moderate (local) scientific significance has been attributed to all surface sites that are associated with areas of moderate to high or high potential for subsurface archaeological deposits (Table 9-4). Also included are rarer site types such as modified trees, or locations with more than one hearth, as multiple hearths may signal a camp site with the potential for subsurface deposits. Any subsurface deposits at these sites are predicted to contain a higher number of artefacts compared to the other sites in the project footprint and, therefore, have potential to provide a large enough sample to enable analyses of assemblage compositions that could be used to derive statements on the technological systems being employed by Aboriginal groups living in this region.

Table 10-4 Sites with moderate (local) scientific significance

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-03	Artefact Scatter (2), PAD	Associated with a PAD (PEC-E-45) with moderate archaeological potential
VNIW-A-05	Artefact Scatter (7), PAD	Associated with VNIW-A-PAD019 with moderate archaeological potential
VNIW-A-0108	Hearth/heat retainers (1), PAD	Associated with VNIW-A-PAD014 with moderate archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0157	Artefact scatter, PAD	Associated with VNIW-A-PAD019 with moderate archaeological potential
VNIW-A-0158	Isolated find, PAD	Associated with VNIW-A-PAD012 with moderate archaeological potential
VNIW-A-0185	Modified tree (1)	Rarer site type
VNIW-A-0186	Modified tree (1)	Rarer site type
VNIW-A-0187	Modified tree (1)	Rarer site type
VNIW-A-0188	Modified tree (1)	Rarer site type
VNIW-A-0189	Modified tree (1)	Rarer site type
VNIW-A-0190	Modified tree (1)	Rarer site type
VNIW-A-0191	Modified tree (1)	Rarer site type
VNIW-A-0192	Modified tree (1)	Rarer site type
VNIW-A-0193	Modified tree (1)	Rarer site type
VNIW-A-0211	Modified tree (1)	Rarer site type
VNIW-A-0214	Hearth/heat retainers (2), PAD	Possible open camp site with moderate archaeological potential
VNIW-A-0215	Isolated finds (3), Hearth/heat retainers (3), PAD	Combination of isolated finds with hearths and VNIW-A-PAD09 with moderate archaeological potential
VNIW-A-0218	Isolated finds (5)	Relatively large number of isolated finds
VNIW-A-0220	Hearth/heat retainers (3)	Possible open camp site with moderate archaeological potential
VNIW-A-0225	Hearth/heat retainers (2)	Possible open camp site with moderate archaeological potential
VNIW-A-0226	Hearth/heat retainers (3)	Possible open camp site with moderate archaeological potential
VNIW-A-0227	Hearth/heat retainers (2)	Possible open camp site with moderate archaeological potential
VNIW-A-0228	Hearth/heat retainers (3)	Possible open camp site associated with VNIW-A-PAD012 with moderate archaeological potential
VNIW-A-0229	Hearth/heat retainers (1), PAD	Possible open camp site associated with VNIW-A-PAD012 with moderate archaeological potential
VNIW-A-0231	Hearth/heat retainers (5)	Possible open camp site associated with VNIW-A-PAD010 with moderate archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0234	Hearth/heat retainers (7), PAD	Possible open camp site associated with VNIW-A-PAD015 with moderate archaeological potential
VNIW-A-0238	Hearth/heat retainers (2)	Possible open camp site with moderate archaeological potential
VNIW-A-0239	Modified tree (1)	Rarer site type
VNIW-A-0240	Hearth/heat retainers (3)	Possible open camp site with moderate archaeological potential
VNIW-A-0242	Artefact scatter, PAD	Possible open camp site associated with VNIW-A-PAD029 with moderate archaeological potential
VNIW-A-0280	Modified tree (1)	Rarer site type
VNIW-A-0284	Hearth/heat retainers (2)	Possible open camp site with moderate archaeological potential
VNIW-A-0285	Hearth/heat retainers (2)	Possible open camp site with moderate archaeological potential
VNIW-A-0286	Artefact scatter (10), PAD	Possible open camp site associated with VNIW-A-PAD027 with moderate archaeological potential
VNIW-A-0287	Artefact scatter (4), Hearth/heat retainers (2), PAD	Possible open camp site associated with VNIW-A-PAD028 with moderate archaeological potential
NA-A-01	Artefact scatter	Associated with a PAD (NA-PAD-01) with moderate archaeological potential
NA-A-02	Artefact scatter	Associated with a PAD (NA-PAD-01) with moderate archaeological potential

*Numbers in parentheses refer to the number of the item i.e. heat retainer (1) is one heat retainer

10.3.4 High scientific significance

High (local) scientific significance has been attributed to all surface sites that are associated with the following (refer to Table 10-5):

- earth mounds, due to the possibility they may contain burials
- very rare sites in the landscape such as shell middens
- exceptionally rich landscapes with large numbers of sites/Aboriginal objects within a relatively small area suggestive of intensive human occupation and with high potential for subsurface archaeological deposits
- sites of exceptional preservation or spatial extent
- areas of very high artefact numbers and very high potential for subsurface archaeological deposits.

Any subsurface deposits at these sites are predicted to contain a higher number of Aboriginal objects compared to the other sites in the project footprint and, therefore, have potential to provide a large enough sample to enable analyses of assemblage compositions that could be used to derive statements on the technological systems being employed by Aboriginal groups living in this region.

Some identified PADs have a number of sites within them, the individual site boundaries have been identified based on the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010).

Table 10-5 Sites with high (local) scientific significance

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-067	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-073	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-076	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-077	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-078	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-079	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-080	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-081	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-082	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-083	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-084	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-085	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-092	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-093	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-094	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-095	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-096	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-097	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-098	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD013 with high archaeological potential
VNIW-A-0148	Isolated find, PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD017 with high archaeological potential
VNIW-A-0221	Hearth/heat retainers (5), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD016 with high archaeological potential
VNIW-A-0222	Earth mound (1), Hearth/heat retainers (3), PAD	Rare site type which may contain human remains, part of an exceptionally rich landscape, associated with VNIW-A-PAD017 with high archaeological potential
VNIW-A-0223	Hearth/heat retainers (2), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD017 with high archaeological potential
VNIW-A-0224	Earth mounds (3), Hearth/heat retainers (2), isolated finds (3), PAD	Rare site type which may contain human remains, associated with VNIW-A-PAD017 with high archaeological potential
VNIW-A-0230	Shell midden, Hearth/heat retainer (3)	Very rare site type, hearths exposed at large depth below ground surface indicating high potential for subsurface archaeological deposits
VNIW-A-0232	Hearth/heat retainers (4), PAD	Site with exceptional preservation of hearths indicating intensive recent occupation, associated with VNIW-A-PAD014 with moderate archaeological potential
VNIW-A-0233	Earth mound (1), Hearth/heat retainers (4),	Rare site type which may contain human remains
VNIW-A-0235	Hearth/heat retainers (2), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD013 with high archaeological potential
VNIW-A-0236	Hearth/heat retainers (4), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD013 with high archaeological potential
VNIW-A-0237	Hearth/heat retainers (13), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD013 with high archaeological potential
VNIW-A-0243	Earth mound, PAD	Rare site type which may contain human remains, part of a rich cultural landscape, associated with a VNIW-A-PAD022 with high archaeological potential
VNIW-A-0244	Earth mound, PAD	Rare site type which may contain human remains, part of a rich cultural landscape, associated with a VNIW-A-PAD022 with high archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0245	Earth mound	Rare site type which may contain human remains
VNIW-A-0249	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD022 with high archaeological potential
VNIW-A-0250	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD022 with high archaeological potential
VNIW-A-0251	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD022 with high archaeological potential
VNIW-A-0255	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0256	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0257	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0258	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0270	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0271	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0272	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0273	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0274	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0283	Modified tree (1), PAD	Rare site type, part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0288	Hearth/heat retainers (3), Isolated find, PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0289	Shell middens, hearths/heat, PAD	Part of a rich cultural landscape, associated with a VNIW-A-PAD024 with high archaeological potential
VNIW-A-0293	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD016 with high archaeological potential
VNIW-A-0294	Hearth/heat retainers (1), shell, artefact, PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD016 with high archaeological potential

Site number	Summary description	Characteristics relevant to significance assessment
VNIW-A-0299	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD017 with high archaeological potential
VNIW-A-0301	Hearth/heat retainers (1), PAD	Part of a rich cultural landscape, associated with VNIW-A-PAD017 with high archaeological potential
VNW-A-0314	Earth mound	Rare site type which may contain human remains and part of a rich cultural landscape, associated with VNIW-A-PAD024 with high archaeological potential

*Numbers in parentheses refer to the number of the item i.e. heat retainer (1) is one heat retainer

10.4 Aesthetic value

As noted in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage* (OEH, 2011), aesthetic value is often closely associated with social values. Culturally significant places are of high aesthetic value to the local Aboriginal community and expectations are that any development in the area would be sympathetic to natural sighting and vistas.

The following have been identified in the CVA report as having aesthetic significance:

> The Murray River: Identified as an important resource area, and therefore a source of life, for local Aboriginal groups and those who travelled through the region. Participants indicated interest in participating in a visual impact assessment at the proposed crossing of the Murray River.
>
> The Edward River/Koletj: Identified as culturally significant due to a regional creation narrative. This mythology holds that the Edward River, known to local Aboriginal people as Koletj, is the embodiment of an ancestral Snake figure. Participants stated that the proposed construction of transmission lines at and over the Edward River would "impact how we see the river", and expressed a desire to participate in a visual impact assessment at the proposed crossing. The Edward River is intersected by the project area.

10.5 Social (or cultural) value

Aboriginal people alone can determine the Aboriginal cultural significance of a place. The following is the result of the ongoing consultation that has occurred as part of this assessment.

All archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape. All sites have cultural significance to present-day Aboriginal groups as manifestations of their ancestors' past occupation of the landscape.

Some objects and places might have cultural value that were not communicated to NOHC. This could be the case for objects or places that are associated with information that is culturally restricted.

10.5.1 Sites of cultural significance

The CVA report has identified locations of cultural value, refer to *Technical Paper 2a – Cultural Values Assessment* for findings and discussion of this assessment.

11 ASSESSMENT OF IMPACTS

11.1 Potential construction impacts

Following the determination of cultural heritage values and significance, an impact assessment was carried out that considered the potential for direct and indirect impacts on heritage. The assessment was based on a worst-case scenario that assumes heritage items throughout the entire project footprint could be impacted. However, as the final impacted area (for construction and operation) would be much smaller than the project footprint, the impact assessment findings presented in this section are conservative.

The construction activities and project components are outlined in Chapter 1. Project components and activities that have the potential to cause direct impact in the project footprint include:

site establishment works, which may include (but not be limited to):

- establishment of combined temporary worker accommodation facilities and construction compounds, including excavations, surface preparation, access roads and utility connections
- establishing helipad/helicopter facilities
- vegetation clearing
- carrying out road improvement work where required
- establishment of water supply points
- establishment of new access tracks and watercourse crossings that have a more than minor impact
- major upgrades to existing access tracks and road improvement work
- relocating, adjusting or protecting utilities, where required
- installing site environmental management and traffic controls

- construction of the proposed transmission lines, which would include (but not be limited to):
  - earthwork (including establishment of construction pads) and the construction of footings and foundations for each transmission line structure
  - erection of the new transmission line structures using crane(s) and/or helicopter(s), noting, where cranes are proposed, is assumed that the final height of the cranes would extend around 20 metres above the respective transmission line structure heights
  - stringing of the conductors and overhead earth wires and optical ground wire (utilising either ground-based and/or helicopter/drone stringing construction methods)
  - installation of earthing conductors
  - testing and commissioning of the transmission lines
- works to replace around nine kilometres of Line 51 generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road, which would include (but not be limited to):
  - demolition of existing transmission line structures and footings and removal of waste materials
  - erection of the new transmission line structures
  - stringing of the conductors and overhead earth wires and optical ground wire
  - testing and commissioning of the new transmission lines
- expansion of the future Dinawan substation, which would include (but not be limited to):
  - civil construction works including earthworks
  - slab construction for the new 500 kV switchyard and 330 kV transformer bays
- adjustments of existing utilities that intersect the transmission line corridor (as required)
- connection and transmission line diversion works at the existing Wagga 330 kV substation and future Gugaa 500 kV substation, Livingstone Gully Road

11.2 Potential harm from construction

A total of 194 Aboriginal sites are within the project footprint, including 26 PADs. These may be directly or indirectly impacted by the project. Direct and indirect impacts for the purposes of this assessment have been defined as follows:

- Total direct harm or disturbance, where direct impacts would occur to all surface and/or subsurface features at an item. This would generally result a total loss of heritage value at a site. An example of a direct impact for the project is the installation of transmission towers. For example sites located in early works areas, within the construction area of the transmission line structures, within the Dinawan substation are likely to be directly impacted.

- Partial direct harm or disturbance, where direct impacts would occur to only some of the surface and/or subsurface features at an item. Partial direct harm generally results partial loss of value at a site. An example of a partial direct harm would be where part of a site is impacted due to the installation of an access track or transmission line infrastructure.

- Potential direct harm or disturbance (total or partial), where direct impacts are occurring adjacent to sites, or where vegetation clearance/maintenance requires the use of heavy machinery to be active near sites. Such impacts would likely be inadvertent.

- Indirect impacts, including to the views to and from heritage items. Indirect impacts could include impacts from vegetation clearance and visual impacts to cultural values and views.

The potential harm from the construction on Aboriginal sites within the project footprint is summarised in Table 11-1 and shown in Appendix 6. The assessment is conservative as it is based in direct impacts occurring throughout the project footprint. It is likely that the final directly impacted area would be much smaller than the project footprint. The transmission line easement would generally occupy only 60 to 110 metres of the 200 metre wide project footprint and only a portion of the easement would be disturbed during construction and operation. In addition, not all the land with the transmission line easement would be directly impacted during construction.

The number of sites to be impacted would be confirmed during finalisation of the design and construction methodology, which would continue to identify opportunities to avoid or minimise impacts. There would be opportunities to avoid impacts to sites through micro-siting transmission line structures and access tracks.

The CVAR details the potential impacts to areas of cultural value, see *Technical Paper 2A – Cultural Values Assessment*.

Table 11-1 Potential construction impacts to Aboriginal sites within the project footprint*

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-03	Artefact Scatter (2), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-05	Artefact Scatter (7), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-06	Cultural resources site	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-017	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-020	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-022	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-027	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-028	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-067	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-073	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-076	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-077	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-078	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-079	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-080	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-081	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-082	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-083	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-084	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-085	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-086	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-087	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-092	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-093	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-094	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-095	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-096	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-097	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-098	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-099	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0108	Hearth/heat retainers (1), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0126	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0129	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0132	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0135	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0140	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0142	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0143	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0144	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0145	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0146	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0148	Isolated find, PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0149	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0152	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0157	Artefact scatter, PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0158	Isolated find, PAD	moderate	This site is within the project footprint within a proposed compound	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0163	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0168	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0172	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0173	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0175	Isolated find, PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0176	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0178	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0179	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0185	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0186	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0187	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0188	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0189	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0190	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0191	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0192	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0193	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0196	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0197	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0198	Isolated find (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0210	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0211	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0214	Hearth/heat retainers (2), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0215	Isolated finds (3), Hearth/heat retainers (3), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0216	Artefact scatter (4), PAD	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0218	Isolated finds (5)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0220	Hearth/heat retainers (3)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0221	Hearth/heat retainers (5), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0222	Earth mound (1), Hearth/heat retainers (3), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0223	Hearth/heat retainers (2), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0224	Earth mounds (3), Hearth/heat retainers (2), isolated finds (3), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0225	Hearth/heat retainers (2)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0226	Hearth/heat retainers (3)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0227	Hearth/heat retainers (2)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0228	Hearth/heat retainers (3)	moderate	This site is within the project footprint within a proposed construction compound	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0229	Hearth/heat retainers (1), PAD	high	This site is within the project footprint within a proposed construction compound	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0230	Shell midden, Hearth/heat retainer (3)	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0231	Hearth/heat retainers (5)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0232	Hearth/heat retainers (4), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0233	Earth mound (1), Hearth/heat retainers (4),	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0234	Hearth/heat retainers (7), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0235	Hearth/heat retainers (2), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0236	Hearth/heat retainers (4), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0237	Hearth/heat retainers (13), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0238	Hearth/heat retainers (2)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0239	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0240	Hearth/heat retainers (3)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0241	Artefact scatter (2)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0242	Artefact scatter, PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0243	Earth mound, PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0244	Earth mound, PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0245	Earth mound	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0249	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0250	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0251	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0252	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0255	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0256	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0257	Hearth/heat retainers (1), PAD	high	This site is within the project footprint within a proposed track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0258	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0259	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0260	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0261	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0262	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0269	Hearth/heat retainers (1)	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0270	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0271	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0272	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0273	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0274	Hearth/heat retainers (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0275	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0276	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0277	Isolated find	low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0278	Isolated find	low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0279	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0280	Modified tree (1)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0283	Modified tree (1), PAD	high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0284	Hearth/heat retainers (2)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0285	Hearth/heat retainers (2)	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0286	Artefact scatter (10), PAD	moderate	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0287	Artefact scatter (4), Hearth/heat retainers (2), PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0288	Hearth/heat retainers (3), Isolated find, PAD	high	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0289	Shell middens, hearths/heat	high	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0290	Artefact scatter	low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0293	Hearth/heat retainers	high	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0294	Hearth/heat retainers, shell midden, artefact	High	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0299	Hearth/heat retainers	High	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0301	Hearth/heat retainers	High	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0303	Hearth/heat retainers	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0304	Hearth/heat retainers	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-0305	Hearth/heat retainers	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0306	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0307	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0308	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0309	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0310	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0311	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0312	Isolated find	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0313	Artefact scatter	Low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-0314	Earth mound	High	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD01	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD02	PAD	Low	This site is within a proposed access track and transmission line portion of the project footprint	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD03A	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-PAD03B	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD05	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD06	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD07	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD08	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD09	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD012	PAD	Low	This site is within the project footprint within a proposed construction compound	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD013	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD014	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD015	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD016	PAD	High	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD017	PAD	High	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD019	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD020	PAD	Low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
pending	VNIW-A-PAD021	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD022	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD023	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD024	PAD	Moderate to high	This site is within a proposed access track and transmission line portion of the project footprint	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD025	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD026	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD027	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD028	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	VNIW-A-PAD029	PAD	Moderate to high	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0179	DEHW-2024A-AS3	Artefact	Moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0185	DEHW-2024A-ST7	Artefact	Moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0060	PEC-E-50	Hearth	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0059	PEC-E-49	Modified tree	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
55-1-0058	PEC-E-48	Modified tree	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0057	PEC-E-47	Hearth	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0055	PEC-E-45	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0131	PEC-E-95	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0052	PEC-E-G2	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0053	PEC-E-43	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0162	DEHW-2023-HAS13	Artefact scatter and hearth	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
55-1-0111	Yanco Delta AS 05	Artefact scatter	low	This site is within the project footprint within a proposed access track	All or part of this site may be directly or indirectly impacted by the project
56-1-0729	HL-01	Artefact scatter/PAD	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
56-1-0730	HL-02	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
56-1-0742	WAS02-01	Subsurface artefact scatter/Artefact scatter	moderate	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
56-1-0731	HL-03	Isolated find	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	HLW-10	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project
pending	HLW-11	Artefact scatter	low	This site is within the transmission line portion of the project footprint.	All or part of this site may be directly or indirectly impacted by the project

AHIMS number	Site name	Site type	Significance	Project component	Impact
56-1-0497	Simpson TSR 1	Modified Tree	moderate	This site is immediately adjacent to a construction compound	This site may be indirectly impacted by the project
pending	NA-A-01	Artefact scatter	moderate	This site is within the project footprint within a construction compound	All or part of this site may be directly or indirectly impacted by the project
pending	NA-A-02	Artefact scatter	moderate	This site is within the project footprint within a construction compound	All or part of this site may be directly or indirectly impacted by the project
pending	NA-A-03	Artefact scatter	low	This site is within the project footprint within a construction compound	All or part of this site may be directly or indirectly impacted by the project
pending	NA-PAD01	PAD	Moderate to high	This site is within the project footprint within a construction compound	All or part of this site may be directly or indirectly impacted by the project

*Note: numbers in brackets refer to the number if items is artefact (13) are three artefacts recorded at that site

11.3 Potential operational impacts

Activities during operation that may have a potential impact on Aboriginal heritage items may include:

- vegetation clearing/trimming within the transmission line easement, and access along road/tracks
- maintenance of the access tracks
- maintenance of the transmission line structure and line including heavy machinery placement
- maintenance of stormwater drainage systems.

Operational impacts may occur on sites that will remain in the transmission line corridor that have not been salvaged or impacted by construction. Operational impacts may be direct or indirect, for example any ground disturbing activities have the potential to directly harm Aboriginal objects and tree trimming may directly harm scarred trees. Works in the vicinity of Aboriginal sites may have indirect impacts such as from burying of Aboriginal artefacts from silt run-off.

As with construction impacts:

- total direct harm or disturbance would generally result in a total loss of heritage value at a site
- partial direct harm generally results in partial loss of value at a site
- indirect impacts may partially impact the cultural values of a site.

11.4 Consideration of the principles of ecologically sustainable development

According to the Operational Policy: Protecting Aboriginal Cultural Heritage, an object of the NPW Act is to conserve places, objects and features of significance to Aboriginal people (section 2A(1)(b)(i)). This is to be achieved by applying the principles of ecologically sustainable development (ESD) (section 2A(2)). An ESD (defined in section 6 of the *Protection of the Environment Administration Act 1991*) requires the integration of economic and environmental considerations (including cultural heritage) in the decision making process. In regard to heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

11.4.1 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. The precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation. In applying the precautionary principle, decisions should be guided by:

- a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment
- an assessment of the risk-weighted consequences of various options.

Intergenerational equity is being considered through the avoidance of impact to archaeological sites where possible, and through the salvaging of archaeological sites where impacts cannot be avoided. Measures taken to avoid impact to sites (including planning the location of work to physically avoid sites, and the use of protective measures such as site fencing) ensures that these sites remain in their current condition and are available for future generations. The initial design and construction planning process has sought to avoid and minimise potential impacts to sites and features of Aboriginal heritage significance. In addition, the vegetation clearing methodology would also result in the reduction of direct impacts to sites, for example the approach is to retain root balls in areas of PADs to avoid impacts. Further design refinements and construction methodology changes would be investigated during detailed design to continue to avoid or minimise impacts.

Where impacts are unavoidable for Aboriginal sites/PADs, salvage of the archaeological material through surface collection and/or excavation would identify, recover and analyse Aboriginal objects that would potentially be subject to harm. To ensure that the objects themselves would be available for future generations to potentially access, the recovered object(s) would be subject to continuing consultation with the appropriate RAPs regarding their long-term storage and keeping.

11.4.2 Precautionary principle

The precautionary principle is relevant to the consideration of potential impacts to Aboriginal cultural heritage where:

- the project involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places
- there is uncertainty about the Aboriginal cultural heritage values or scientific or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.

Where this is the case, a precautionary approach should be taken, and all cost-effective measures should be implemented to prevent or reduce damage to the objects/place.

The archaeological survey and subsurface test excavations, engagement with the RAPs and preparation of a thorough ACHAR have improved the understanding of the cultural heritage project footprint. This knowledge will allow design and construction measures to be prepared with impact avoidance as a priority. Where impacts cannot be avoided, the proposed salvage of surface artefacts and subsurface deposits, represents a precautionary measure against the harm to archaeological material at these locations. The recorded finds from these actions would inform an understanding of past human behaviour. The subsequent written record created through the reporting process would create new knowledge. The knowledge generated through the reporting process acts as another harm mitigation measure.

12 CUMULATIVE IMPACT ASSESSMENT

The cumulative impact assessment considers other nearby developments along with the project and assesses the scale and nature of the cumulative impacts on key issues.

The assessment is consistent with the requirements of the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW Department of Planning, Industry and Environment (DPIE), 2022). These guidelines define cumulative impacts as those arising as a result of incremental, sustained and combined effects of human action and natural variations over time that can be both positive and negative. These impacts can be caused by the compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise.

Further detail on cumulative impact assessment approach and the other projects considered in the cumulative impact assessment is provided in Chapter 24 (Cumulative impacts) of the EIS.

12.1 Projects considered

The relevant future projects that were considered as having the potential to result in cumulative impacts with the project are listed in Table 12-1. The location of the major relevant future projects are shown in Figure 12-1 and Figure 12-2.

Table 12-1 Projects with the potential for cumulative impacts

Related developments		
1. VNI West (Victoria)	2. EnergyConnect (NSW – Eastern section) (SSI-9172452)	3. HumeLink (SSI-36656827)
Projects currently subject to environmental assessment		
4. Junction Rivers Wind Farm (SSD-30448824)	11. Pottinger Wind Farm (SSD-59235464)	18. Dinawan Solar Farm (SSD-50725959)
5. Keri Keri Wind Farm (SSD-38358962)	12. Pottinger Solar Farm (SSD-59254709)	19. Dinawan Wind Farm (SSD-50725708)
6. Wilan Wind Farm (SSD-51306206)	13. Billabong Creek Environmental Water Regulators (SSI-50831979)	20. Argoon Wind Farm (SSD-64935522)
7. Baldon Wind Farm (SSD-40138508)	14. Bullawah Wind Farm (SSD-50505215)	21. Belhaven Battery Energy Storage System (SSD-57575973)
8. Tchelery Wind Farm (SSD-59701722)	15. Romani Solar Farm (SSD-67105475)	22. Livingstone Solar Farm (SSD-80114208)
9. Abercrombie Wind Farm (SSD-77340978)	16. West Nyangay Solar Farm (SSD-74990235)	23. Mangoplah Battery Energy Storage System (SSD-77527735)
10. Wanganella Wind Farm (SSD-78102208)	17. Conargo Wind Farm (SSD-70611708)	
Approved or changed projects		
24. Yanco Delta Wind Farm (SSD-41743746)	25. Gregadoo Solar Farm (SSD-8825)	26. Inland Rail (Albury to Illabo) (SSI-10055)

12.1.1 South West Renewable Energy Zone access right agreements

In April 2025, EnergyCo granted access rights to six wind, solar and large-scale battery projects with a combined generation capacity of 3.56 gigawatts[1]. The project are:

- Yanco Delta Wind Farm (project 24 in Table 12-1)
- Dinawan Energy Hub – consisting of the Dinawan Solar Farm and Dinawan Wind Farm (projects 18 and 19 respectively in Table 12-1)
- Pottinger Energy Park – consisting of the Pottinger Solar Farm and Pottinger Wind Farm (projects 11 and 12 respectively in Table 12-1)
- Bullawah Wind Farm (project 14 in Table 12-1)

The combined generation capacity of these proposed or approved projects represents the initial allocation of access rights under the South West Renewable Energy Zone access scheme. In making this decision, the maximum capacity for access rights assigned to each proposed renewable energy project is lower than what has been identified in planning assessment documentation for those projects, and it would alter the likelihood of some of the remaining projects in the South West Renewable Energy Zone proceeding in the short-term. However, for the purposes of this cumulative assessment it is assumed that all identified projects would proceed as described in the relevant planning assessment documentation available at the time of the assessment (in line with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW DPIE, 2022)).

1 Media Release – South West Renewable Energy Zone powers up

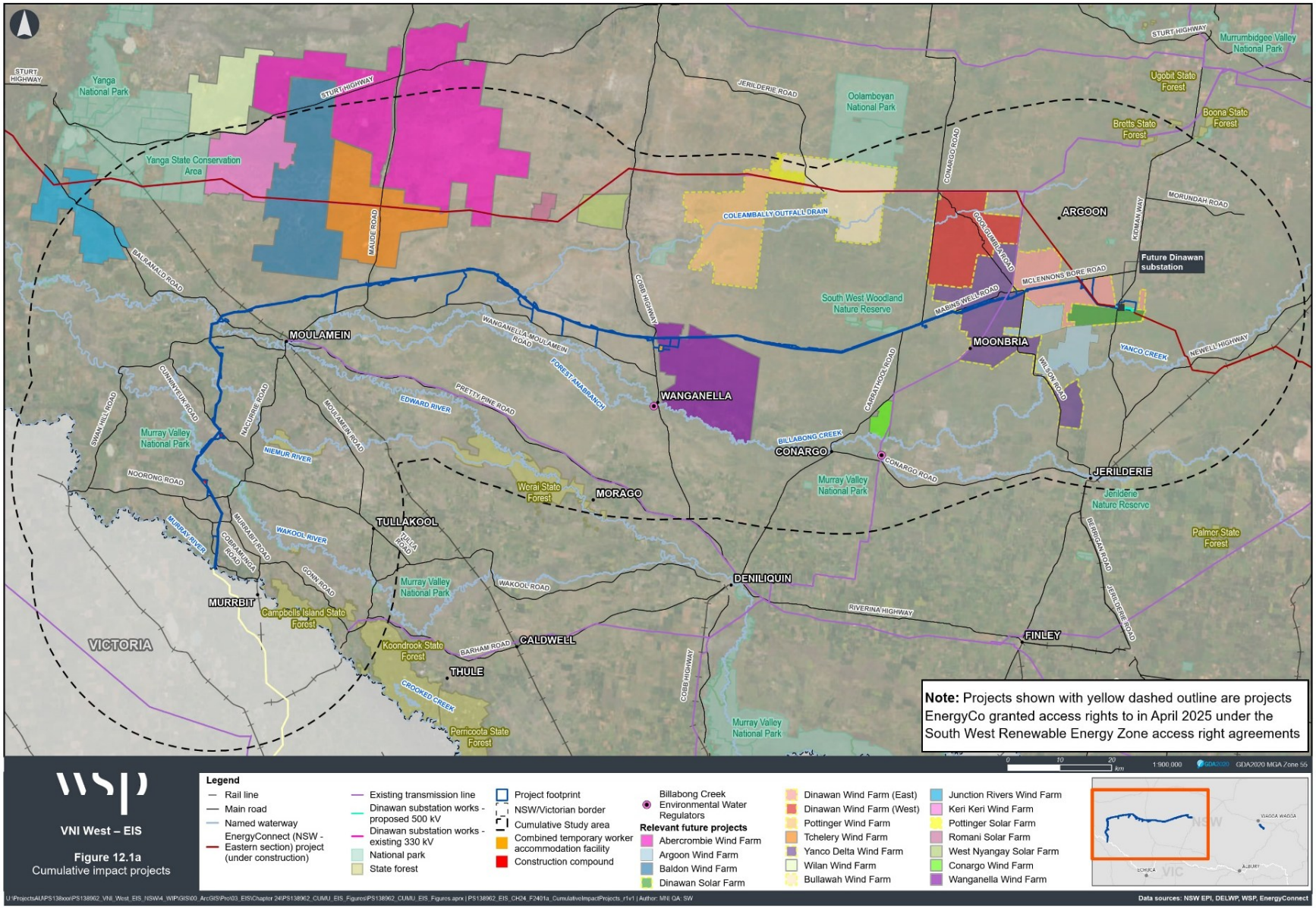


Figure 12-1 Cumulative Impact projects – NSW/Victorian border to Dinawan substation

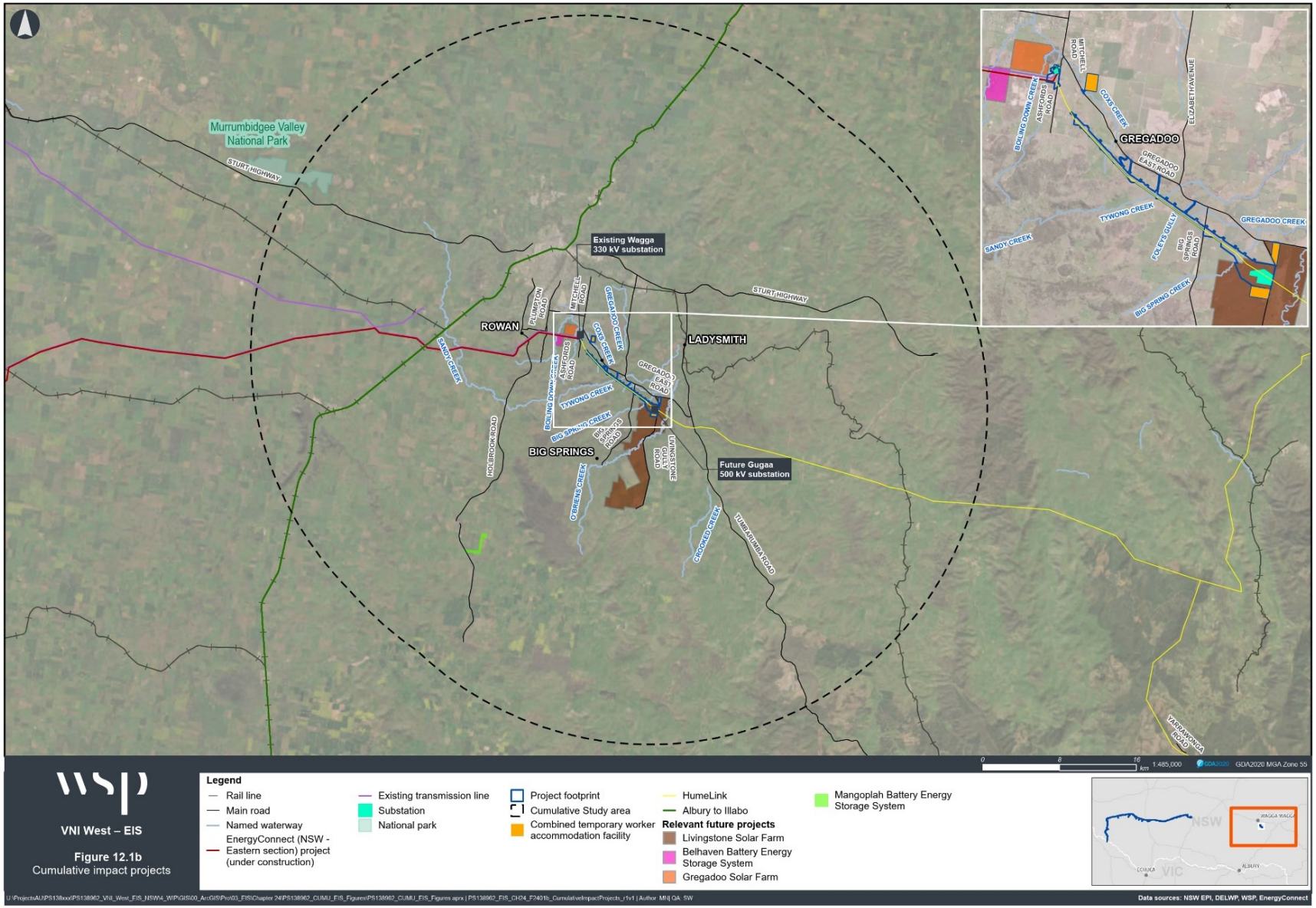


Figure 12-2 Cumulative impact projects – Network augmentation works

Table 12-2 Projects with the potential for cumulative impacts

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
Related developments					
1. VNI West (Victoria)	Transmission Company Victoria	Victorian component of the VNI West project. VNI West (Victoria) would consist of around 240 km of new 500 kV transmission line between the connection point with VNI West (Victoria) and Bulgana, Victoria.	Provides a direct connection into the project at NSW border.	• TCV released its 70 m preferred easement alignment for the Victorian component in October 2024 • the project is currently undergoing environmental assessment in accordance with Victorian and Commonwealth planning processes, and is subject to ongoing preparation of an Environment Effects Statement • project approval and commencement of construction is expected to occur in 2026.	No assessment available
2. EnergyConnect (NSW – Eastern Section) (SSI-9172452)	Transgrid	Development of a new transmission line connecting Buronga Substation and Wagga Substation, and construction of the new Dinawan Substation (around 170 km west of Wagga Wagga).	Provides a direct connection into the project at the future Dinawan substation (being constructed as part of Energy Connect (NSW – Eastern Section)).	• project approved in September 2022 • construction began in early 2023 and is expected to continue until around mid to-late 2025 • operation is expected to begin in 2025 with an operational life of around 50 years.	Of the 147 Aboriginal sites (previously and newly identified), and PADs within the EnergyConnect (NSW – Eastern Section) survey area, 55 would not be impacted at all by the project and 92 may potentially be. Of these there are seven sites in the current project footprint and two Aboriginal sites that would be impacted by both EnergyConnect and the VNI West (NSW). VNI West (NSW) would not see a

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
					substantial increase in impact to Aboriginal sites across the very large area encompassed by both projects.
3. HumeLink (SSI-36656827)	Transgrid	Construction and operation of new transmission lines between the existing substations at Wagga Wagga and Bannaby and the proposed Maragle substation, and a new substation at Gugaa.	The project overlaps the HumeLink footprint.	• project approved late 2024 • construction is proposed to commence in 2025 and is expected to take around 2.5 years to complete • operation is expected to begin in mid-2027 with an operational life of 50-70 years.	There are 178 Aboriginal sites including 12 PADs and one modified tree/PAD within the HumeLink amended project footprint that may be directly or indirectly impacted by the project. Of these four sites would be impacted by both HumeLink and VNI West (NSW). VNI West (NSW) would not see a substantial increase in impact to Aboriginal sites across the very large area encompassed by both projects.
Proposed projects					
4. Junction Rivers Wind Farm (SSD-30448824)	BayWare Projects Australia Pty Ltd	Development of a 750 MW wind farm, including 96 turbines (up to 300m), battery storage and ancillary infrastructure.	Approx 20 km north-west of the project	• Currently responding to submissions • It is anticipated that works associated with the Project could commence within six months of the development consent being granted, should the Project be approved • Pre-construction and construction expected to take up to 54 to 60 months.	There are 95 Aboriginal sites in the Junction Rivers Wind Farm project area, of these 45 will be impacted by that project. The Junction Rivers Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
5. Keri Keri Wind Farm (SSD-38358962)	Acciona Energy Australia	Construction and operation of a proposed new wind farm comprising around 155 wind turbines and 200 MW battery energy storage system (BESS) across an area of around 18,055 hectares.	Site around 22 km north of the project	• EIS exhibited in May and June 2024 • construction is proposed to begin in late 2027 and is expected to take about 24 months • operation is expected to begin in 2030 with an operational life of around 30 years.	There are 209 newly recorded Aboriginal sites in the Keri Keri Wind Farm project area, of these 13 are subject to direct impact and a further 74 may be subject to potential direct impact. The Keri Keri Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
6. Wilan Wind Farm (SSD-51306206)	Kilara	Construction and operation of a proposed new wind farm comprising around 138 wind turbines with an installed capacity around 800 MW and a BESS across an area of around 16,000 hectares.	Site around 34 km north of the project	• SEARs issued in December 2022 (with supplementary SEARs issued in April 2023) and EIS is being prepared • construction is proposed to begin in early 2025 and is expected to take around 24 to 30 months • operation is expected to begin in late 2026 or early 2027 with an operational life of 25-30 years.	The results of the desktop assessment for the scoping report for the Wilan Wind Farm have identified one hundred and sixty-seven (167) AHIMS sites within the original Project area. The Wilan Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
7. Baldon Wind Farm (SSD-40138508)	Goldwind Australia	Construction and operation of a proposed new wind farm comprising around 162 wind turbines with an installed capacity of around 1 GW across an area of around 42,500 hectares.	Site around 2 km north of the project of the project	• EIS exhibited August-September 2024 • construction is expected to begin in early 2026 and take around 36 months if constructed in one stage	A total of 77 newly recorded sites are within the Baldon Wind Farm Development Corridor which may be impacted by the development, while 21 sites have currently undetermined impacts due to unknown management associated with

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
				• operation is expected to begin in early 2029 with an operational life of 25-30 years.	overhead stringing of power lines. The Baldon Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
8. Tchelery Wind Farm (SSD-59701722)	Neoen	Construction and operation of a wind farm with up to 120 wind turbines and associated infrastructure.	Site around 2.2 km north of the project	• SEARs issued July 2023 (with supplementary SEARs issued December 2023) and EIS being prepared • construction is proposed to commence in early 2026 and is expected to take around 30 months • operation is expected to begin in 2028 with an operational life of around 30 years.	The results of the desktop assessment for the scoping report for the Tchelery Wind Farm have identified 69 AHIMS sites within the Tchelery Wind Farm. The Tchelery Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
9. Abercrombie Wind Farm (SSD-77340978)	Abercrombie Wind Farm Pty Ltd	Construction, operation and decommissioning of a wind farm with up to 348 turbines, up to two BESS systems, and associated infrastructure	Around 13km north of the project area	• SEARs issued December 2024 and EIS being prepares at time of reporting.	The results of the desktop assessment for the scoping report for the Abercrombie Wind Farm have identified 143 AHIMS sites within the Abercrombie Wind Farm. The Abercrombie Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
10. Wanganella Wind Farm (SSD-78102208)	Equis Wind Australia Pty Ltd	Construction, operation and decommissioning of a wind farm with 105 turbines, a BESS	Provides a direct connection at Wanganella	• SEARs issued December 2024 and EIS being prepared at time of reporting.	The results of the desktop assessment for the scoping report for the Wanganella Wind Farm have identified

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
		system and associated infrastructure.			119 AHIMS sites within the Wanganella Wind Farm. Part of the Wanganella Wind Farm overlaps with the current project therefore there may be some increase in impact to Aboriginal sites.
11. Pottinger Wind Farm (SSD-59235464)	Someva Renewables	Construction and operation of a wind farm with up to 247 wind turbines, battery storage and associated infrastructure.	Approx 10 km north of the project	• response to submissions report submitted October 2024 • currently under final assessment/approval consideration • project construction will likely occur over approximately 55 months from commencement to commissioning.	There are 114 Aboriginal sites in the Pottinger Wind Farm project area, of these 53 sites may be directly or indirectly harmed. The Pottinger Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
12. Pottinger Solar Farm (SSD-59254709)	Someva Renewables	• Construction and operation of a solar farm of up to 300 MW, including associated infrastructure.	Site around 20 km north of the project	• SEARs issued July 2023. EIS currently in preparation • construction is proposed to commence in 2026 and is expected take around 24 months • operation is expected to begin in 2027 with an operational life of 50 years.	An extensive search of the AHIMS database was carried out for the scoping report for the Pottinger Solar Farm, no AHIMS sites were identified within the Pottinger Solar Farm Project Area. The Pottinger Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
13. Billabong Creek Environmental Water Regulators (SSI-50831979)	New South Wales Department of Climate Change, Energy, the	Replacing two existing weirs along Billabong Creek with two new environmental water regulators. The new regulators	Approx 7 km south of the project	• EIS exhibited between 1 November 2024 and 28 November 2024	There are 11 Aboriginal sites in the Billabong Creek Environmental Water Regulators project footprints.

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
	Environment and Water	would allow for flow regulation and fish passage.		• construction is anticipated to start in 2025, and be completed by 2026 • the construction period is anticipated to be around 18 months	Of these two sites will be partially harmed and threes sites will be totally harmed. Billabong Creek Environmental Water Regulators does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
14. Bullawah Wind Farm (SSD-50505215)	BayWare Projects Australia	Construction and operation of a proposed new wind farm comprising around 170 wind turbines with an installed capacity of around 1 GW and a BESS across an area of around 33,000 hectares.	Site around 19 km north/northwest of the project	• EIS exhibited between August and September 2024 • construction is proposed to begin in late 2025 and is expected to take around 44 months • operation is expected to begin in 2029 with an operational life of 30 years.	A total of 17 Aboriginal sites within the Bullawah Wind Farm are recommended to be avoided. A total of 29 Aboriginal sites and/or areas of PAD within the Bullawah Wind Farm may be directly impacted by. The Bullawah Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
15. Romani Solar Farm (SSD-67105475)	Samsung C&T Renewable Energy Australia Pty Ltd	The construction, operation and decommissioning of a solar photovoltaic energy generating facility (250 MW) with an associated battery energy storage system (150MW / 300MWh)	Approx 12 km north of the project	• proponent currently preparing EIS • construction is anticipated to start in 2025, and be completed by 2026 • the construction period is anticipated to be around 18 months.	An extensive search of the AHIMS database was carried out for the scoping report for the Romani Solar Farm, one AHIMS sites were identified within the Romani Solar Farm Project Area. The Romani Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
16. West Nyangay Solar Farm (SSD-74990235)	Australian solar farms	Development of a 800MW solar farm with energy storage and associated infrastructure	Approx 19 km north of the project	• proponent currently preparing EIS • the project would be constructed over a period of around 12 to 18 months • construction commencement timeframe currently unknown.	An extensive search of the AHIMS database was carried out for the scoping report for the West Nyangay Solar Farm, 17 AHIMS sites were identified within the West Nyangay Solar Farm Project Area. The West Nyangay Solar Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
17. Conargo Wind Farm (SSD-70611708)	Squadron Energy	Construction and operation of a 300 MW wind farm, including 53 WTGs up to 270 m in height and a 150MW/1200MWh BESS	Approx 12.5 km south of the project	• proponent currently preparing EIS • the project would be constructed over a period of around 24 months from 2027 • planned to operate in 2028/2029 with an estimated operational life of 30 years.	An extensive search of the AHIMS database was carried out for the scoping report for the Conargo Wind Farm, no AHIMS sites were identified within the Conargo Wind Farm. The Conargo Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
18. Dinawan Solar Farm (SSD-50725959)	Spark Renewables	Construction and operation of a proposed new solar farm comprising around 1.5 million PV panels with an installed capacity of around 1 GW and a BESS across an area of 4,500 hectares.	100 m south of project	• EIS exhibited between November and December 2023, with additional information request issued October 2024 • construction is proposed to begin in early 2025 and is expected to take around 18 to 36 months	A total of 35 Aboriginal sites are within the Dinawan Solar Farm of these 27 will be avoided. A total of 8 Aboriginal sites within the Dinawan Solar Farm may be directly impacted. The Dinawan Solar Farm does not overlap with the current project therefore there is no

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
				• operation is expected to commence in 2026 with an operational life of 25-35 years.	increase in impact to Aboriginal sites.
19. Dinawan Wind Farm (SSD-50725708)	Spark Renewables	Construction and operation of a proposed new wind farm comprising around 200 wind turbines with an installed capacity and a BESS of around 1.5 GW across an area of around 46,000.	Dinawan Wind Farm (west) around 4 km north of the project The project traverses Dinawan Wind Farm (east)	• EIS exhibited between July and August 2024 • construction is proposed to begin in 2025 and is expected to take around 60 months • operation is expected to begin in 2027/2028 with an operational life of 25-35 years.	A large number of discrete sites have been recorded across the project area. The results have been combined and ratified with 32 identified sites and places along with a low-density distribution of predominantly surface and shallowly buried cultural materials distributed across the project area. Project redesign undertaken through the assessment process has resulted in the avoidance of 15 of the discrete Aboriginal sites and site complexes identified by the field investigations. The VNI West (NSW) project traverses the east section of the Dinawan Wind Farm. There is one Aboriginal site that would be impacted by both Dinawan Wind Farm and the VNI West (NSW). VNI West (NSW) would not see a substantial increase in impact to Aboriginal sites.
20. Argoon Wind Farm (SSD-64935522)	Argoon Wind Farms	Construction and operation of a wind farm with up to 106 wind	Approx 1 km south of the project	• proponent currently preparing EIS	An extensive search of the AHIMS database was carried out for the scoping report for the Argoon Wind Farm, no

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
		turbines, battery storage and associated infrastructure.		• the project would be constructed over a period of around 24 to 36 months • construction commencement timeframe currently unknown.	AHIMS sites were identified within the Argoon Wind Farm. The Argoon Wind Farm does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
21. Belhaven Battery Energy Storage System (SSD-57575973)	Vena Energy	Construction and operation of a 400 MW / 800 MWh Battery Energy Storage System including transmission connection and associated infrastructure	Around 2 km west of the project (network augmentation works)	• proponent currently preparing EIS with the aim to be completed by 2024 • Construction anticipated between 2025 and 2026.	The scoping report identified that there are no registered Aboriginal sites within the Belhaven Battery Energy Storage System project area. The scoping report assessed that there may be unidentified Aboriginal site in the project area. The cumulative impact cannot be determined for this project prior to further assessment.
22. Livingstone Solar Farm (SSD-80114208)	Brunsdon Pastoral Co	Construction, operation and decommissioning of a Solar Farm with a BESS system and ancillary infrastructure.	Provides a direct connection at the Ivydale Road/future Gugaa substation works area.	• SEARs issued March 2025. An EIS is currently being prepared.	The results of the desktop assessment for the scoping report for the Livingstone Solar Farm have identified 119 AHIMS sites within the Livingstone Solar Farm. Part of the Livingstone Solar Farm overlaps with the current project therefore there may be some increase in impact to Aboriginal sites.

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
23. Mangoplah Battery Energy Storage System (SSD-77527735)	Samsung C & T Renewable Energy Australia (SREA)	Construction of a BESS system and associated infrastructure.	Approximately 20km southwest of the Ivydale Road/future Gugaa substation works area .	• SEARs issued November 2024. An EIS is currently being prepared.	The results of the desktop assessment for the scoping report for the Mangoplah Battery Energy Storage System have identified 64 AHIMS sites within the Mangoplah Battery Energy Storage System. Part of the Mangoplah Battery Energy Storage System does not overlap with the current project therefore there is no increase in impact to Aboriginal sites.
Approved projects and changes to existing projects					
24. Yanco Delta Wind Farm (SSD-41743746)	ViRYA Energy	Construction and operation of a wind farm comprising around 208 wind turbines with an installed capacity of around 1.5 GW and a BESS across an area of around 42,000 hectares.	The project traverses Yanco Delta Wind Farm	• approved in December 2023 • construction is proposed to begin in 2026 and is expected to take around 36 months • operation is expected to begin in 2026 or 2027 with an operational life of around 30 years.	There are a total of 35 Aboriginal sites within the Yanco Delta Wind Farm project area. Of these 11 sites may be partially impacted by the Yanco Delta Wind Farm. The VNI West project traverses Yanco Delta Wind Farm. There are no Aboriginal sites that would be impacted by both Yanco Delta Wind Farm and the VNI West (NSW). VNI West (NSW) would not see a substantial increase in impact to Aboriginal sites.

Relevant future project	Proponent	Scope	Location / distance to project	Status / timeframe	Aboriginal cultural heritage impacts
25. Gregadoo Solar Farm (SSD-8825)	Gregadoo Solar Farm Pty Ltd	Existing solar farm with increased generating capacity of around 65 MW (AC) and 75 MW (DC). Current proposal includes au[date of the current project approval to include a BESS.	Adjacent to the project at Wagga 330 kV substation (network augmentation works)	• main solar farm approved December 2018 and will start construction in 2025 • Construction of the proposal is expected to take up to around 9 months • modification currently in preparation for the addition of a BESS.	Seven Aboriginal stone artefacts were found across the proposal area immediately west of the Wagga 330 kV substation, none of the sites are within the VNI West (NSW) footprint. VNI West (NSW) would not see a substantial increase in impact to Aboriginal sites.
26. Inland Rail (Albury to Illabo)	ARTC	Enhancement works to structures and sections of track along 185 kilometres of existing operational standard gauge rail from the Victorian/New South Wales border to Illabo in regional NSW. The project forms part of the Inland Rail project.	11.5 km north west of the project and 14 km west of the project (network augmentation works)	• approved 8 October 2024 • construction is proposed to begin in late 2024 and is expected to take around 16 months to complete • operation is expected to begin in late 2026.	Site investigations were completed at nine locations that were determined through desktop assessment as having archaeological potential. Of those surveyed areas, one was found to have the potential to contain archaeological deposits and two isolated artefacts were found at two separate locations. A number of Aboriginal cultural places were also identified. None of these sites are within the VNI West (NSW) project footprint. In addition to the Inland Rail – Albury to Illabo project the VNI West project would not see a substantial increase in impact to Aboriginal sites.

12.2 Assessment of Cumulative Impacts

The project footprint has not been historically subject to high levels of impact from residential, commercial, or government development. The linear nature of the project, as well as the large spans between transmission line structure location impacts would result in impacts being spread across landforms. There will also be an opportunity in the detailed design process to adjust transmission line structure locations and align access tracks in some locations to avoid or minimise impact to Aboriginal sites. Wherever the direct impacts do occur in the project footprint, there are likely to be numerous similar landforms and Aboriginal sites within the surrounding landscape that would be retained and preserved. There is little overlap with sites from other projects with this project. There will however be an increased impact to Aboriginal sites from this project in culmination with the other projects identified. It is assessed that the cumulative impacts from this project on the Aboriginal heritage of the region are assessed as low.

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13 MANAGEMENT OF IMPACTS

13.1 Overview of approach

This chapter describes how the project would be managed to reduce potential environmental impacts throughout detailed design, construction and operation.

The approach to environmental management and mitigation of potential Aboriginal heritage impacts for the construction of the project would be carried out through the development of a project specific Construction Environmental Management Plan (CEMP) for the main construction works and the implementation of individual property management plans developed in consultation with landowners.

Operation of the project would be managed through Transgrid's EMS, which is accredited to ISO 14001 requirements. The EMS includes an *Environmental Assessment Framework*, which contains checklists, procedures, guidance notes and an *Environmental Handbook* (Transgrid, 2021d) to assess and manage the potential impacts of maintenance activities.

13.1.1 Aboriginal Heritage Management Plan

An Aboriginal Heritage Management Plan (AHMP) would be developed by the construction contractors. It would be prepared by a heritage specialist in consultation with all relevant RAPs and approval authority to provide the post approval framework for managing Aboriginal heritage impacted by the project. The AHMP would address the processes, timing, communication methods and project involvement (eg onsite activities) for maintaining Aboriginal community consultation and participation prior to and during construction. The AHMP would include the detail for the methods and processes to complete the required mitigation measures such as unexpected finds, site fencing and further archaeological survey, collection, testing and salvage. Appendix 7 details an unexpected finds process and Appendix 8 details methodologies for surface survey, test excavation, salvage excavation, and surface collection of Aboriginal objects. The AHMP would be communicated to all relevant construction personnel prior to construction commencing in that area.

13.2 Avoidance and minimisation of impacts

There are 194 Aboriginal sites and PADs located within the project footprint that may be directly or indirectly impacted by the project. The project aims to avoid heritage items as a first principle, see Section 13.4.1. Aboriginal heritage has been considered throughout the corridor and route options process for the 500 kV transmission line between the NSW/Victorian border to Dinawan substation as a constraint to avoid wherever possible. The development of the corridor was informed by the consideration of previously recorded sites (AHIMS sites), areas of high Indigenous significance (defined by consideration of Aboriginal Places, areas subject to Native Title and initial consultation with local Aboriginal representatives. This was built on further in the route options assessment through the development of a preliminary Aboriginal heritage predictive model. No areas of high Indigenous significance (as per the definition) were located within the areas considered for corridor and route options.

The preferred route was selected as it performed the best against the engineering, environmental and social and community criteria. Specific to Aboriginal heritage, the preferred route reduced impacts on known (previously identified) Aboriginal sites compared to other route options and had less interaction with waterways. However, it is acknowledged all route options would cross areas of high and medium potential for Aboriginal finds identified by the preliminary predictive model, and that there large gaps in the location of previously identified sites in the AHIMS data.

For other elements of the project, previously recorded Aboriginal heritage sites were considered when selecting locations for construction compounds, temporary worker accommodation facilities and access tracks. Impacts to Aboriginal heritage for the network augmentation works have been minimised through the use of the existing easement.

The project design and construction methodology would continue to be refined to avoid or reduce impacts to Aboriginal sites. This would include investigating further refinements of project elements

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and construction activities to avoid or minimise impacts to these sites. For sites and PADs located in temporary compounds, greater effort will be placed on avoiding these sites from impact from temporary works.

13.3 Summary of mitigation measures

Site-specific mitigation measures have been proposed to minimise Aboriginal heritage impacts associated with the project. Mitigation measures are presented in Table 13-1. The sites identified are not of a type that will be impacted by vibration and noise therefore there are no impacts to Aboriginal sites associated with vibration and noise.

Table 13-1 Mitigation measures

Reference	Impact	Mitigation measures	Timing	Relevant location
AH1	Impact to Aboriginal sites	Consultation with relevant RAPs for this project will continue until completion of construction. The Heritage management sub-plan will detail the consultation process.	Detailed design and construction	All locations
AH2	Impact to Aboriginal sites	The finalisation of the project design and construction methodology, and associated disturbance areas, will be developed to avoid and/or minimise harm to Aboriginal heritage sites as far as practicable, with priority given to sites of moderate or high Aboriginal heritage significance. The objective is to further reduce potential impacts through considered placement of transmission line structure locations and design refinement of proposed infrastructure and the associated construction methodology. Avoidance and minimisation of harm to sites and potential archaeological deposits will be prioritised.	Detailed design	All locations
AH3	Impact to Aboriginal sites in unassessed areas of the project footprint	Additional assessment will occur in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010b) for areas where ground disturbing activities are required in locations outside of the previously assessed area. Where required, additional heritage surveys will be carried out with the relevant RAPs prior to ground disturbing activities occurring in any such areas (refer to Appendix 9 of *Technical paper 2 – Aboriginal Cultural Heritage Assessment Report* for a methodology for field survey). If the additional heritage surveys do not find any Aboriginal objects or if any found Aboriginal objects are not impacted by the project, then a letter report will be prepared by an archaeologist that documents the findings and gives clearance to proceed.	Detailed design and construction	All locations

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Reference	Impact	Mitigation measures	Timing	Relevant location
		Where Aboriginal objects, scarred trees or areas of potential archaeological deposits are located in unassessed areas and would be directly impacted, report/s will be prepared. The report/s will: • detail findings of the survey activities • detail where test excavation is required • outline any additional mitigation strategies beyond those required • be presented to the RAPs for comment. Following consultation with the Registered Aboriginal Parties, the reports will be finalised and provided to RAPs and to Heritage NSW for their information prior to the commencement of ground disturbing activities in these locations.		
AH4	Impact to potential archaeological deposits not subject to test excavation	Potential archaeological deposits not previously subject to test excavation and potential archaeological deposits identified during the additional heritage surveys (as provided in mitigation measure AH3) will be tested in accordance with the methodologies presented in Appendix 9 (refer to *Technical paper 2– Aboriginal Cultural Heritage Assessment Report*). • If the test excavation identifies archaeological deposits of moderate and high archaeological significance than salvage can follow (as provided in mitigation measure AH6).	Detailed design	Potential archaeological deposits not previously tested

Reference	Impact	Mitigation measures	Timing	Relevant location
AH5	Impact to Aboriginal sites – Modified/scarred trees	Harm to modified trees will be avoided where possible through design development and construction planning. Modified trees will only be removed to directly facilitate construction of permanent infrastructure and/or to meet Vegetation Clearance Requirements for the transmission line. If the removal of a scarred tree (a type of modified tree) that has been assessed to be an Aboriginal object cannot be avoided, the tree will be subject to 3D scanning. Prior to any impacts to modified trees, or a tree of cultural significance, consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.	Detailed design	Modified trees
AH6	Impact to Aboriginal sites – Isolated Finds, Artefact scatters and potential archaeological deposits (moderate or high archaeological significance)	All portions of artefact scatters and isolated finds of moderate or high archaeological significance that will be directly impacted will require surface collection and/or movement prior to construction commencement in those areas (refer to Appendix 9 of *Technical paper 2 – Aboriginal Cultural Heritage Assessment Report*). Where test excavations identify archaeological deposits of moderate or high archaeological significance which cannot be avoided, salvage excavations will occur (refer to Appendix 8 of *Technical paper 2– Aboriginal Cultural Heritage Assessment Report*).	Detailed design and construction	Directly impacted sites and potential archaeological deposits

Reference	Impact	Mitigation measures	Timing	Relevant location
AH7	Indirect impact to adjacent heritage items	Aboriginal heritage exclusion zones will be established to protect: • Aboriginal heritage sites that remain in-situ • potential archaeological sites that become a known site following subsurface testing and which are identified for no impact (in full or the remaining portion for sites subject to partial impact). Suitable controls and protocols will be identified in the Heritage management sub-plan, which may include temporary fencing. The locations of known Aboriginal heritage sites within and adjacent to the project footprint and the relevant controls or protocols to avoid and manage any potential harm to the items will be communicated through the Heritage Management Plan to all relevant construction workers prior to construction commencing in that area.	Detailed design and construction	All locations
AH8	Impact to Aboriginal sites	Cultural heritage awareness training will be carried out for all construction workers working on the project prior to the construction workers participating in construction activities. The training shall cover sites of heritage significance within and adjacent to project work sites and protocols that must be complied with to minimise and manage potential impacts to those sites.	Construction	All locations
AH9	Unexpected finds (Aboriginal sites)	If at any time during construction any unanticipated Aboriginal objects or human remains are discovered, they will be managed in accordance with an unexpected finds protocol that is aligned with the protocol in Appendix 7 of *Technical paper 2 – Aboriginal Cultural Heritage Assessment Report*.	Construction	All locations
AH10	Salvaged archaeological material	The long-term management of salvaged archaeological materials will be determined in consultation with Registered Aboriginal Parties. A care and control methodology is presented in Appendix 8 of Technical paper 2 – Aboriginal Cultural Heritage Assessment Report.	Construction	All locations (as applicable)

Reference	Impact	Mitigation measures	Timing	Relevant location
AH11	Post construction impacts to Aboriginal heritage items (maintenance activities)	Sites of heritage significance that would remain in-situ within the transmission line easement, at substation locations and along access tracks will be mapped and recorded within GIS systems managed by Transgrid to reduce the potential for inadvertent impacts which may occur during maintenance activities.	Operation	Transmission line easement, substations and access tracks.

13.4 Residual Impacts

Following the implementation of the above mitigation measures there is likely to be residual impacts to Aboriginal cultural heritage from the project. For example, sites identified as being of low significance and subsurface archaeology identified as being of low significance may be impacted by the project. Due to the nature of the project these impacts are likely to be low. In addition the below section outlines the management of the project design to further avoid impacts to Aboriginal heritage.

13.4.1 Managing the finalisation of the project design

This Aboriginal heritage assessment is based on the project footprint as presented in this ACHAR. This assessment aims to develop an understanding of the nature of potential impacts from the project and retain a level of flexibility during design refinement.

During detailed design, the locations of recorded Aboriginal sites, PADs and areas of moderate and high archaeological sensitivity will be used to inform the final location of transmission line structures, and the layout of construction compounds and temporary worker accommodation facilities, with an aim to:

- protect, conserve and/or manage the heritage significance of Aboriginal objects and places to ensure the project does not diminish the cultural understanding of Aboriginal people in New South Wales
- avoid or minimise impacts to areas of archaeological potential and moderate to high scientific significance, where feasible and reasonable.

Aspects of the project that may be subject to further refinement include:

- the final transmission line structure locations
- location of new or upgraded access tracks
- final layouts of the construction compounds and temporary worker accommodation facilities
- construction methods and staging.

Refinements to optimise the design outcomes and construction method would be carried out to further avoid or minimise environmental impacts. This includes approaches to avoid or minimise native vegetation clearing, and areas of moderate to high Aboriginal archaeological sensitivity.

Some refinements might however require changes that could disturb locations outside the project footprint. In such circumstances additional heritage survey would be required before confirming the change.

The final design would be reviewed for consistency with the assessment contained in this report including the proposed mitigation measures, and any conditions of approval. If design refinements are not consistent with the environmental assessment, and any approval from the NSW Minister for Planning and Housing, approval would be sought from the Minister for any such modifications in accordance with the requirements of Division 5.2 of the EP&A Act.

Where known Aboriginal sites are located close to construction for the project, mitigation measures to protect the sites from accidental impacts would be implemented such as clear mapping of sites on construction plans and use of high visibility fencing to mark exclusion zones.

Where direct impacts to sites cannot be avoided during design refinement, the identified mitigation measures would be implemented to minimise the potential impacts on Aboriginal heritage, such as surface salvage of artefacts or a program of salvage excavations in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a).

14 CONCLUSION

As a result of this assessment, 194 Aboriginal sites and PADs have been identified within the project footprint that may be directly or indirectly impacted by the project. Of these 176 are newly recorded sites identified during pedestrian survey by NOHC archaeologists and RAPs on both components of the project footprint. The majority of the new sites are hearths and heat retainers (45 per cent) and stone artefact occurrences including artefact scatters and isolated finds (31 per cent). Additionally, 13 modified trees, eight earth mound sites, two shell midden sites and one cultural resources site have been recorded.

The assessment completed within this report identifies that the majority (79) of sites within the project footprint exhibit low scientific or archaeological significance, with a lower proportion (47) possessing moderate scientific significance, and relatively high proportion (69) exhibiting high scientific or archaeological significance.

- A total of 194 Aboriginal sites are within the project footprint, including 26 PADs. Of these (excluding PADs) sixty-three are artefact occurrences, four are earth mounds, seventy-five are hearths/heat retainers, sixteen are modified trees, two shell middens, one cultural resource site and seven are mixed sites that have several attributes. It should be kept in mind, however, about 78.2 per cent of the NSW/Victoria border to the Dinawan substation transmission line corridor component and 26.6 per cent of the access tracks, compounds and other sites in this section have been surveyed and assessed. It is likely that additional Aboriginal objects will be recorded when these areas are surveyed in the future. The complete project footprint for the network augmentation works component has been fully assessed.
- Among the 27 newly recorded PADs, 14 (52 per cent) located in the Dinawan substation transmission line corridor component have been subject to test excavations. All of them are in landscapes used primarily for livestock grazing and areas of largely undisturbed land. Eight were contained in landscapes predicted to be of high sensitivity by archaeological sensitivity modelling and the mean distance to water was 174 metres.
- The PADs were associated with a total of 86 surface finds recorded during field survey or located on the surface at the time of excavation. Only about 13 per cent of test pits contained archaeologically sensitive (A Horizon) soils and only four test pits (approximately 2 per cent) contained Aboriginal objects which included three stone flakes and a small sample of mussel shell fragments. An artefact scatter in the network augmentation works section of the project footprint has also been assessed as possessing high potential to yield significant cultural information.
- Eighty-seven newly recorded sites and two excavated PADs in the NSW/Victorian border to Dinawan substation component exhibit moderate-high scientific significance with the remainder being of low scientific significance. Two newly recorded sites in the network augmentation works component exhibit moderate scientific significance with the remainder being of low scientific significance. The remaining (untested) PADs remain at moderate to high potential pending subsurface test excavations.

The project aims to avoid heritage items as a first principle. As such, impacts to Aboriginal heritage have been considered during the corridor and route selection phases of the project and will be considered further through detailed design, including investigating further refinements of project elements and construction activities. Mitigation measures aim to further manage impacts by undertaking salvage and recording prior to impacts occurring to sites. The HMP would include relevant mitigation measures that would be implemented during construction in addition to providing the processes, timing, communication methods and project involvement (e.g. on-site activities) for maintaining Aboriginal community consultation and participation through the remainder of the project.

The following recommendations are made:

- The Aboriginal community consultation process for this project will continue until completion of construction.
- The finalisation of the project design and construction methodology, and associated final disturbance areas, will be developed to avoid harm to sites of moderate or above Aboriginal

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heritage significance as far as practicable. For sites and PADs in temporary compounds greater effort will be placed on avoiding these sites from impact from temporary works.

- Additional assessment will occur in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (2010b) for areas where ground disturbing activities are required in locations outside of the previously assessed area.
- All portions of artefact scatters and isolated finds of moderate or high archaeological significance that will be directly impacted will require surface collection and/or movement prior to construction commencement in those areas.
- The locations of known Aboriginal heritage sites within and adjacent to the project footprint and the relevant protocols to avoid and manage any potential harm to the items will be communicated through the Heritage Management Plan to all relevant construction workers prior to construction commencing in that area.
- Cultural heritage awareness training will be carried out for all construction workers working on the project prior to the construction workers participating in construction activities.
- If at any time during construction any unanticipated Aboriginal objects or human remains are discovered, they will be managed in accordance with an unexpected finds protocol that is aligned with the protocol in Appendix 7.
- The long-term management of salvaged archaeological materials will be determined in consultation with RAPs. A care and control methodology are presented in Appendix 8.
- Sites of heritage significance that would remain in-situ within the transmission line easement, at substation locations and along access tracks, will be mapped and recorded within GIS systems managed by Transgrid.

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APPENDIX 1

ABORIGINAL COMMUNITY CONSULTATION

See attached documents:

- Consultation log
- Consultation records

Official

Table A1 Consultation log

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Agencies (not including LALCs)		NOHC	NH	6/11/2023	email	stage 1a letters	
Heritage NSW	Barry Gunther			7/11/2023	email	response to 1a letter including list	
Local Land Services	Wendy Nethercote			7/11/2023	email	can not supply contact details but have passed on the request to key first nations contacts	
Murrumbidgee Council	Heidi Bryce			10/11/2023	email	identified Griffith Aboriginal Land Council , Cummeragunja Aboriginal Land Council and Tammileigh Chirgwin at Waddi Housing & Advancement in Darlington Point	
Edward River Council				15/11/2023	email	identified Yarkuwa Aboriginal Community and Aboriginal Land Council Deniliquin	
LALCs (not including Wagga LALC)		NOHC	NH	4/12/2023	email	stage 1a letters	
Office of the Registrar,				5/12/2023	email	directed to contact the LALCs	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Aboriginal Land Rights Act 1983							
Wagga City council		NOHC	NH	13/12/2023	email	stage 1a letter including Wagga project footprint	
Wagga Wagga LALC		NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
Heritage NSW	Barry Gunther	NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
Local Land Services Riverina		NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
NTSCorp		NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
NNTT		NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
Office of the Registrar, Aboriginal Land Rights Act 1983		NOHC	SMcT	13/12/2023	email	stage 1a letter including Wagga project footprint	
A&K Cultural Heritage	Ali Maher	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Bangerang Aboriginal Corporation	Kevin Atkinson	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Bundyi Aboriginal Cultural Knowledge	Mark Saddler	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Gary Pappin	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Girragirra Murun Aboriginal Corporation	Diana Astin	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	John Jackson	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	John Winch	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Konanggo Aboriginal Cultural Heritage Services	Robert Young	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
MAH	Robert Williams	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Miyagan Culture & Heritage	Robert Carroll	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Pappin Family Aboriginal Corporation	Admin	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Patricia Winch	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Sonione Wakabut Rogers	Sonione Wakabut Rogers	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation	Will Carter	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Thomas Dahlstrom	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
	Verna Eade	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Wakool Indigenous Corporation	Cynthja Pappin Gary Pappin	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Will Carter	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Wingarra Wilay Aboriginal Corporation	Raymond Moon	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Yalmambirra	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Yarkuwa Indigenous Knowledge Centre	Jeanette Crew – Chairperson	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Yorta Yorta Nation Aboriginal Corporation	Neville Atkinson (Chairperson)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Yurwang Gundana Consultancy Cultural Heritage Services.	Dean Bell ; Merekai Bell	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Waddi Housing & Advancement in Darlington Point	Tammileigh Chirgwin	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Uncle Ron Galway (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Uncle Neville Whyman (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Wayne Webster (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Nicholas Smith (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
	Shanice Whyman Gazzara (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Glen Galway (Barapa Barapa)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Uncle Ross Stewart OAM (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Uncle Kenny Stewart (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Nick Stewart (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Aunty Hazel Atkinson (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
	Auntie Rose Kirby (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
	Auntie Karen Kirby (Wamba Wemba)	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Cummeragunja LALC	Haydon Love	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Deniliquin Local Aboriginal Land Council	Rose Dunn	NOHC on behalf of Transgrid	DC	20/12/2023	email	stage 1b letter	
Girragirra Murun Aboriginal Corporation	John Winch			21/12/2023	email	registration of interest	
	Thomas Dahlstrom			5/01/2024	email	registration of interest	
SW Yiradyuri Corporation	Will Carter			6/01/2024	email	registration of interest	
Wakool Indigenous Corporation	Gary Pappin			10/01/2024	email	registration of interest	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation	David Crew			12/01/2024	email	registration of interest	
	Nicholas Smith Junior			12/01/2024	email	registration of interest	
All RAPs		NOHC on behalf of Transgrid	NH	8/02/2024	email	methodology and project information	also confirmation of project areas to Wagga area groups and invitation to register
Wakool Indigenous Corporation	Cynthja Pappin Gary Pappin			8/02/2024	email	provided a response	
Bundyi Cultural Tours	Mark Saddler			9/02/2024	email	registration of interest	
Pappin Family Aboriginal Corporation	Mary Pappin			9/02/2024	email	registration of interest	
Miyagan Culture and Heritage	Robert Carroll and Neerim Carroll			9/02/2024	email	registration of interest	

Contact		Contacted By				Details	
Organisation	Person	Organisation	Person	Date	Method	Notes	Additional comments (not included in published log)
Konanggo Aboriginal Cultural Heritage Services	Robert Young			9/02/2024	email	registration of interest	
Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation	Will Carter			13/02/2024	email	provided a response	
Wingarra Wilay	Ray Moon			14/02/2024	email	registration of interest	sent methodology
Bidya Marra Consultancy	James ingram			29/02/2024	email	registration of interest	Bruce, Mitchell and Brandon Crowe
All RAPs				19/05/2025	email	draft ACHA	All RAPs
Bundyi Cultural Tours	Mark Saddler		NH	19/05/2025	telephone call	following up on email, I directed him to the augmentation works section, he will review the report	Bundyi Cultural Tours
	Thomas Dahlstrom		NH	19/05/2025	email	return email said would talk to Heritage NSW as Wiradjuring is one not multiple	
	Ray Woods		NH	19/05/2025	telephone call	left voicemail, tried to return call but no answer	

Transgrid

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4th December 2023

Cummeragunja Local Aboriginal Land Council

Email: ceo@cummeralalc.com.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

Your organisation is named as a reasonable source of information that must be contacted under Stage 1 (section 4.1.2) of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.2 of the Consultation Requirements makes it the proponent's responsibility to ascertain, from reasonable sources of information such as your organisation, the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and / or places.

Navin Officer Heritage Consultants Pty Ltd has been commissioned by WSP Australia Pty Ltd on behalf of Transgrid Pty Ltd (the proponent) to complete an Aboriginal Cultural Heritage Assessment Report (ACHAR) and complete the AHIP process for the proposed for Victoria - NSW Interconnector (VNI) West. The project is located within Edward River Local Government Area (LGA) and the initial study area for the proposal is shown in **Figure 1**. The key components of the project include:

- construction of about 220 kilometres of new 500kV double circuit transmission lines and associated infrastructure between the NSW/Victoria border and the Buronga substation and the Dinawan substation (currently under construction as part of the EnergyConnect (NSW Eastern Section project – SSI-9172452))
- expansion of the 330kV Dinawan substation to include a new 500kV switchyard to accommodate two 500/330kV 1,500 megavolt amperes (MVA) transformers
- establishment and upgrade of access tracks and roads, as required
- other ancillary works required to facilitate the construction of the project (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

The ACHA will be undertaken following relevant sections of the *Environmental Planning and Assessment Act 1979* (EP&A Act) which requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals.

Navin Officer Heritage Consultants will involve stakeholders in decisions regarding Aboriginal cultural heritage issues arising from this project. Further information about the project will be provided to all registered Aboriginal stakeholders as the project progresses. The purpose of the community consultation with relevant Aboriginal people is to assist the proponent in the preparation of an application for an Aboriginal heritage impact permit and to assist the Director-General in their consideration and determination of the application.

In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson
Environment Manager – VNI-West | Major Projects
Transgrid
Insert address

I am therefore writing to request that you please provide us with the names of Aboriginal people who you know that may hold cultural knowledge relevant to determining the significance of Aboriginal objects for the project.

Please respond in writing within 14 days by 18th December 2023 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours sincerely,

Nicola Hayes

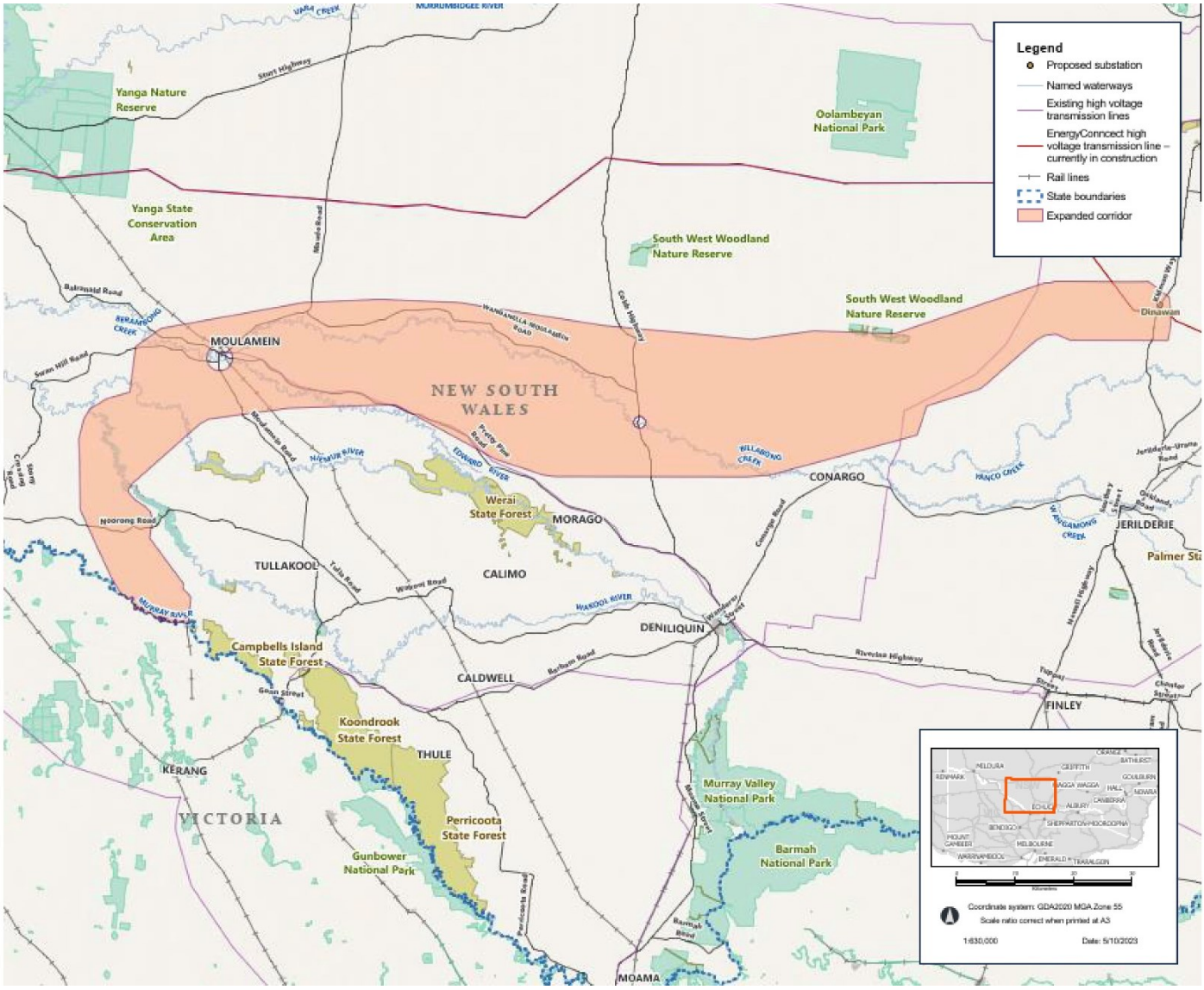


Figure 1- VNI West initial study area

Transgrid

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4th December 2023

Deniliquin Local Aboriginal Land Council

Email: lalcd@bigpond.com

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

Your organisation is named as a reasonable source of information that must be contacted under Stage 1 (section 4.1.2) of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.2 of the Consultation Requirements makes it the proponent's responsibility to ascertain, from reasonable sources of information such as your organisation, the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and / or places.

Navin Officer Heritage Consultants Pty Ltd has been commissioned by WSP Australia Pty Ltd on behalf of Transgrid Pty Ltd (the proponent) to complete an Aboriginal Cultural Heritage Assessment Report (ACHAR) and complete the AHIP process for the proposed for Victoria - NSW Interconnector (VNI) West. The project is located within Edward River Local Government Area (LGA) and the initial study area for the proposal is shown in **Figure 1**. The key components of the project include:

- construction of about 220 kilometres of new 500kV double circuit transmission lines and associated infrastructure between the NSW/Victoria border and the Buronga substation and the Dinawan substation (currently under construction as part of the EnergyConnect (NSW Eastern Section project – SSI-9172452))
- expansion of the 330kV Dinawan substation to include a new 500kV switchyard to accommodate two 500/330kV 1,500 megavolt amperes (MVA) transformers
- establishment and upgrade of access tracks and roads, as required
- other ancillary works required to facilitate the construction of the project (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

The ACHA will be undertaken following relevant sections of the *Environmental Planning and Assessment Act 1979* (EP&A Act) which requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals.

Navin Officer Heritage Consultants will involve stakeholders in decisions regarding Aboriginal cultural heritage issues arising from this project. Further information about the project will be provided to all registered Aboriginal stakeholders as the project progresses. The purpose of the community consultation with relevant Aboriginal people is to assist the proponent in the preparation of an application for an Aboriginal heritage impact permit and to assist the Director-General in their consideration and determination of the application.

In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson
Environment Manager – VNI-West | Major Projects
Transgrid
Insert address

I am therefore writing to request that you please provide us with the names of Aboriginal people who you know that may hold cultural knowledge relevant to determining the significance of Aboriginal objects for the project.

Please respond in writing within 14 days by 18th December 2023 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours sincerely,

Nicola Hayes

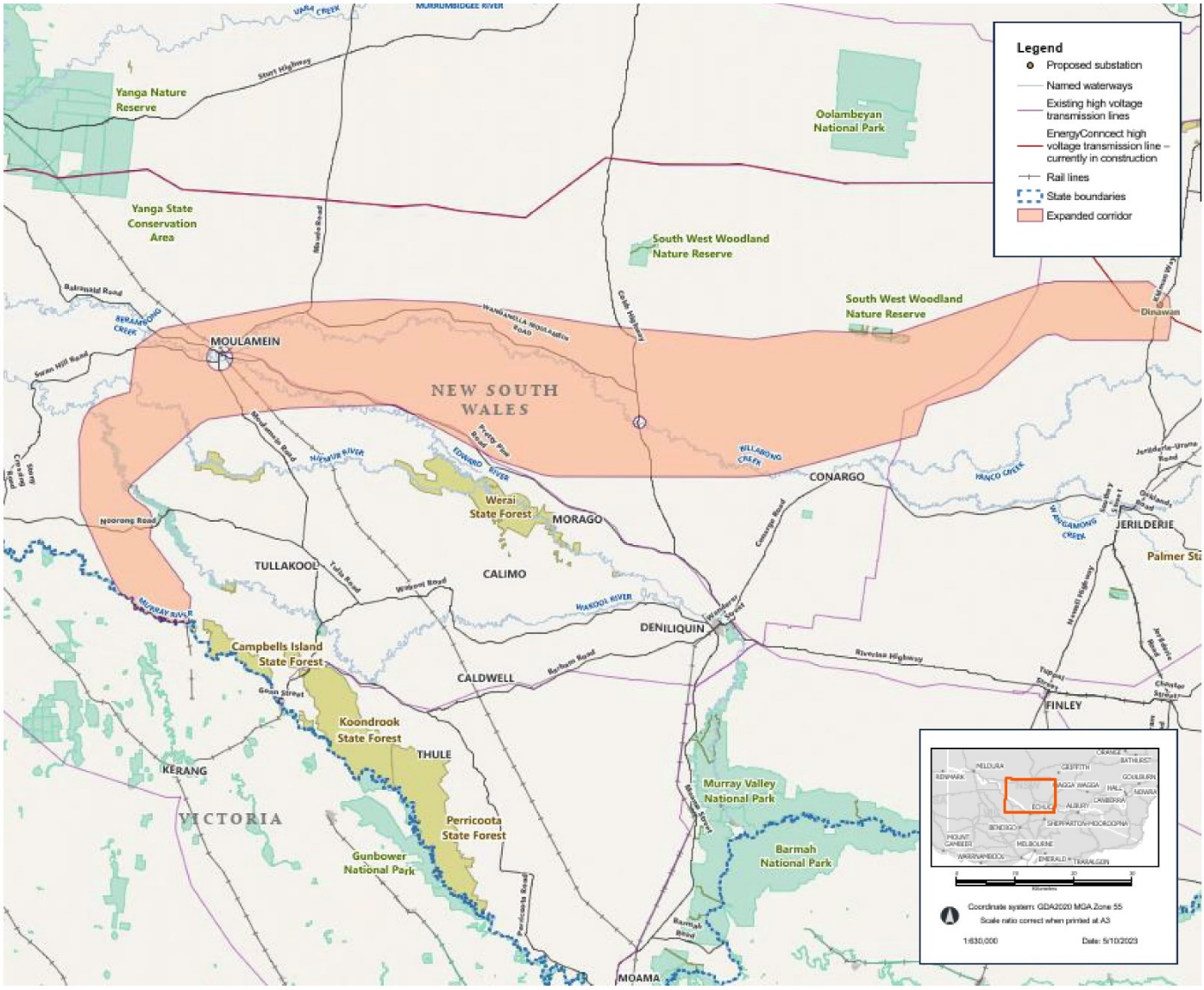


Figure 1- VNI West initial study area

Transgrid

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4th December 2023

Griffith Local Aboriginal Land Council

Email: grifflalc@bigpond.com

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

Your organisation is named as a reasonable source of information that must be contacted under Stage 1 (section 4.1.2) of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.2 of the Consultation Requirements makes it the proponent's responsibility to ascertain, from reasonable sources of information such as your organisation, the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and / or places.

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- expansion of the 330kV Dinawan substation to include a new 500kV switchyard to accommodate two 500/330kV 1,500 megavolt amperes (MVA) transformers
- establishment and upgrade of access tracks and roads, as required
- other ancillary works required to facilitate the construction of the project (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

The ACHA will be undertaken following relevant sections of the *Environmental Planning and Assessment Act 1979* (EP&A Act) which requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals.

Navin Officer Heritage Consultants will involve stakeholders in decisions regarding Aboriginal cultural heritage issues arising from this project. Further information about the project will be provided to all registered Aboriginal stakeholders as the project progresses. The purpose of the community consultation with relevant Aboriginal people is to assist the proponent in the preparation of an application for an Aboriginal heritage impact permit and to assist the Director-General in their consideration and determination of the application.

In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson
Environment Manager – VNI-West | Major Projects
Transgrid
Insert address

I am therefore writing to request that you please provide us with the names of Aboriginal people who you know that may hold cultural knowledge relevant to determining the significance of Aboriginal objects for the project.

Please respond in writing within 14 days by 18th December 2023 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours sincerely,

Nicola Hayes

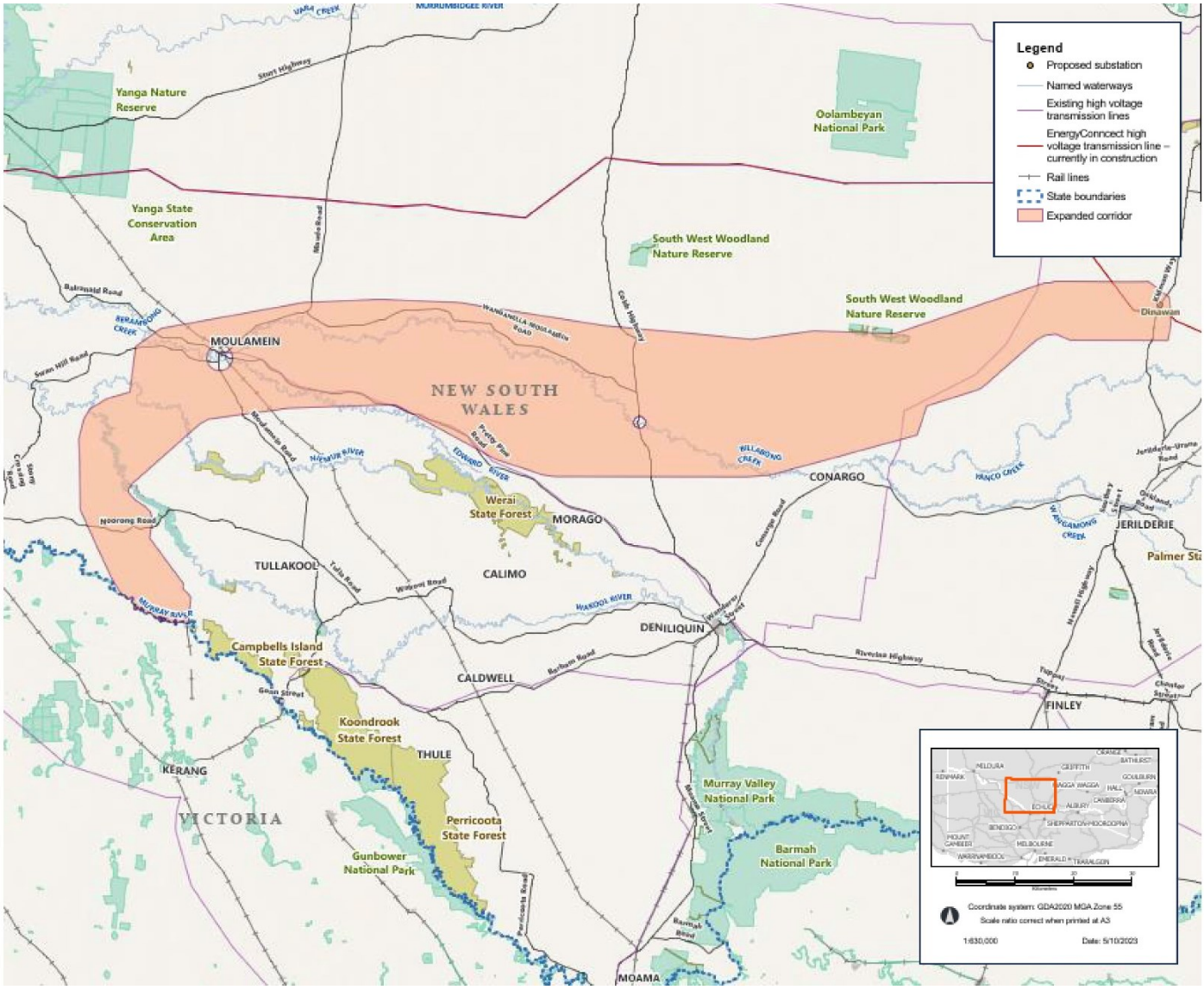


Figure 1- VNI West initial study area

Transgrid

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4th December 2023

Wamba Wamba Local Aboriginal Land Council

Email: wambawambalalc@gmail.com

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

Your organisation is named as a reasonable source of information that must be contacted under Stage 1 (section 4.1.2) of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.2 of the Consultation Requirements makes it the proponent's responsibility to ascertain, from reasonable sources of information such as your organisation, the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and / or places.

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- expansion of the 330kV Dinawan substation to include a new 500kV switchyard to accommodate two 500/330kV 1,500 megavolt amperes (MVA) transformers
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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson
Environment Manager – VNI-West | Major Projects
Transgrid
Insert address

I am therefore writing to request that you please provide us with the names of Aboriginal people who you know that may hold cultural knowledge relevant to determining the significance of Aboriginal objects for the project.

Please respond in writing within 14 days by 18th December 2023 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours sincerely,

Nicola Hayes

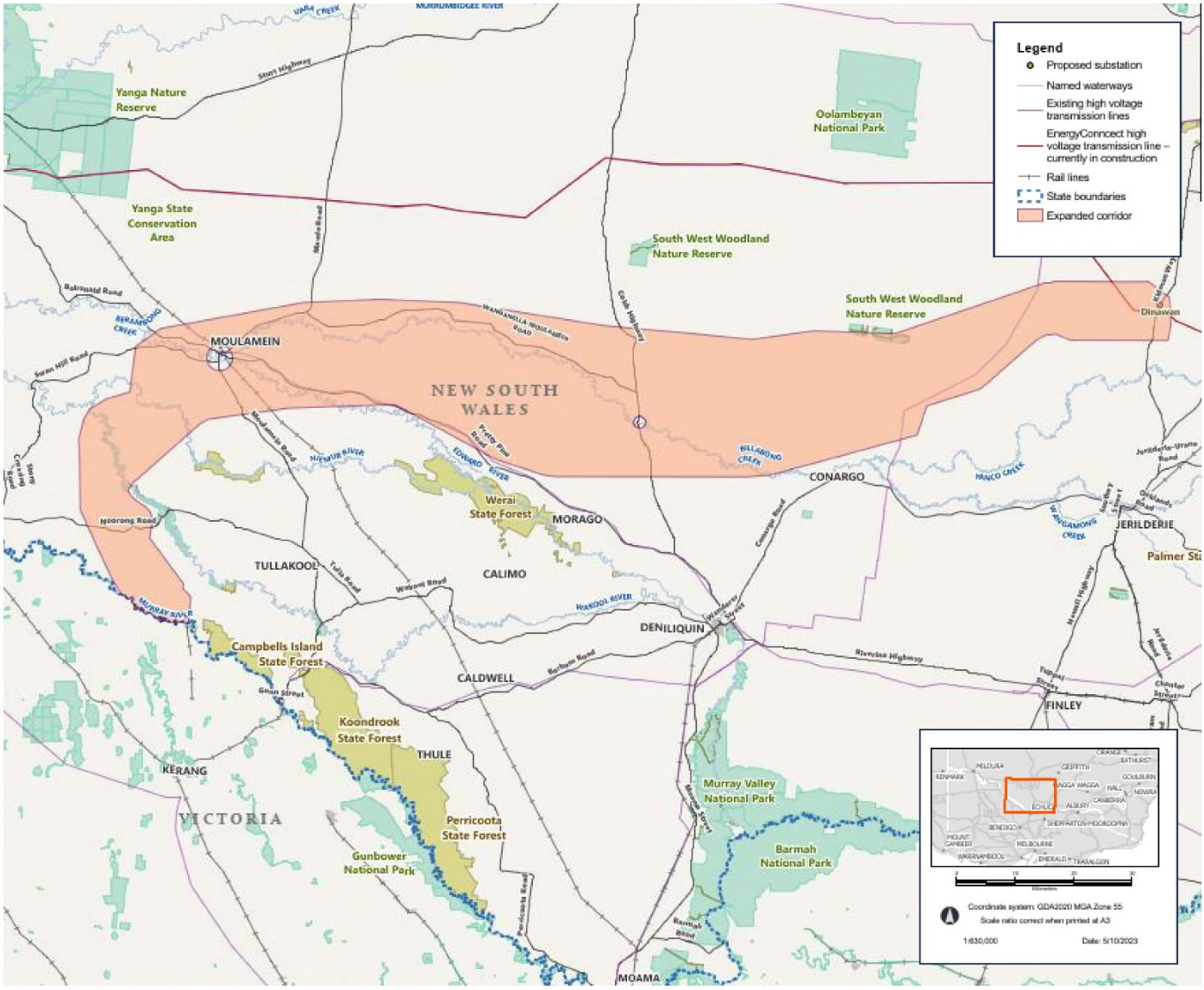


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

6th November 2023

Edward River Council

Email: council@edwardriver.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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N. Hayes

Nicola Hayes

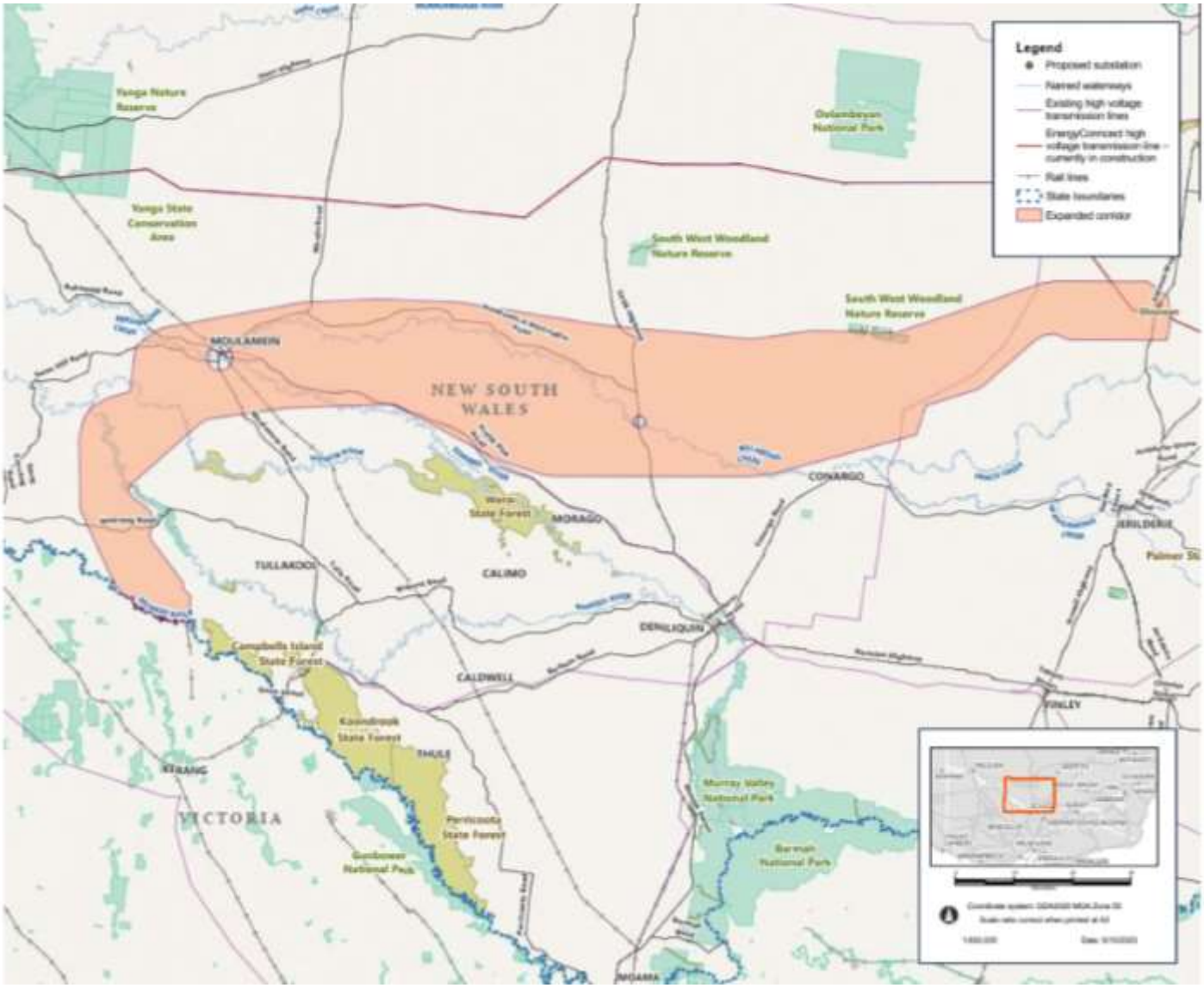


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

6th November 2023

Heritage NSW

Email: heritagemailbox@environment.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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KINGSTON ACT 2604

Phone: 0477702814

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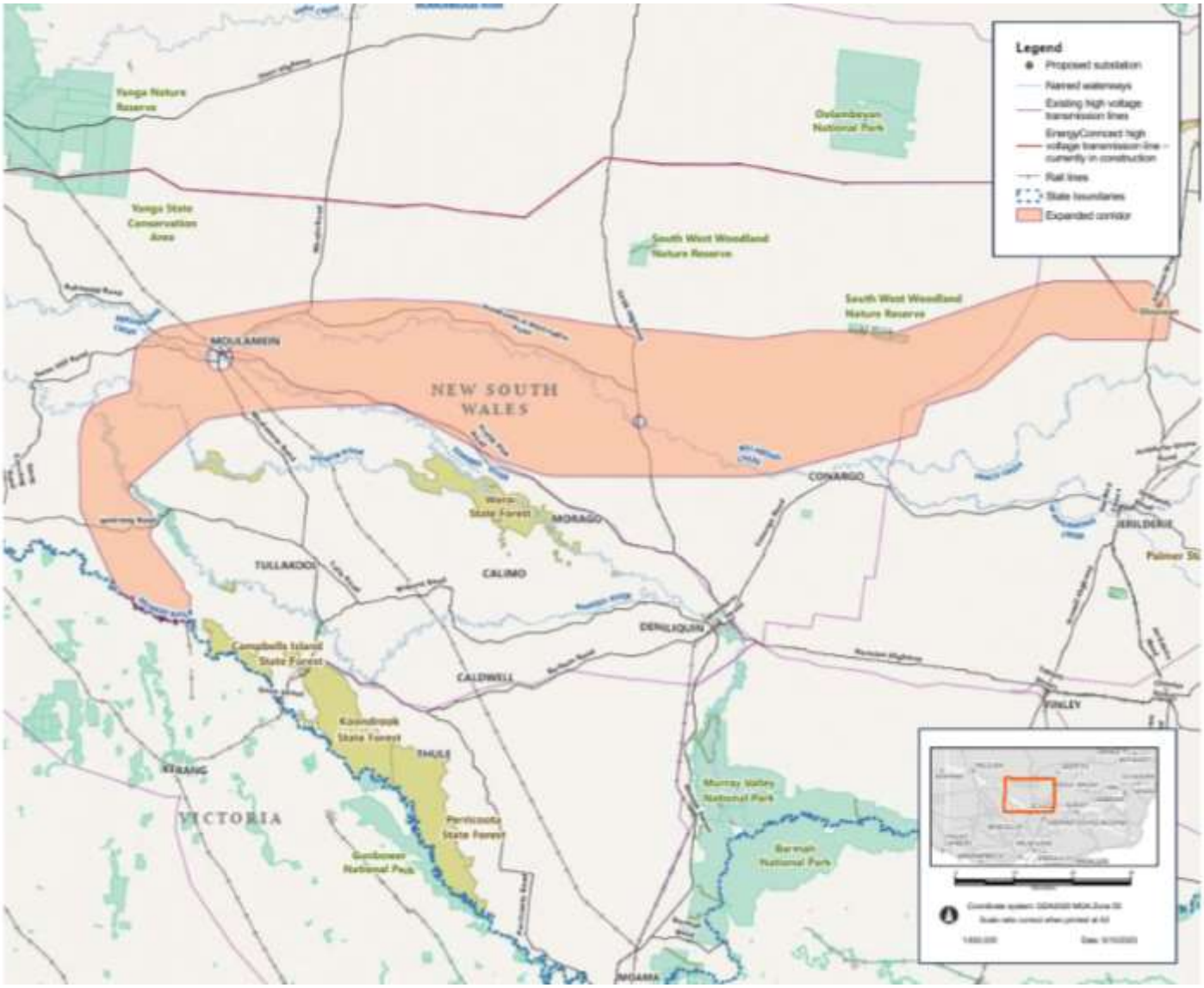


Figure 1- VNI West initial study area

Transgrid

People. Power. Possibilities.

11th December 2023

Heritage NSW

Email: heritagemailbox@environment.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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Environment Manager – VNI-West | Major Projects
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4/71 Leichhardt Street
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Phone: 0477702814

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N. Hayes

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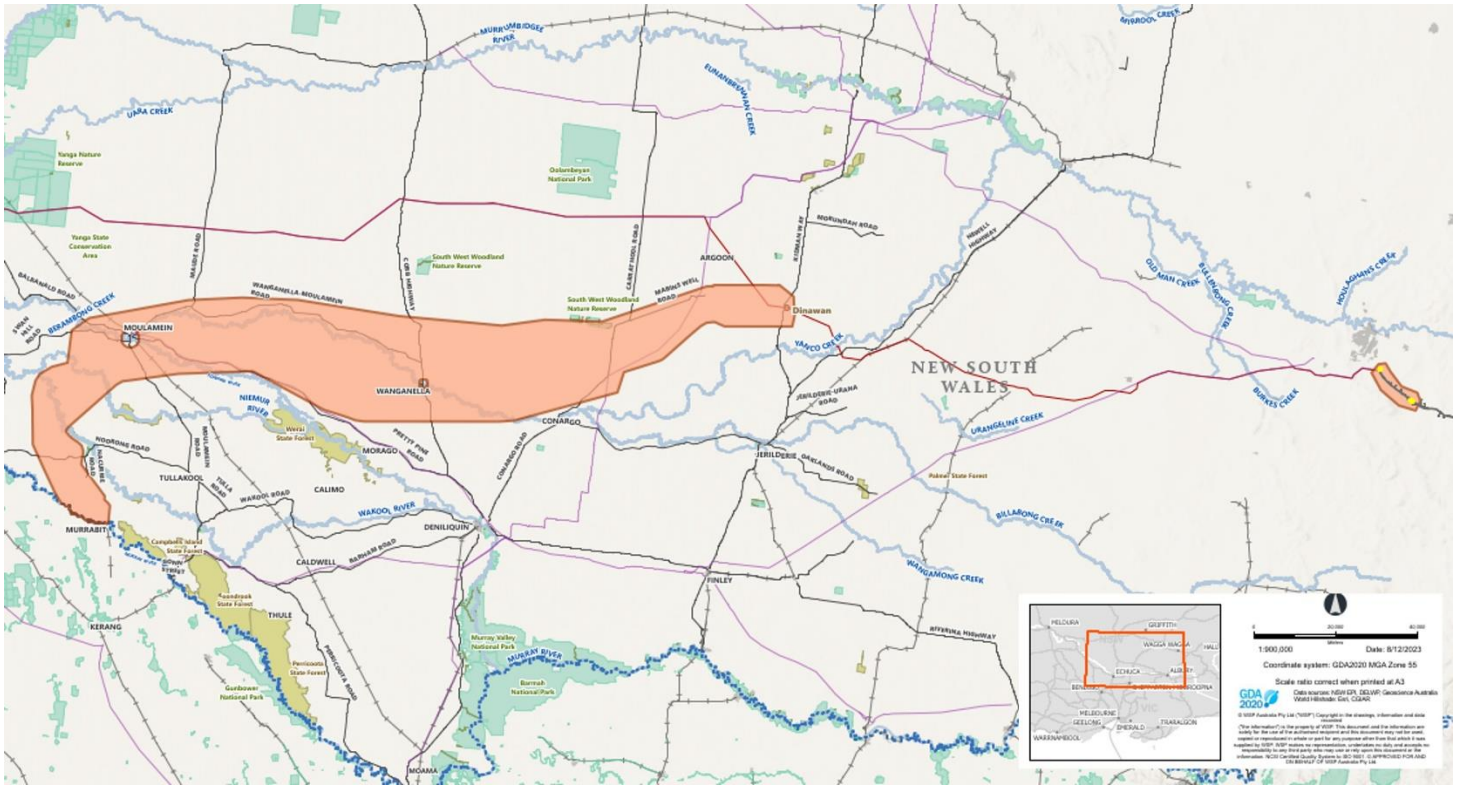


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

12th December 2023

Heritage NSW

Email: heritagemailbox@environment.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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- expansion of the 330kV Dinawan substation to include a new 500kV switchyard to accommodate two 500/330kV 1,500 megavolt amperes (MVA) transformers
- Augmentation of a section (around 9 km) of the existing single circuit (Line 51) between the existing Wagga Wagga substation and proposed Gugaa substation (to be constructed as part of the HumeLink project), including demolition and re-construction of the existing infrastructure to provide a double circuit 330kV transmission line, within the existing easement
- establishment and upgrade of access tracks and roads, as required
- other ancillary works required to facilitate the construction of the project (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

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Transgrid
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KINGSTON ACT 2604

Phone: 0477702814

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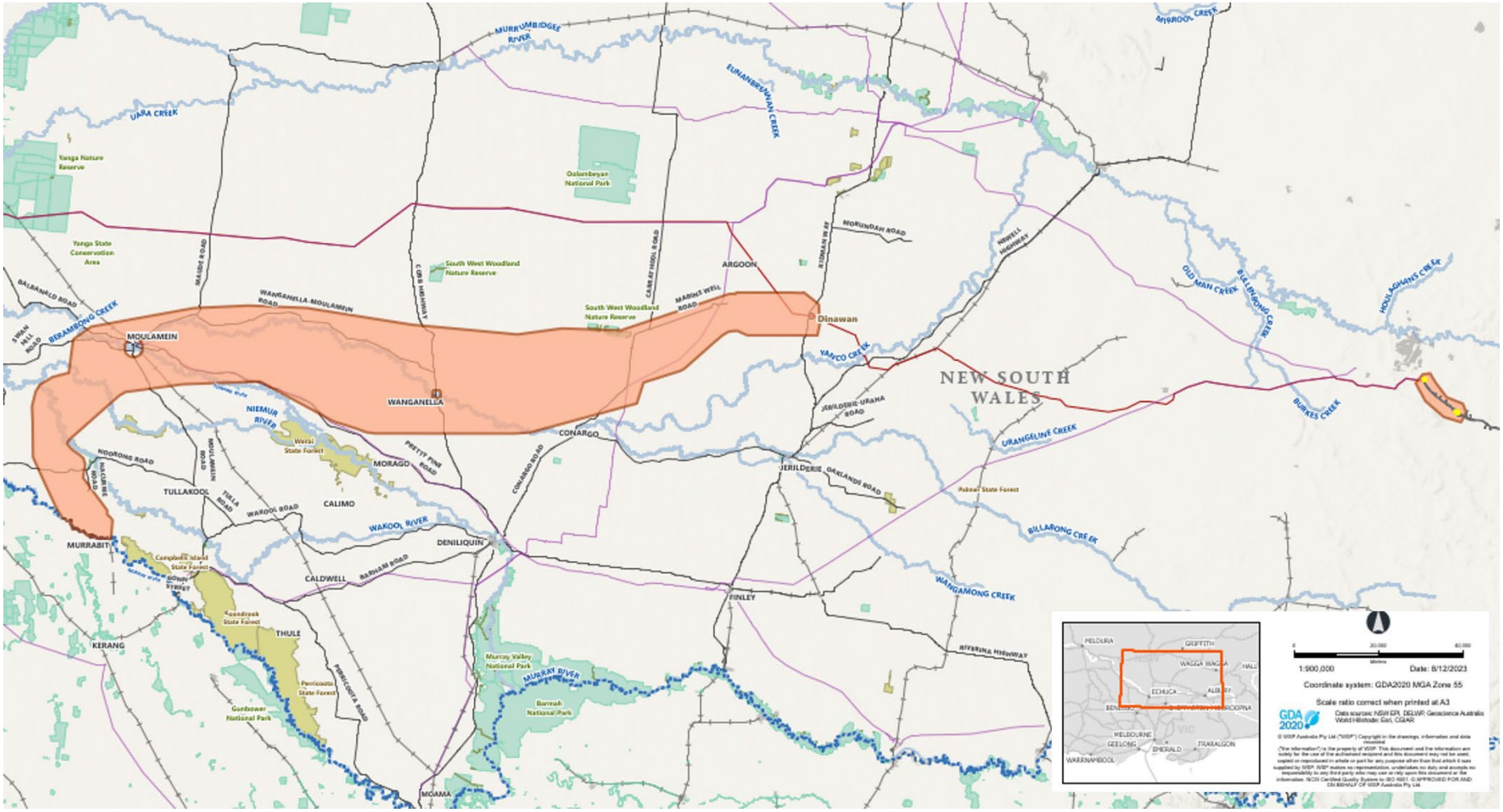


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

6th November 2023

Murray Local Land Services

Email: admin.murray@lls.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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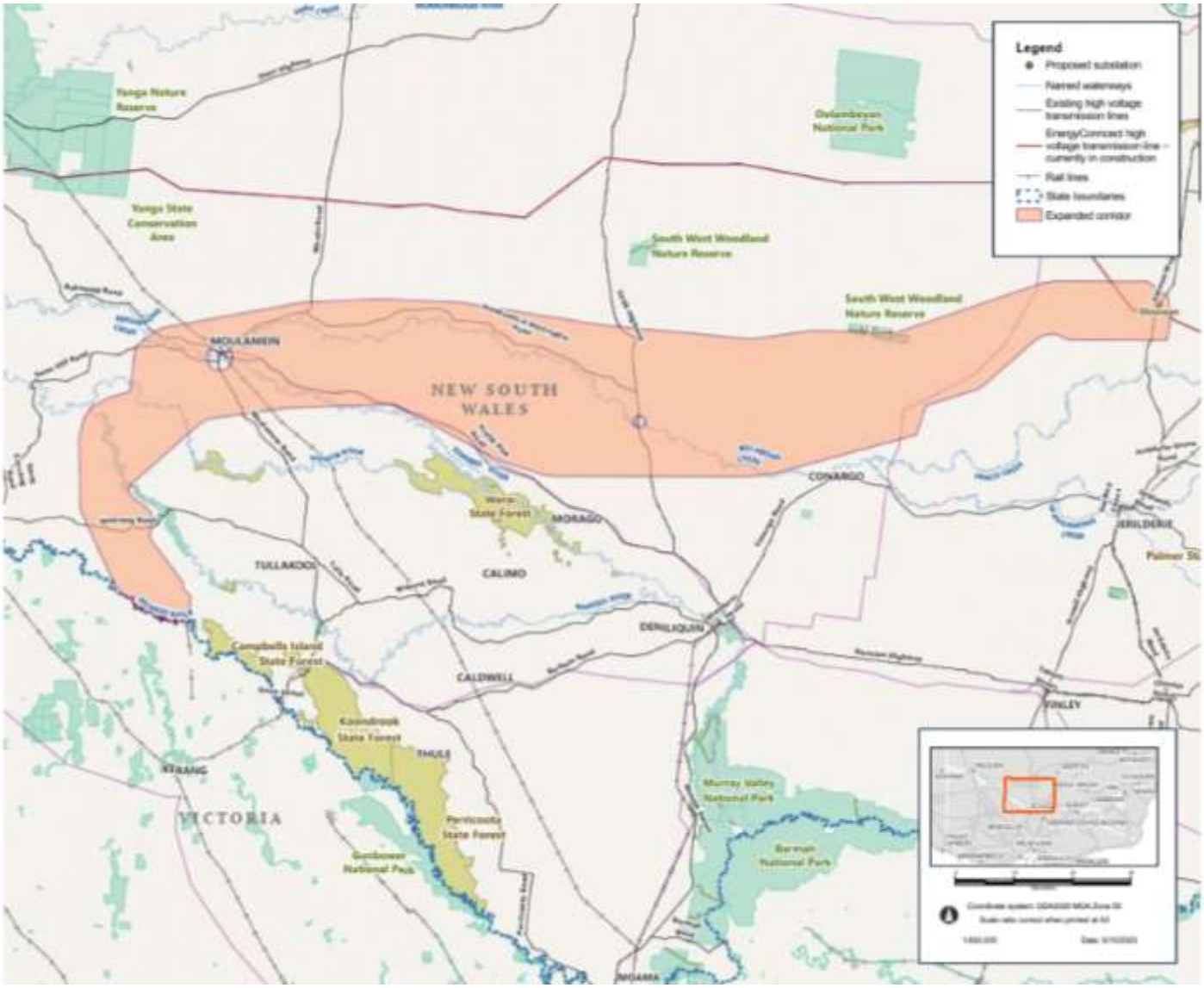


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

6th November 2023

Murray River Council

Email: admin@murrayriver.nsw.gov.au

Our Reference: ***230027***

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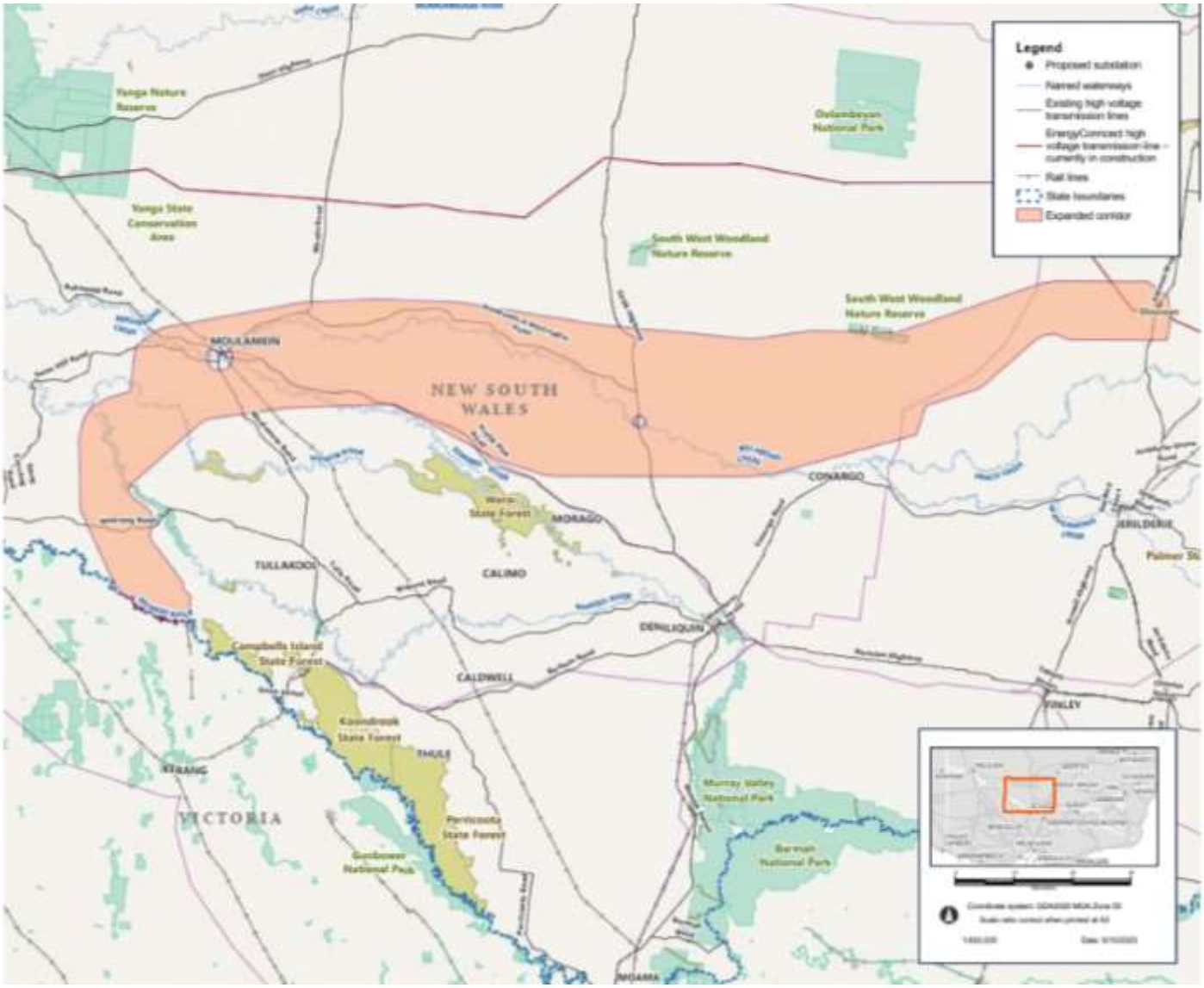


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

6th November 2023

Murrumbidgee Council

Email: mail@murrumbidgee.nsw.gov.au

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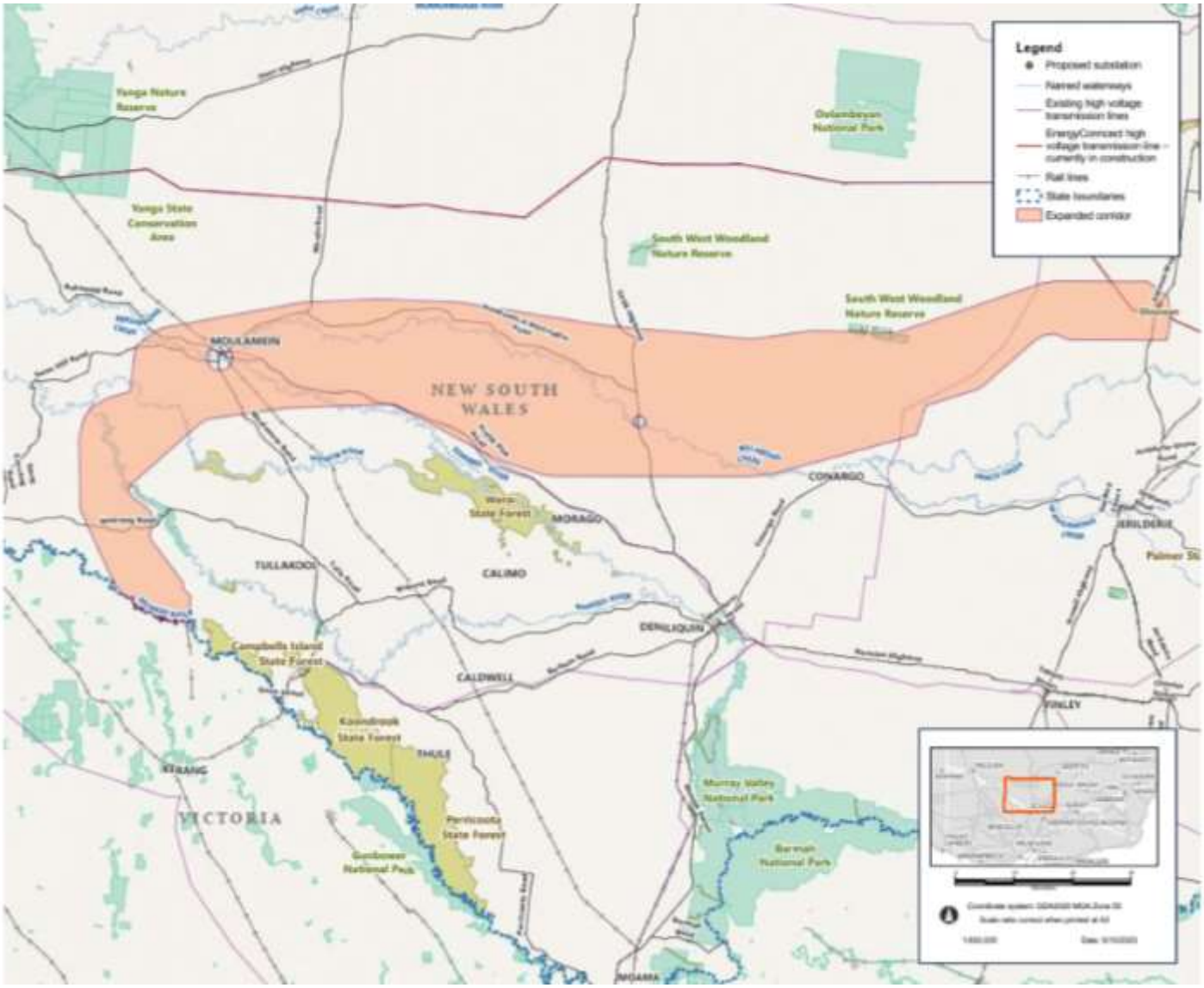


Figure 1- VNI West initial study area

Transgrid People. Power. Possibilities.

12th December 2023

National Native Title Tribunal

GPO Box 9973

Sydney NSW 2150

Email: enquiries@nntt.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson
Environment Manager – VNI-West | Major Projects
Transgrid
Insert address

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Please respond in writing (via email preferred) within 14 days by 28th December 2023 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours sincerely,



Nicola Hayes

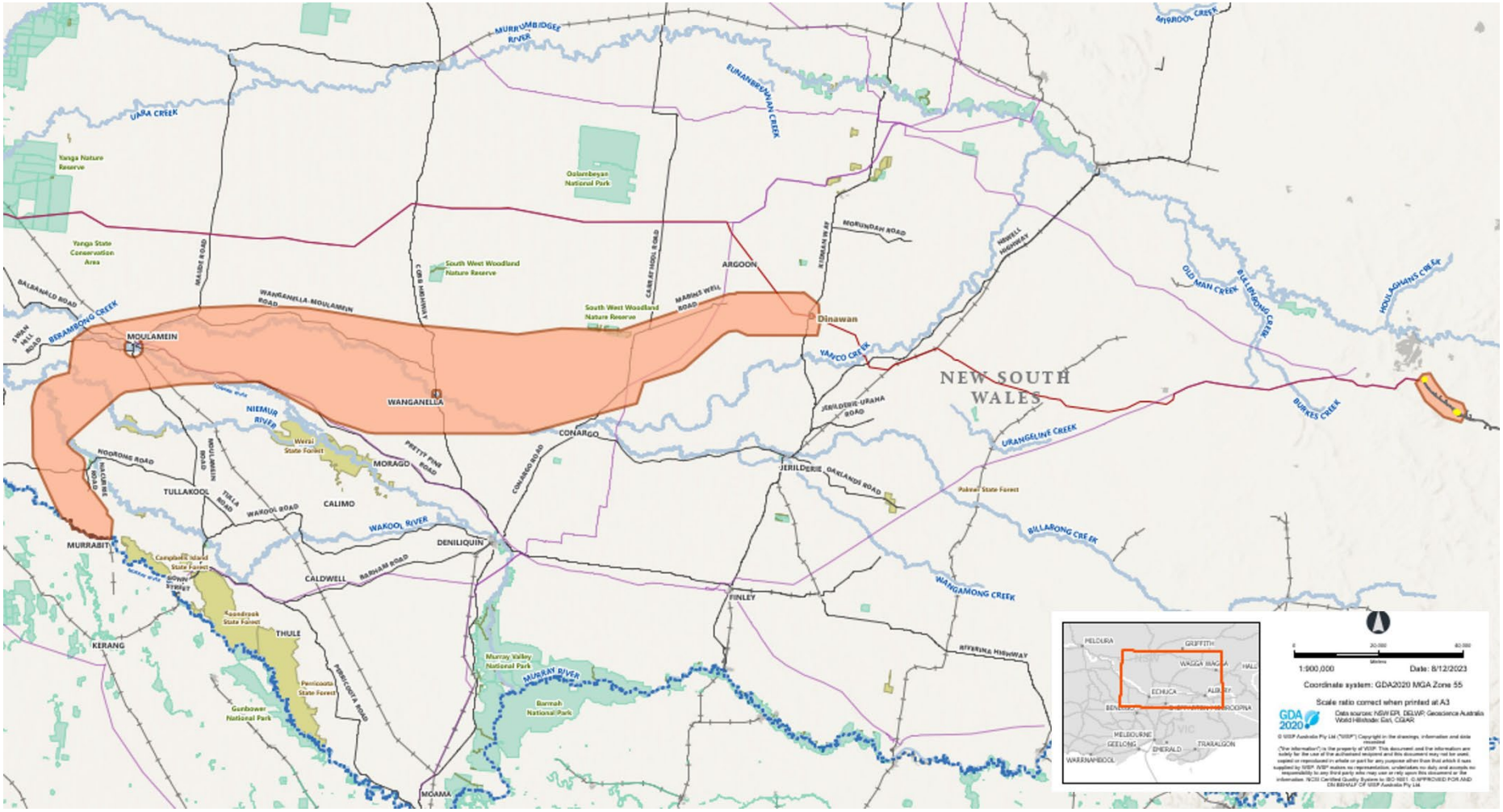


Figure 1- VNI West initial study area

Transgrid

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12th December 2023

Officer of the Registrar

Level 3, 2-10 Wentworth Street

Parramatta NSW 2124

Email: adminofficer@oralra.nsw.gov.au

Our Reference: ***230027***

Re: STAGE 1: REQUEST FOR INFORMATION FOR Aboriginal Cultural Heritage Assessment for Victoria - NSW Interconnector (VNI) West

Dear Sir, Madam

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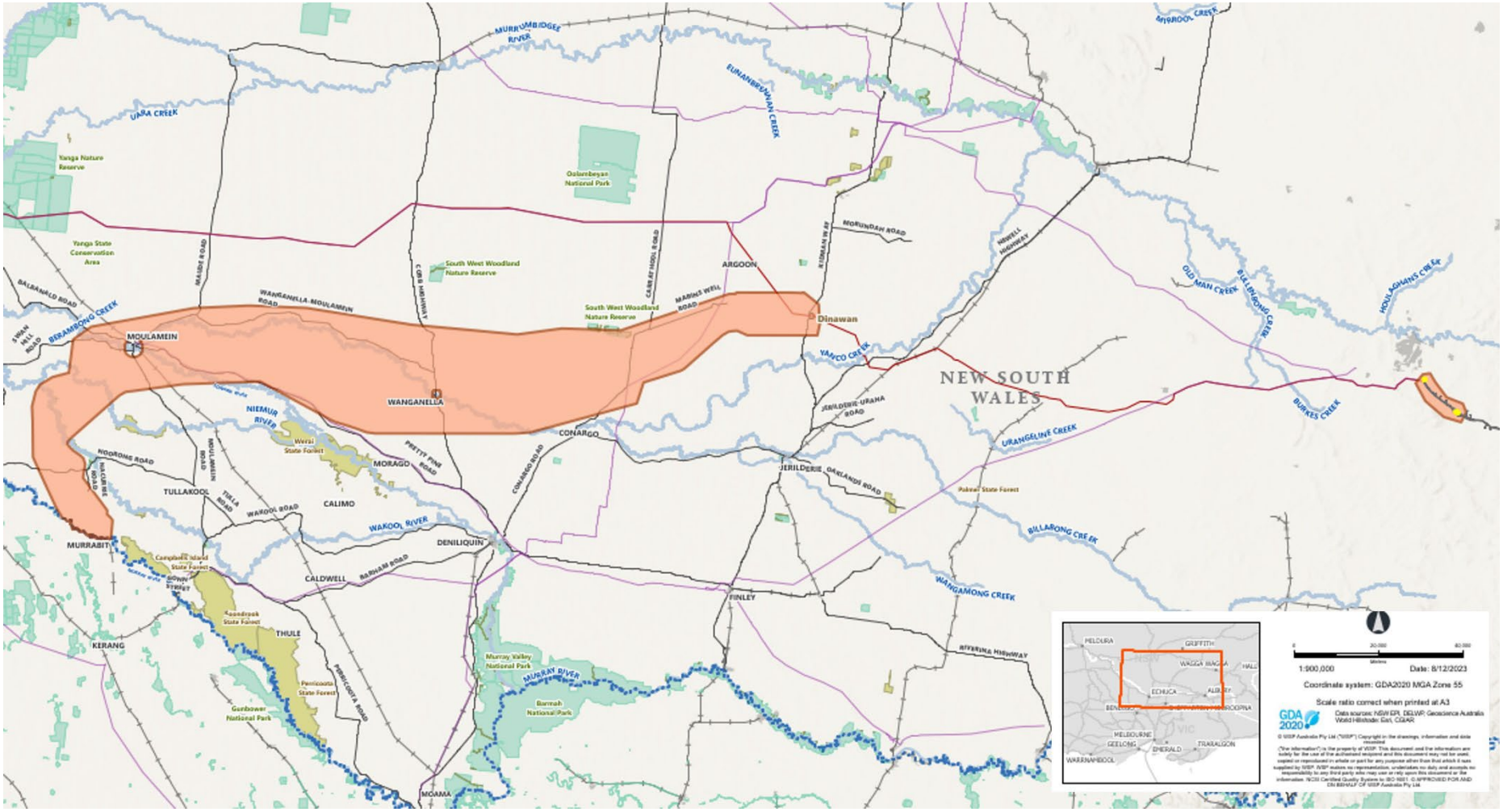


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Transgrid

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12th December 2023

Riverina Local Land Services

Email: admin.riverina@lls.nsw.gov.au

Our Reference: ***230027***

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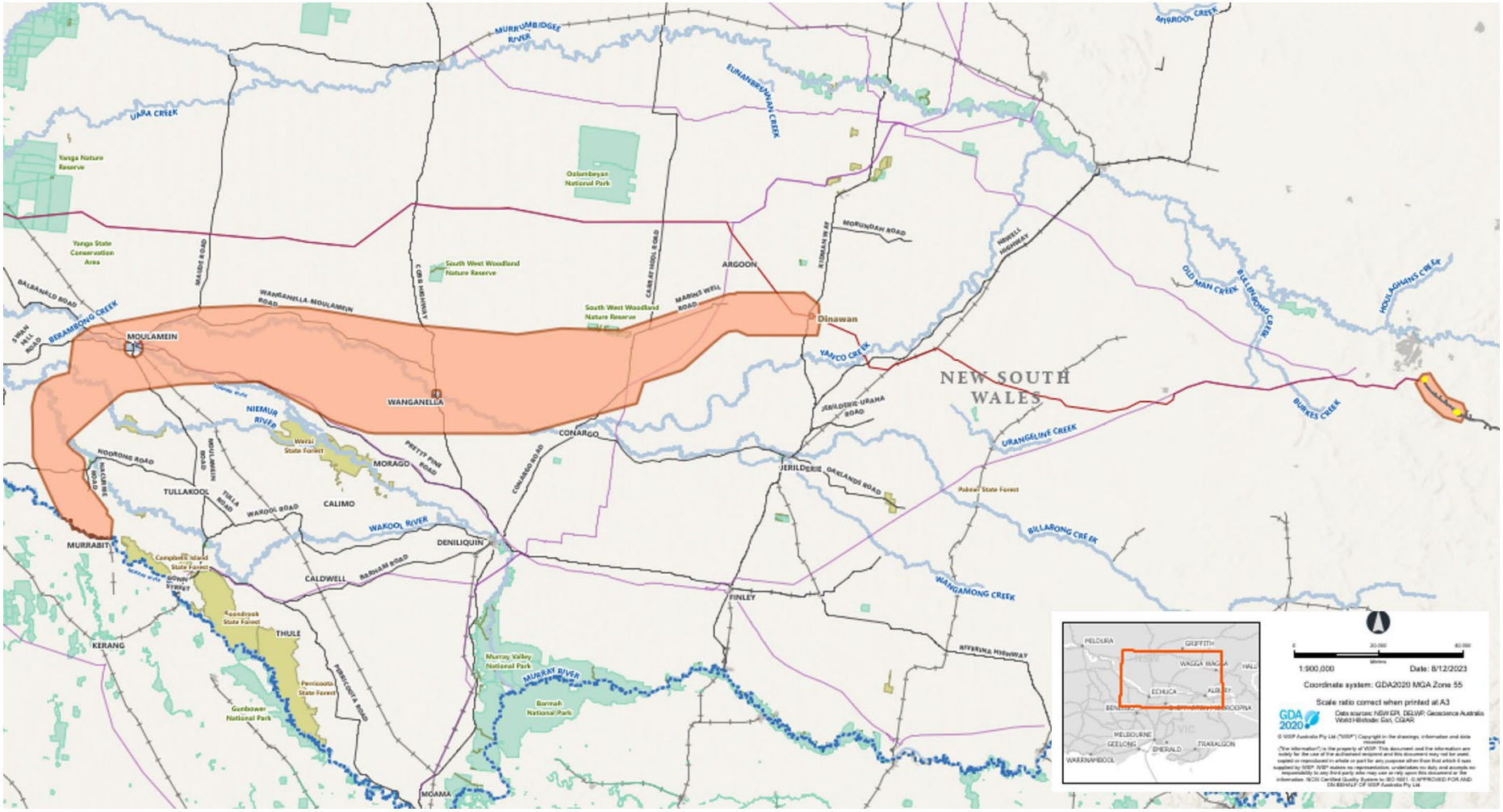


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Transgrid

People. Power. Possibilities.

12th December 2023

Wagga Wagga City Council

243 Baylis Street, Wagga Wagga

NSW 2650, Australia

Via Email: council@wagga.nsw.gov.au

Our Reference: ***230027***

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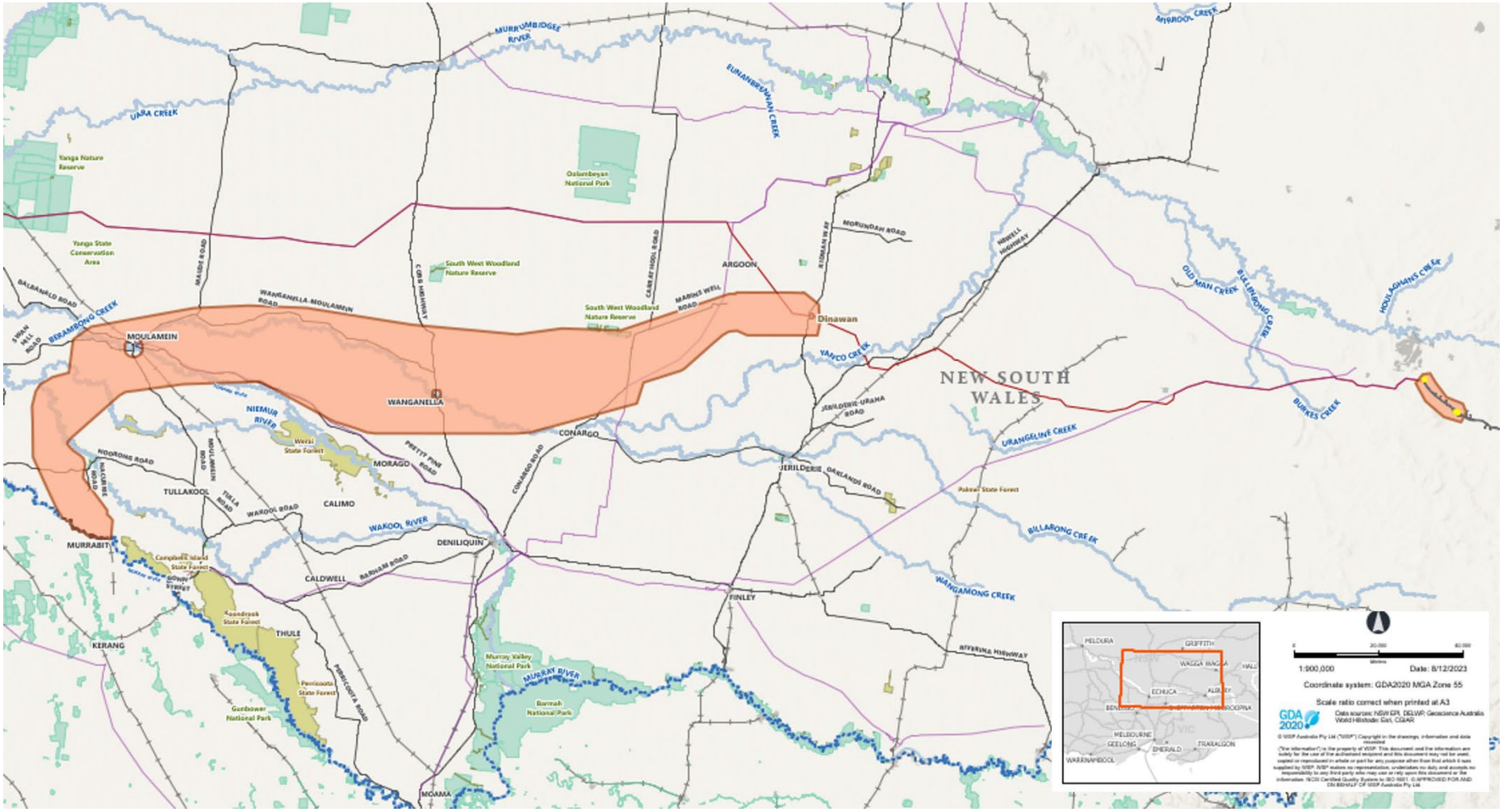


Figure 1- VNI West initial study area

Meeting Minutes

VNI West

Meeting title:	VNI West Indigenous Working Group meeting # 1	**Date:**	22 November 2023
Location:	Deniliquin RSL	**Time:**	15:30 – 16:45
Chairperson:	Geoffrey Hudson		
Attendees			
VNI West Project Team			
Geoffrey Hudson	Environment Manager – VNI West (Transgrid)		
Wardia Kessal	Environmental Approvals Lead – VNI West (Transgrid)		
Aaron Atkinson	Indigenous engagement and Access Officer - Transgrid		
Paul McFadyen	Place Manager – VNI West		
Nikki Hansell	Place Manager – VNI West		
VNI West Indigenous Working Group			
Nicola Hayes	Heritage Consultant - Navin Officer (NOHC)		
Cynthja Pappin	Wakool Indigenous Corporation and landholder		
Jeremy Gaden	Transmission Company Victoria (TCV)		
Craig A Watson	Transmission Company Victoria (TCV)		
Bruce Tran	Indigenous Land & Sea Corporation and Landholder		
Craig Tucker	VicGrid		
Alex Garrett	WSP		
Apologies			
David Crew	Yarkuwa Indigenous Knowledge Centre		
Leon Atkinson Kevin Atkinson Roaland Atkinson Haydon Love	Cummeragunja LALC Cummeragunja LALC – Bangerang Aboriginal Corporation Cummeragunja LALC – Bangerang Aboriginal Corporation Cummeragunja LALC		
Rose Dunn	Deniliquin LALC		
John Kerr	Moama LALC		
Colin Williams	Wamba Wamba LALC		
Sherrie Anderson	Yura Ngura Indigenous Advisory Manager - Transgrid		
Guests			
Andrew Scott	Environment Business Partner - Transgrid		

Meeting Proceedings

Item	Summary notes
1. Welcome, introductions	The Chair welcomed everyone and asked everyone to introduce themselves.
2. VNI West project introduction	The chair gave: Introduction on the VNI West project and overview of the current preferred corridor and timeline. Introduction on the early route selection and advice that the preferred route will be finalised and published around Marh 2024 before moving onto the EIS stage.
3. Aboriginal Cultural Heritage Assessment (ACHA) process	Nicola provided introduction on the formal ACHA consultation process. Agency consultation letters have already been sent. Local Aboriginal Land Council (LALC) consultation will be next.
4. Group discussion	Cynthja – consultation needed to be kept local and to consult first with the Traditional Owners Cynthja - in NSW LALCs are a statutory body that doesn't have same boundaries to the tribes. Need to start with traditional owner groups and then go from there. LALCs represent the Aboriginal community in the region, but not necessarily the traditional owners. Cynthja - would be a good idea to identify Traditional Owners along the project route. Nicola – will get the broader RAP list and identify the relevant groups as part the Aboriginal Cultural Heritage Assessment Report (ACHAR). Transgrid – Transgrid would give plenty of notice upon the readiness of the ACHAR. Transgrid might consider supplementing the 28 Day statutory consultation period for the ACHAR with a presentation of the project key points during a drop-in session. Transgrid - PEC had bite sized information packs for individual areas with the recommendations - little extra work but goes a long way Nicola - early NOHC predictive modelling has included these boundaries. Different inputs into the modelling. E.g. carved trees in Wiradjuri country, burials in the riverlands and western edge of the scope near Moulamein. Very few known sites out there because it's not developed. Cynthja – crossing tribal boundaries will have different expectations. Different groups have different requirements. There will be different finds. The area north of Moulamein for example would be full of potential burial sites (hence the name Moulamein meaning 'Place of Ghosts' in traditional language). Jeremy - Vic stakeholders have expressed concern that they haven't been able to talk to stakeholders on the NSW side. River crossing in sensitive area. Should be having ongoing conversations between the two sides to ensure the best opportunity for the crossing location. Transgrid – this is currently discussed in our fortnightly meeting with TCV as part of the constraints assessment for the preferred route. • Native Title - Wamba application was not accepted. Put in 3 groups as part of the application, court couldn't be confident it's the one tribe.

Item	Summary notes
	Native Title applicants should be invited even if Native Title claim wasn't accepted. Each tribe has its own governance. If you can get in touch with the tribal elders, then that's a good start. Even if a group says "go ahead" still check that all groups are comfortable. Cynthja – if this is done this right, Transgrid wouldn't have many people object. Cynthja –could expect more people to be involved at the preferred route stage if Transgrid can provide some financial incentive. There is a lot of disadvantaged communities in this area.

Action items

Agenda item	Description	Person responsible	Status
Next - VNI West Indigenous Working Group meeting # 2	Once we get to the preferred route phase, we will reconvene another meeting (Indigenous Working Group meeting # 2) to take place early 2024. Date/location will be confirmed (however looking at early to mid February 2024) and invitations sent out early next year	Geoffrey Hudson and Transgrid Team	In progress

Next meeting

Date:	February 2024 (Date to be confirmed)	**Time:**	To be confirmed
Location:	To be confirmed	**Chairperson:**	Geoffrey Hudson

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Ali Maher
A&K Cultural Heritage
67 Semaphore Road
Berkeley NSW 2506
aandkculturalheritage@gmail.com

Our Reference: **230027**

Dear Ms Maher

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

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Office Manager
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4/71 Leichhardt Street
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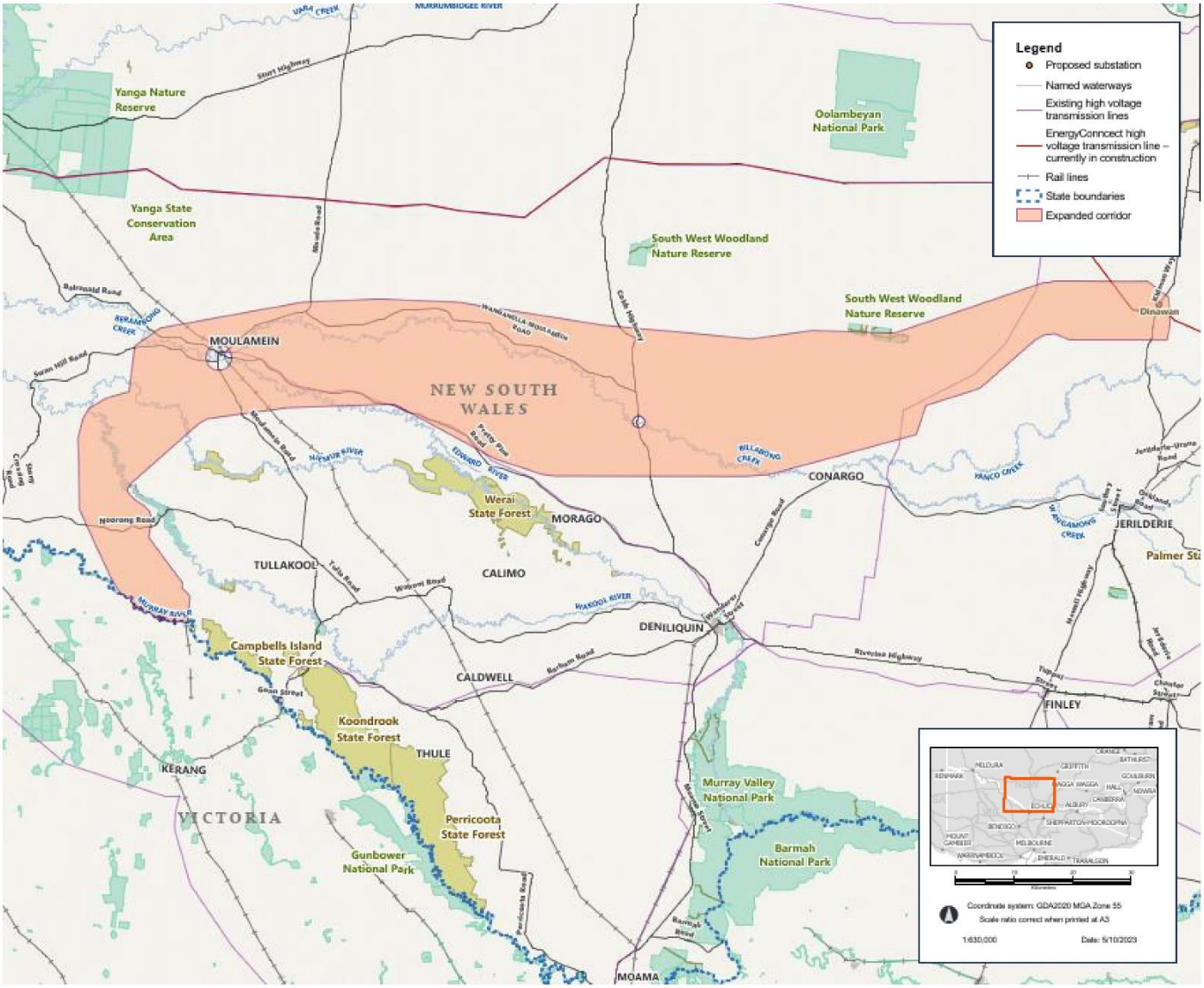


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ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Kevin Atkinson
Bangerang Aboriginal Corporation
vicki@bacch.org.au; admin@bacch.org.au

Our Reference: **230027**

Dear Mr Atkinson

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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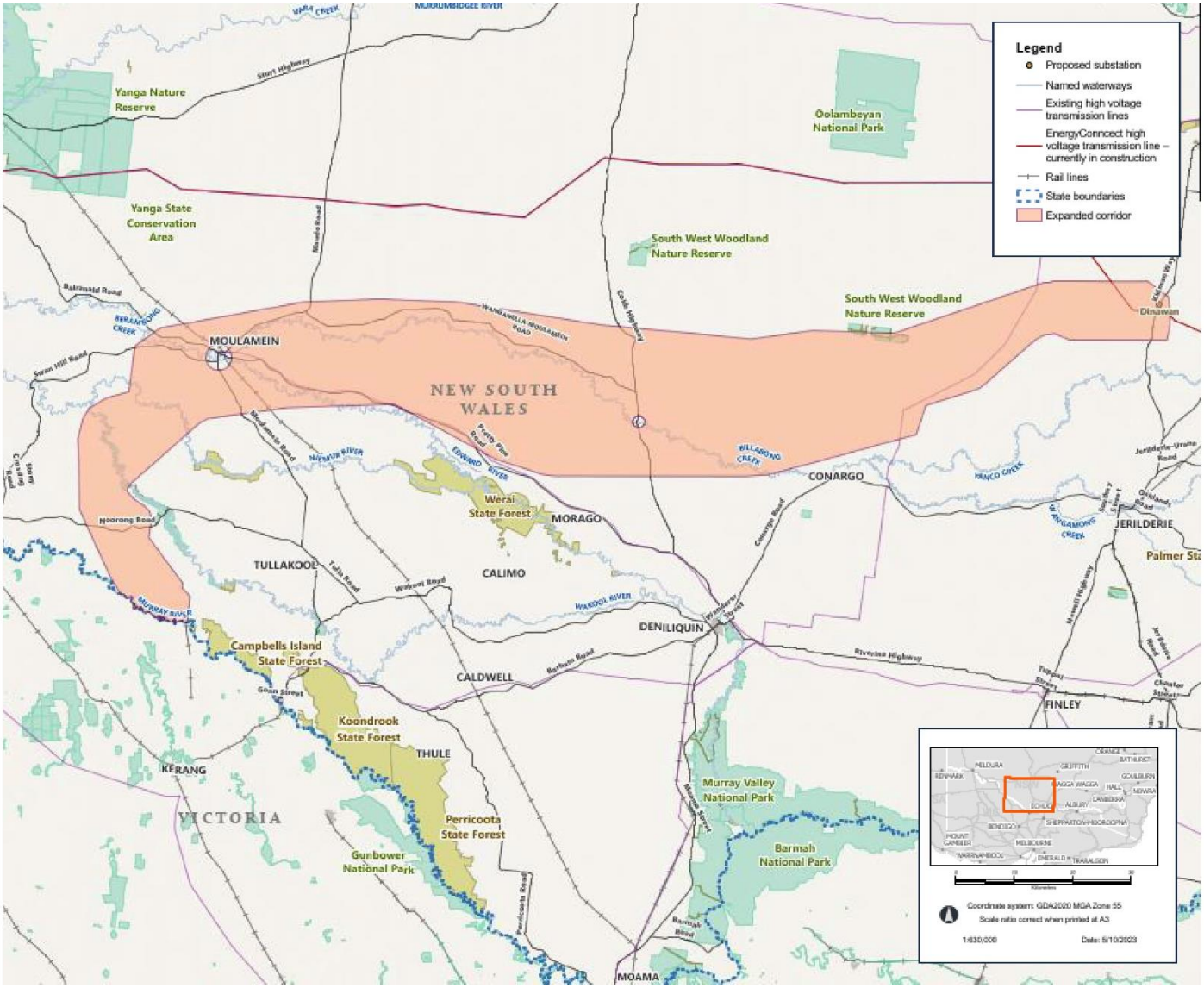


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F (02) 9284 3456

Wednesday, 20 December 2023

Mark Saddler
Bundyi Aboriginal Cultural Knowledge
marksad@live.com.au

Our Reference: **230027**

Dear Mr Saddler

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Victoria - NSW Interconnector (VNI) West

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

Please respond in writing within 14 days by 17th January 2024 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

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Yours faithfully

Geoffrey Hudson

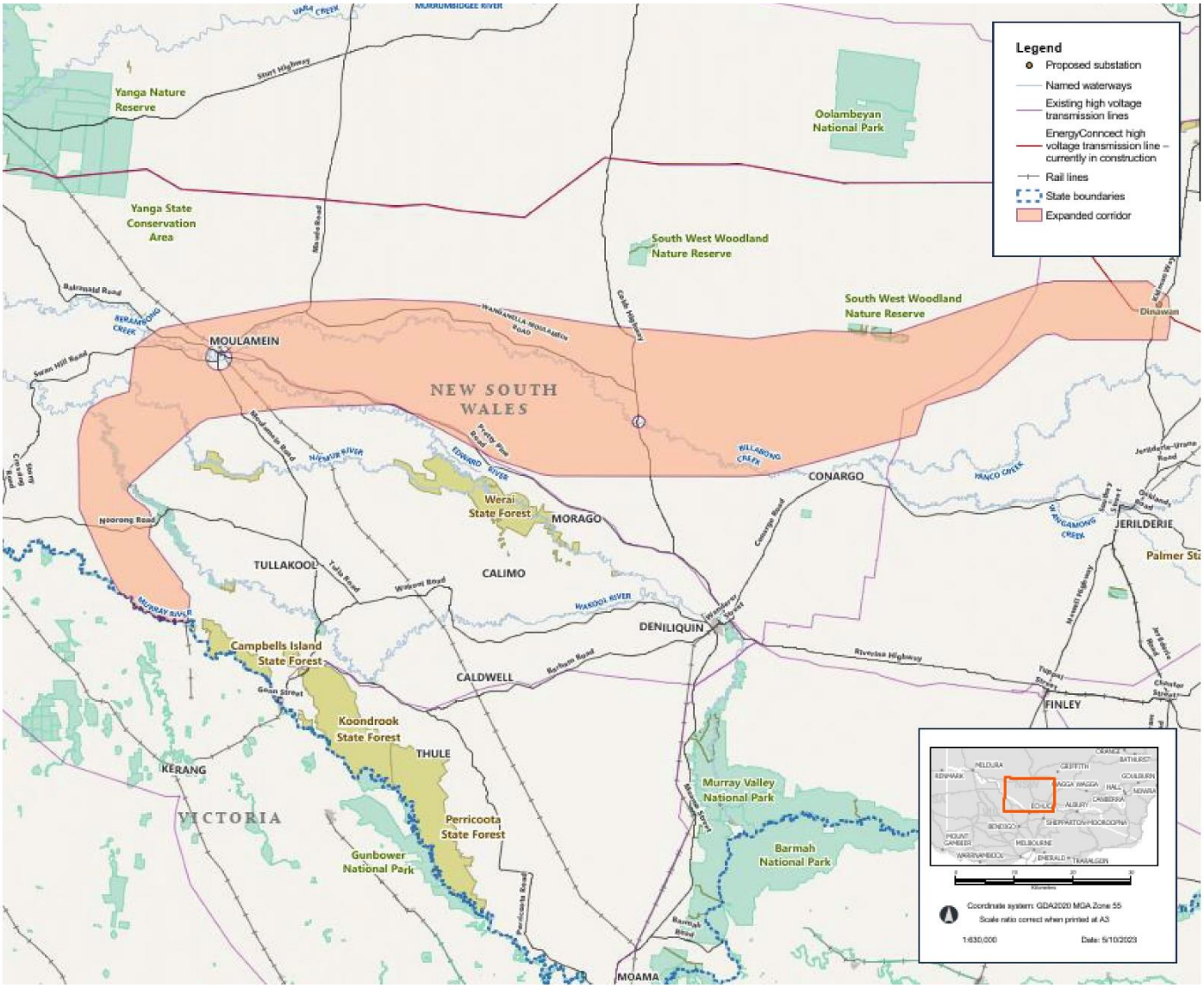


Figure 1 VNI West initial study area

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Haydon Love
Cummeragunja Local Aboriginal Land Council
ceo@cummeralalc.com.au

Our Reference: **230027**

Dear Mr Love

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

Transgrid has identified you / your organisation as an Aboriginal person / organisation who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or places according to Stage 1 (section 4.1.2) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.3 of the Consultation Requirements makes it the proponent's responsibility write to the Aboriginal people whose names were obtained in section 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Phone: 0477702814

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Yours faithfully

Geoffrey Hudson

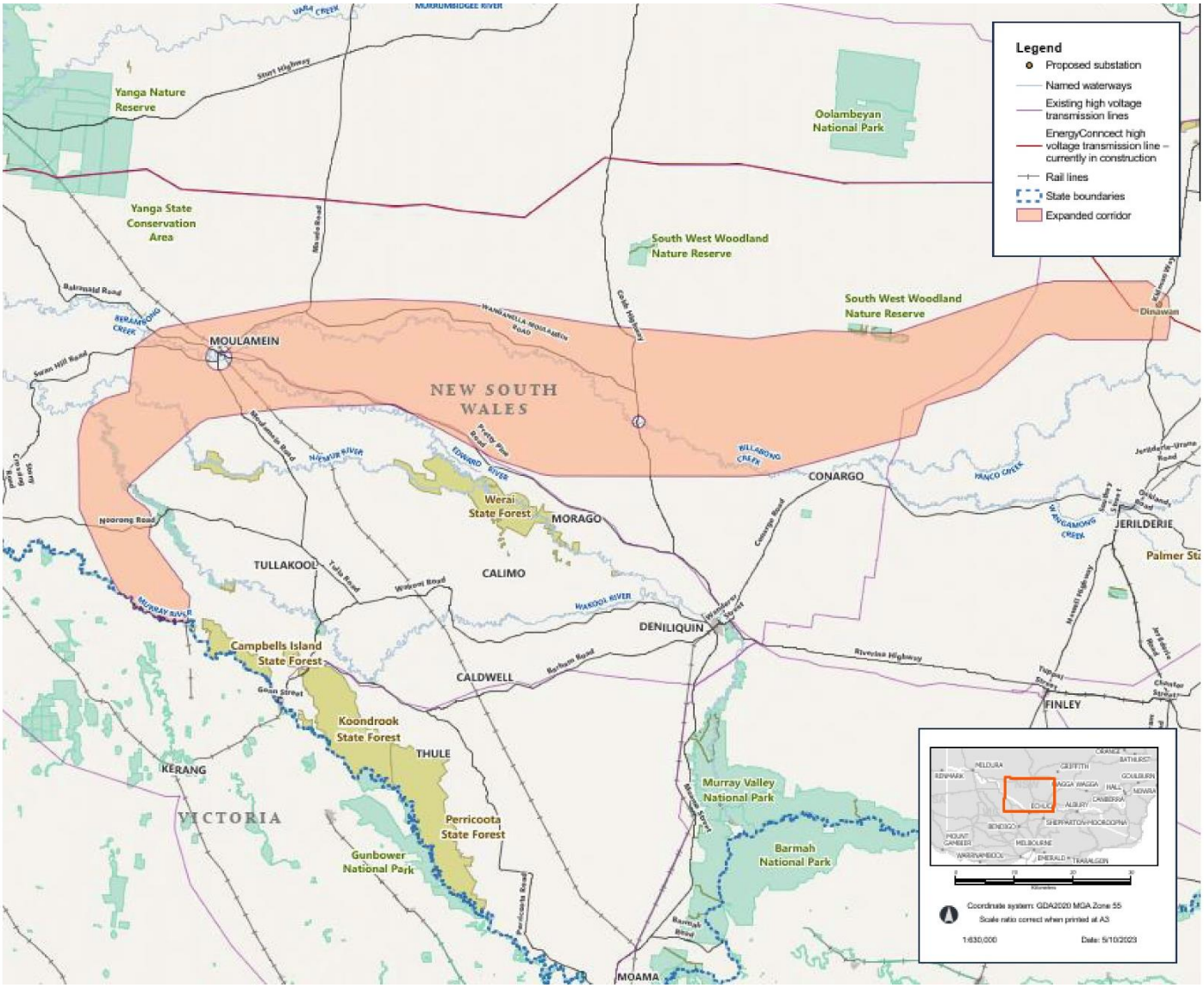


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Wednesday, 20 December 2023

Rose Dunn
Deniliquin Local Aboriginal Land Council
lalcd@bigpond.com

Our Reference: **230027**

Dear Ms Dunn

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

Transgrid has identified you / your organisation as an Aboriginal person / organisation who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or places according to Stage 1 (section 4.1.2) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.3 of the Consultation Requirements makes it the proponent's responsibility write to the Aboriginal people whose names were obtained in section 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Geoffrey Hudson

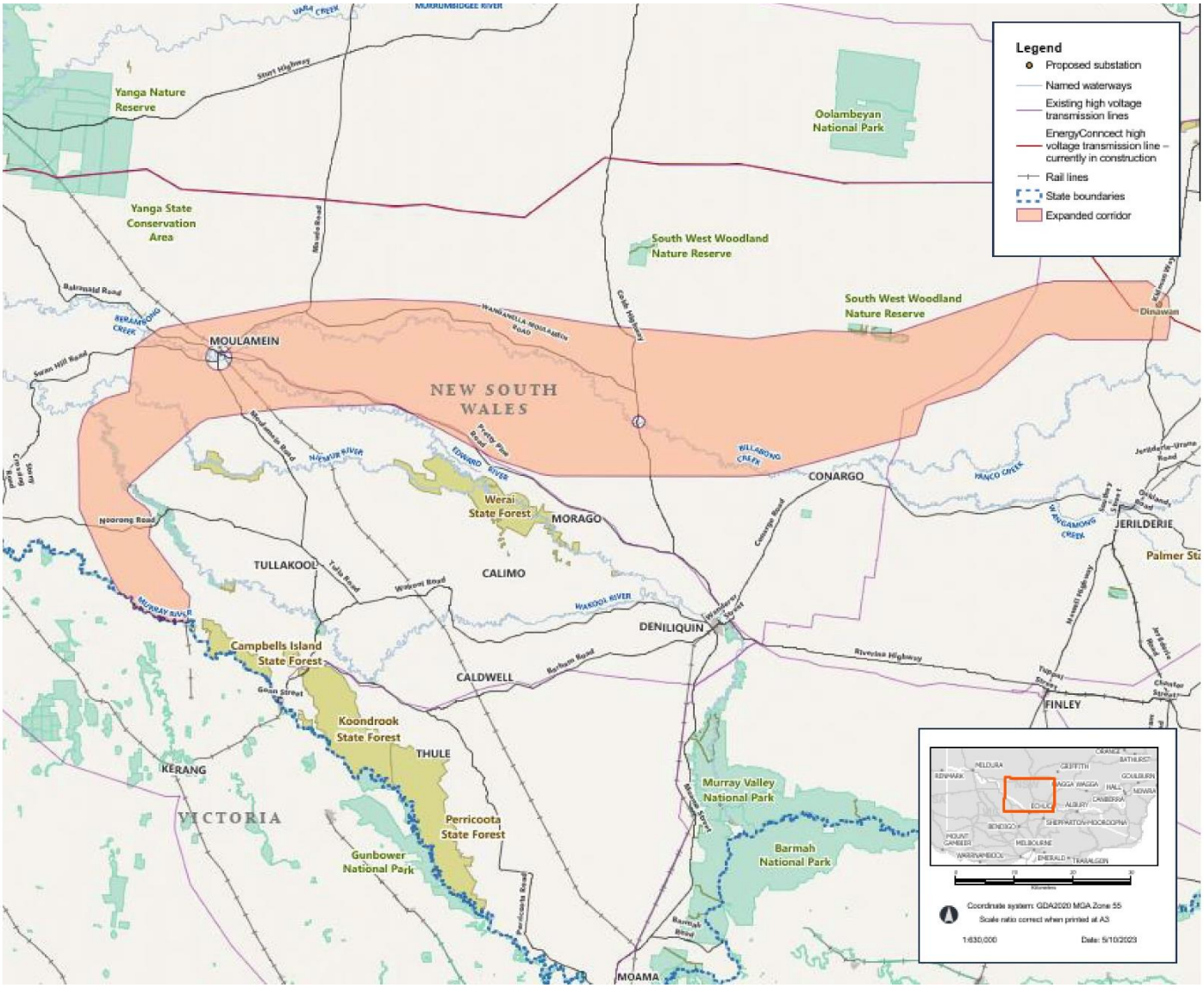


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F (02) 9284 3456

Wednesday, 20 December 2023

Diana Astin
Girragirra Murun Aboriginal Corporation
girragirramurun@yahoo.com

Our Reference: **230027**

Dear Ms Astin

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

Transgrid has identified you / your organisation as an Aboriginal person / organisation who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or places according to Stage 1 (section 4.1.2) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.3 of the Consultation Requirements makes it the proponent's responsibility write to the Aboriginal people whose names were obtained in section 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Office Manager
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Phone: 0477702814

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Yours faithfully

Geoffrey Hudson

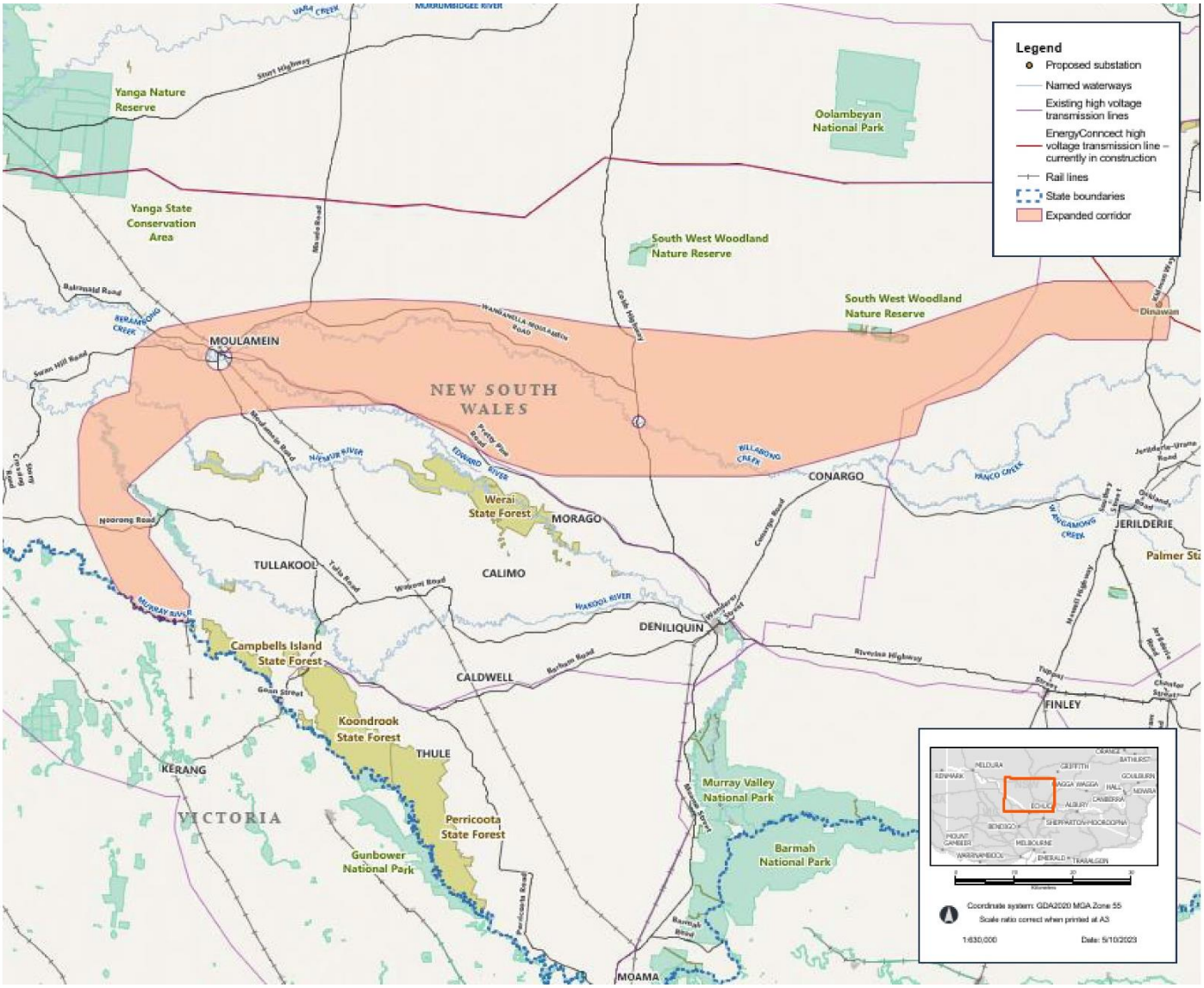


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F (02) 9284 3456

Wednesday, 20 December 2023

John Jackson
Girragirra Murun Aboriginal Corporation
John.Jackson@health.nsw.gov.au

Our Reference: **230027**

Dear Mr Jackson

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
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Phone: 0477702814

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Geoffrey Hudson

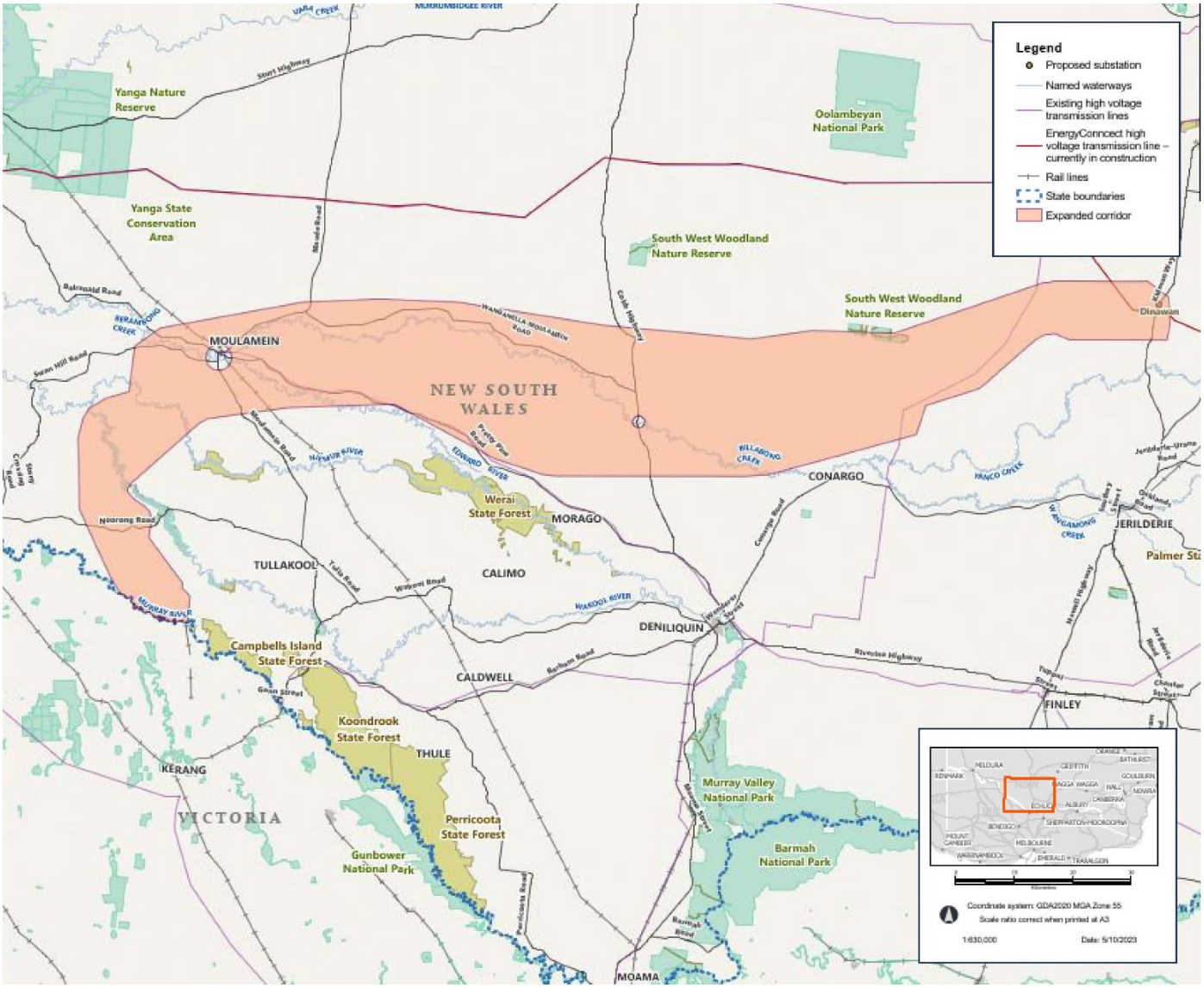


Figure 1 VNI West initial study area

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F (02) 9284 3456

Wednesday, 20 December 2023

John Winch
Girragirra Murun Aboriginal Corporation
kulinenvironments@outlook.com.au

Our Reference: **230027**

Dear Mr Winch

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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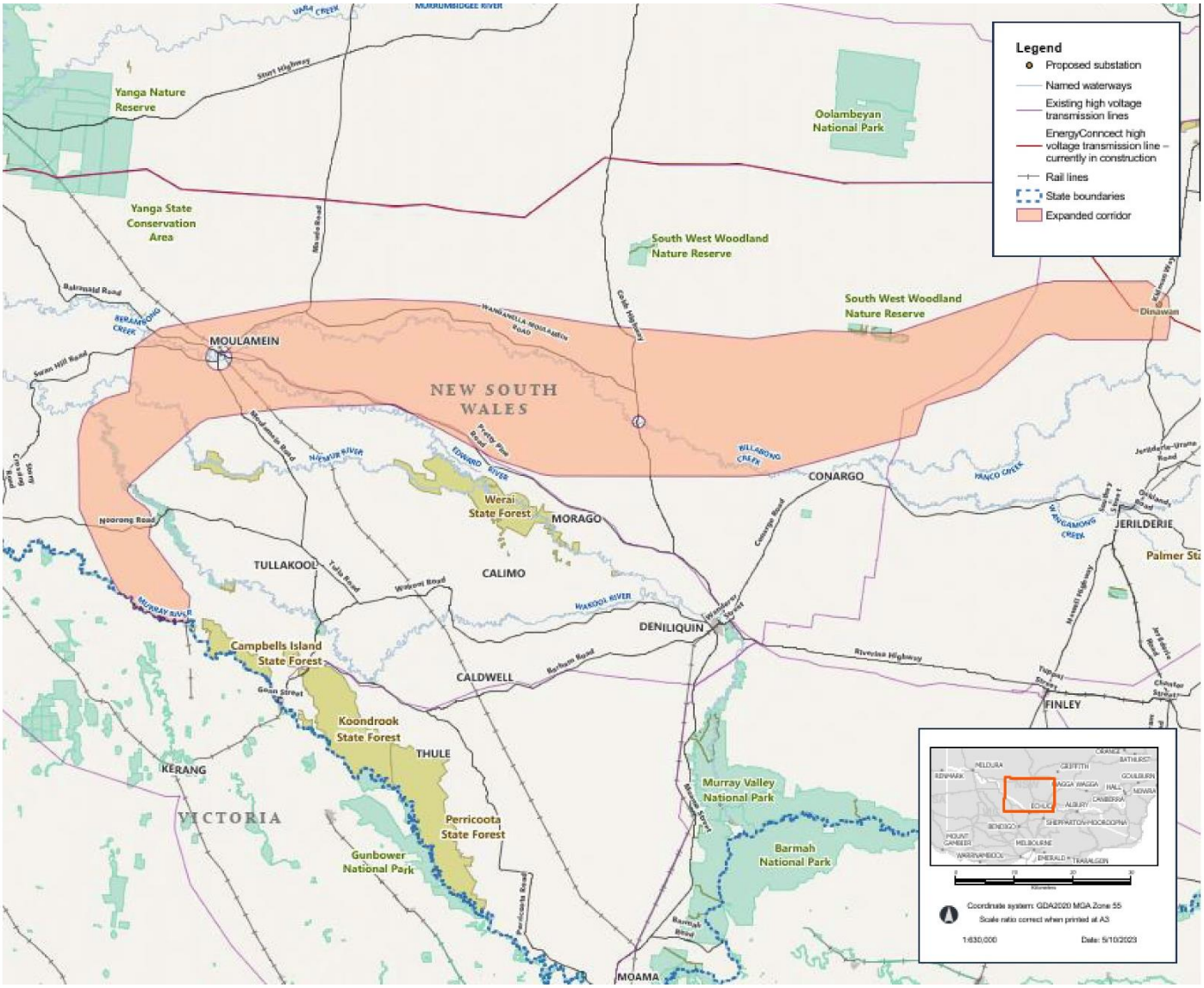


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F (02) 9284 3456

Wednesday, 20 December 2023

Robert Young
Konanggo Aboriginal Cultural Heritage Services
konanggo_consultancy@hotmail.com

Our Reference: **230027**

Dear Mr Young

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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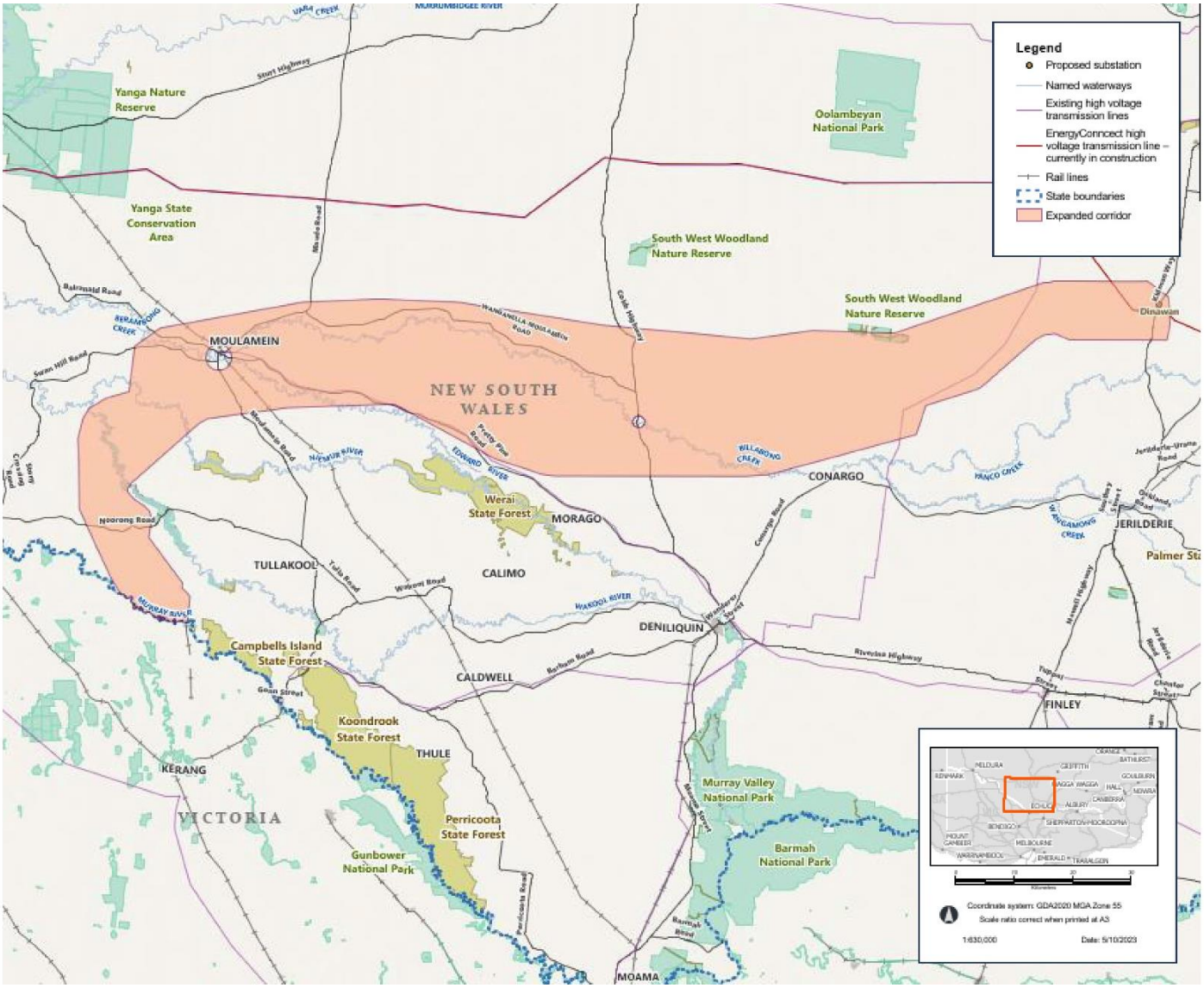


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Wednesday, 20 December 2023

Robert Williams
MAH
rob@murrumbidgeeah.com

Our Reference: **230027**

Dear Mr Williams

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours faithfully

Geoffrey Hudson

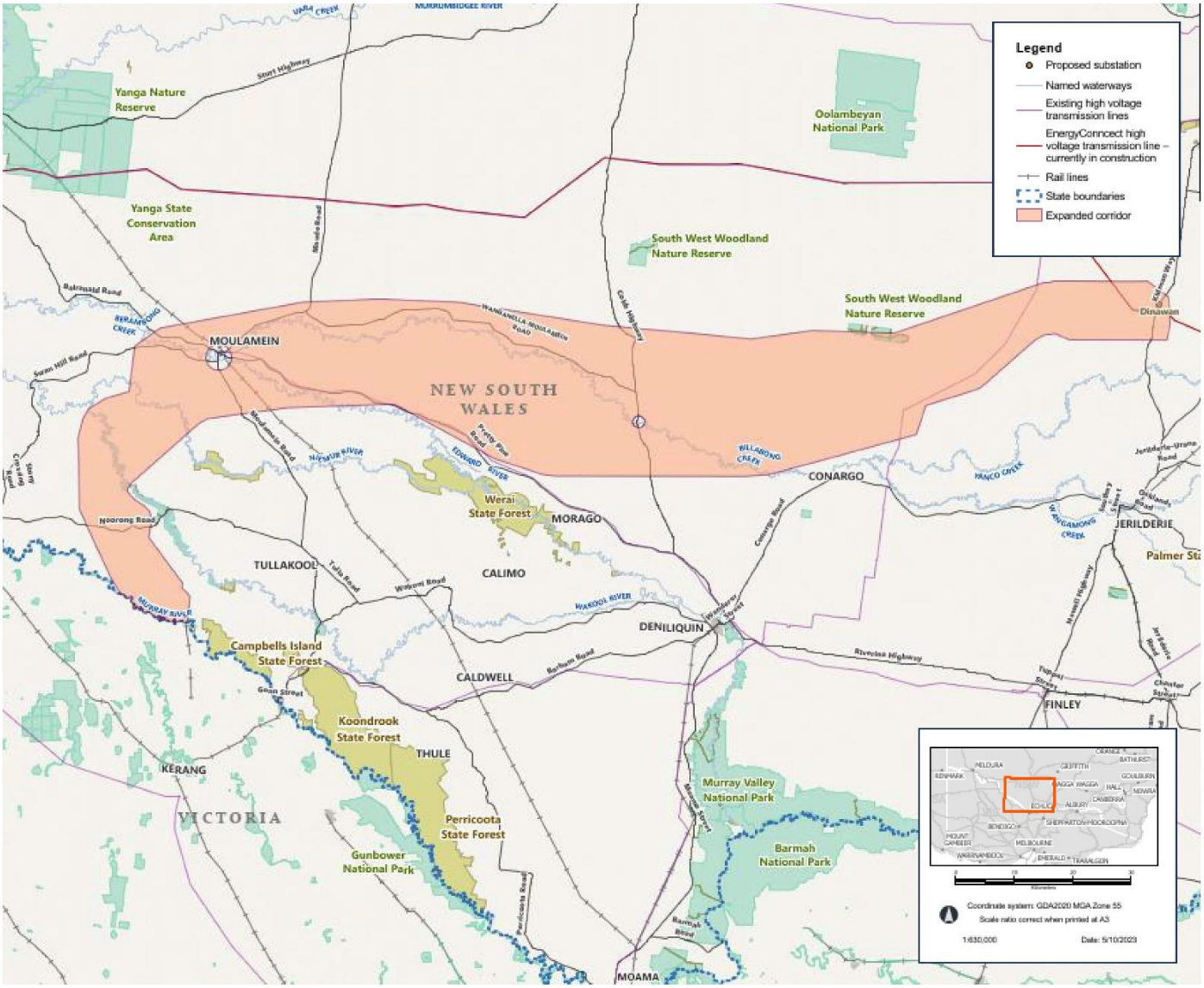


Figure 1 VNI West initial study area

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Robert Carroll
Miyagan Culture & Heritage
robert.carroll1971@gmail.com

Our Reference: **230027**

Dear Mr Carroll

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

Transgrid has identified you / your organisation as an Aboriginal person / organisation who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or places according to Stage 1 (section 4.1.2) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.3 of the Consultation Requirements makes it the proponent's responsibility write to the Aboriginal people whose names were obtained in section 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project.

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

Please respond in writing within 14 days by 17th January 2024 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
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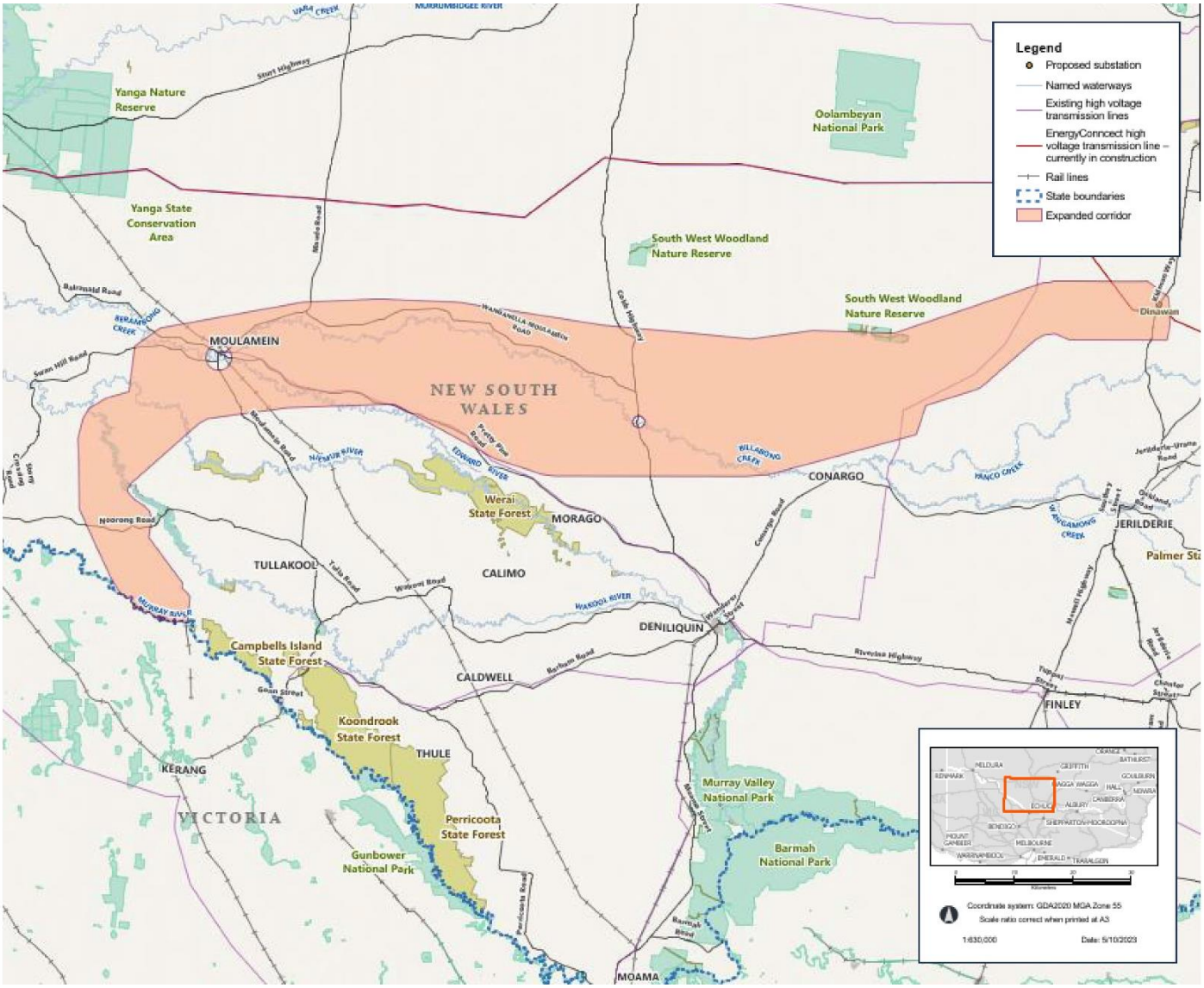


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Wednesday, 20 December 2023

Pappin Family Aboriginal Corporation
pfac1@outlook.com

Our Reference: **230027**

Dear Sir / Madam

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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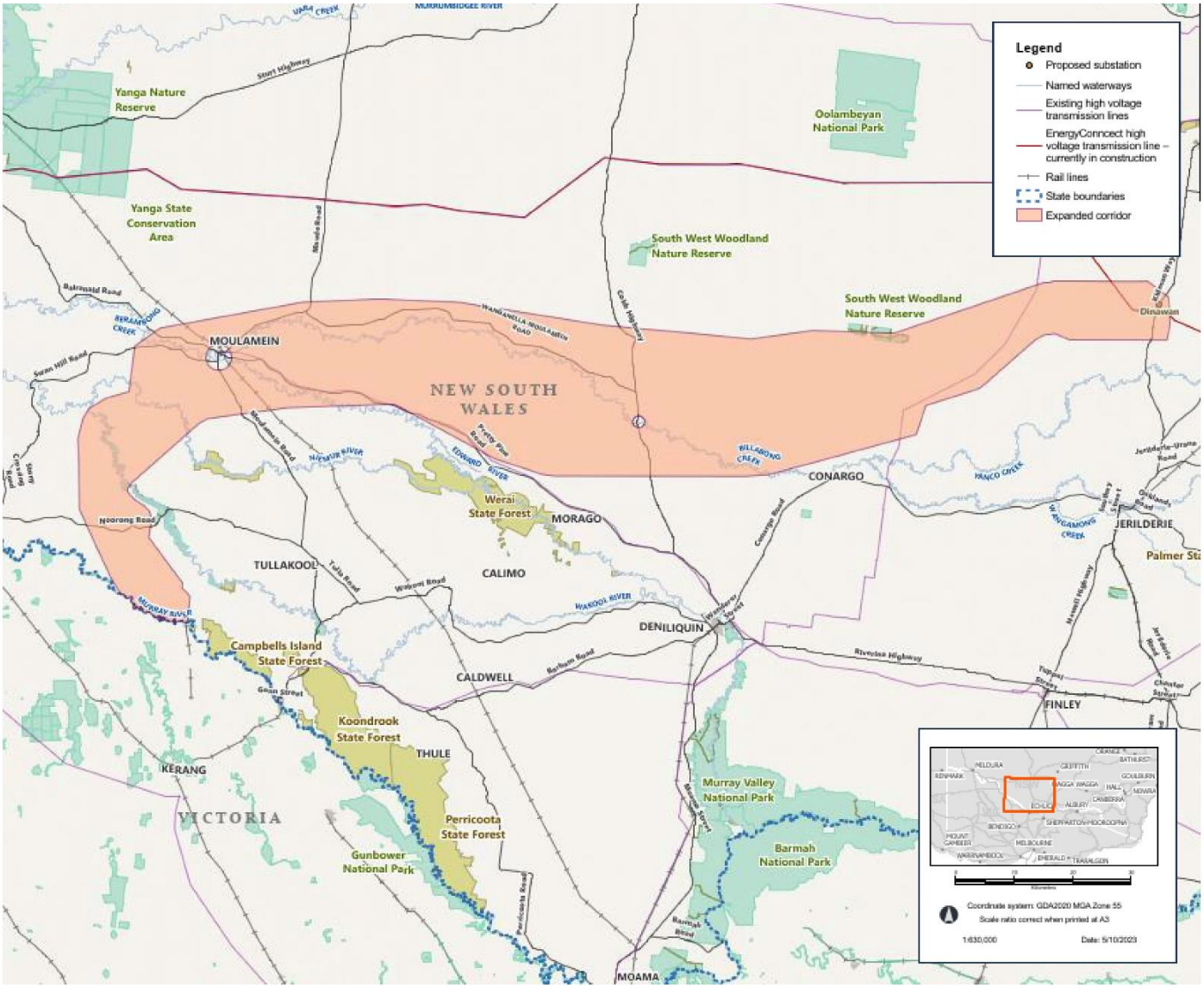


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Wednesday, 20 December 2023

Patricia Winch
Pappin Family Aboriginal Corporation
pltwinch@hotmail.com

Our Reference: **230027**

Dear Ms Winch

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Phone: 0477702814

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Geoffrey Hudson

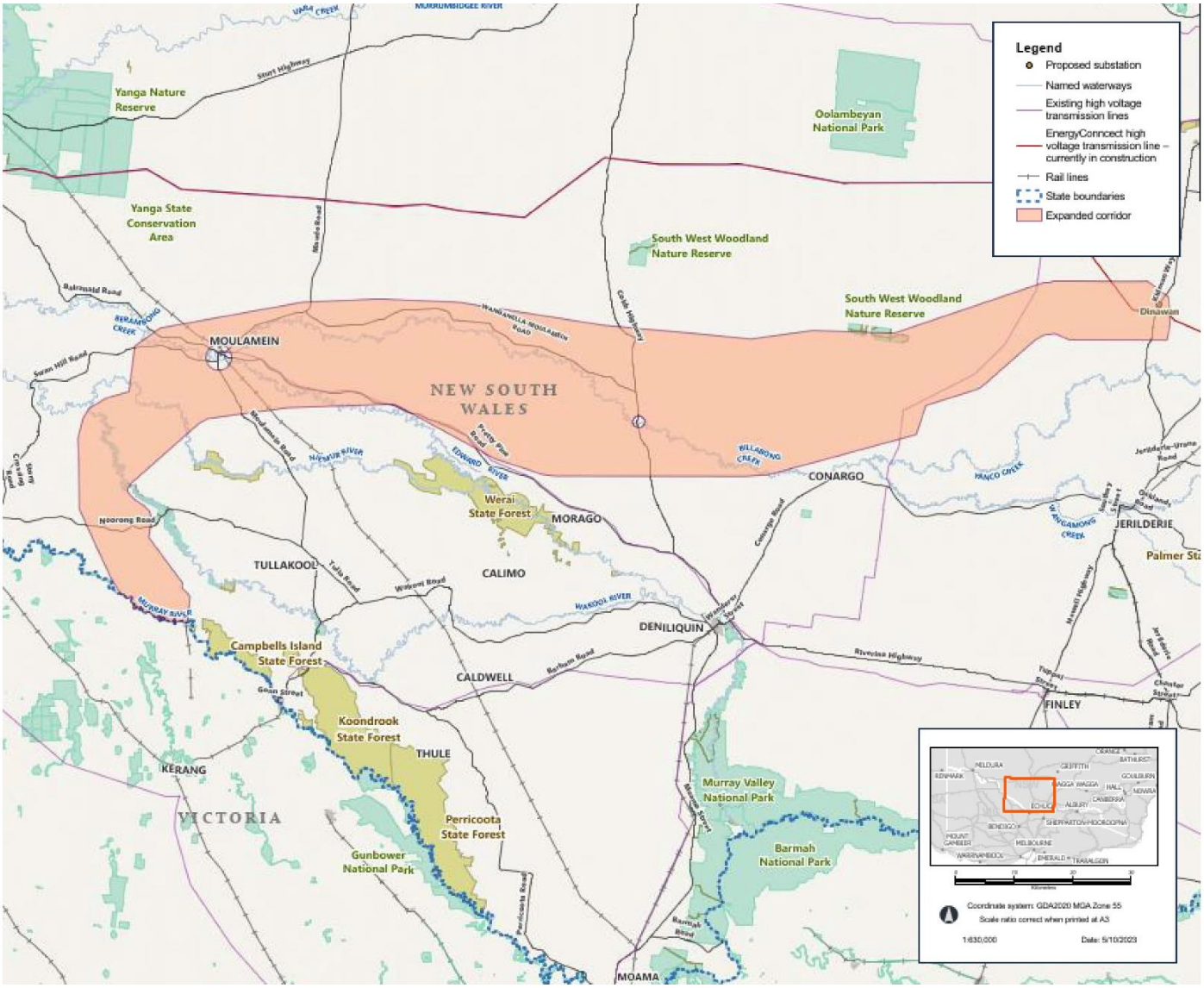


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Wednesday, 20 December 2023

Sonione Wakabut Rogers
sonionerogers@yahoo.com

Our Reference: **230027**

Dear Ms Wakabut Rogers

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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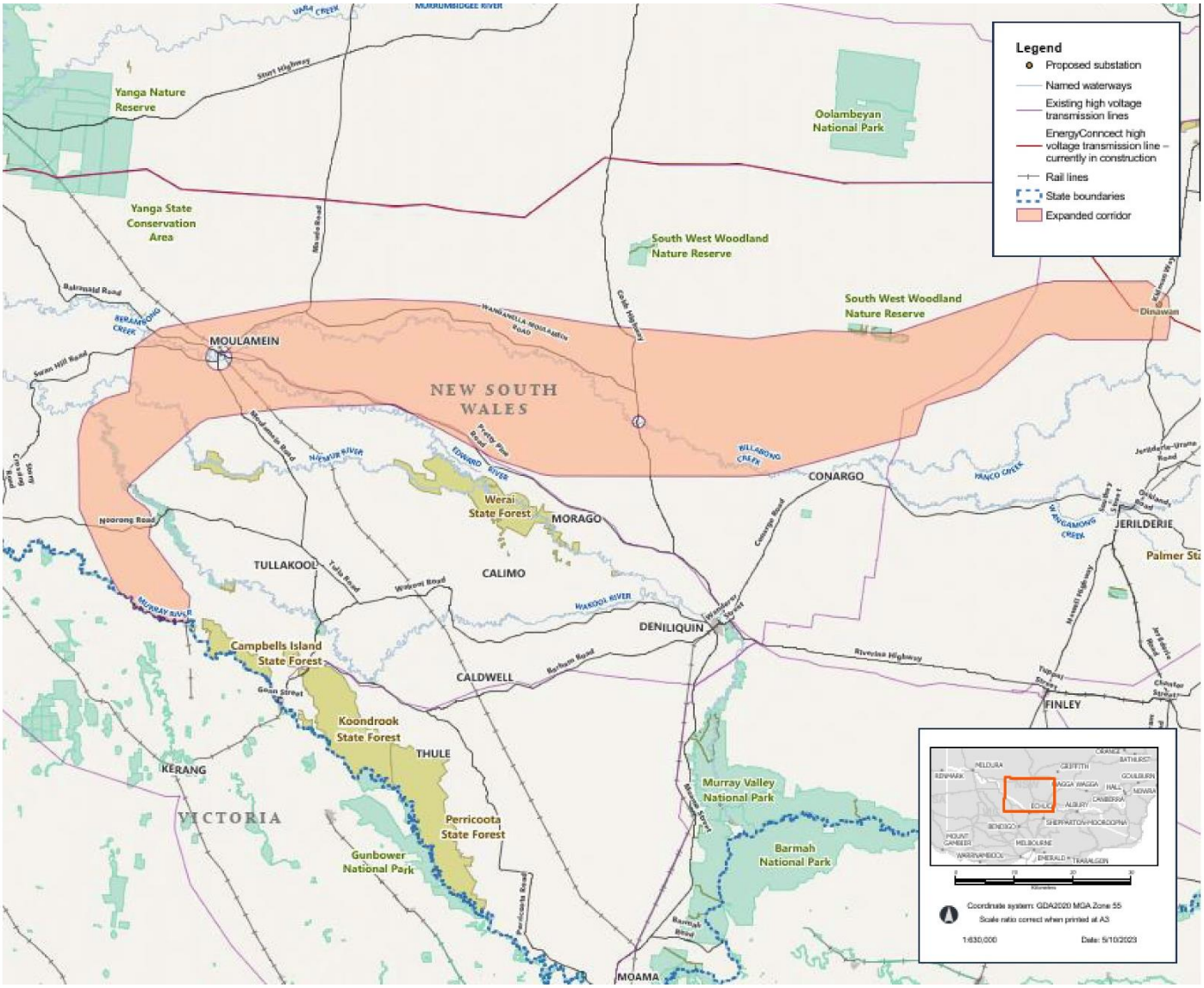


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F (02) 9284 3456

Wednesday, 20 December 2023

Thomas Dahlstrom
Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation
gamila_roi@yahoo.com

Our Reference: **230027**

Dear Mr Dahlstrom

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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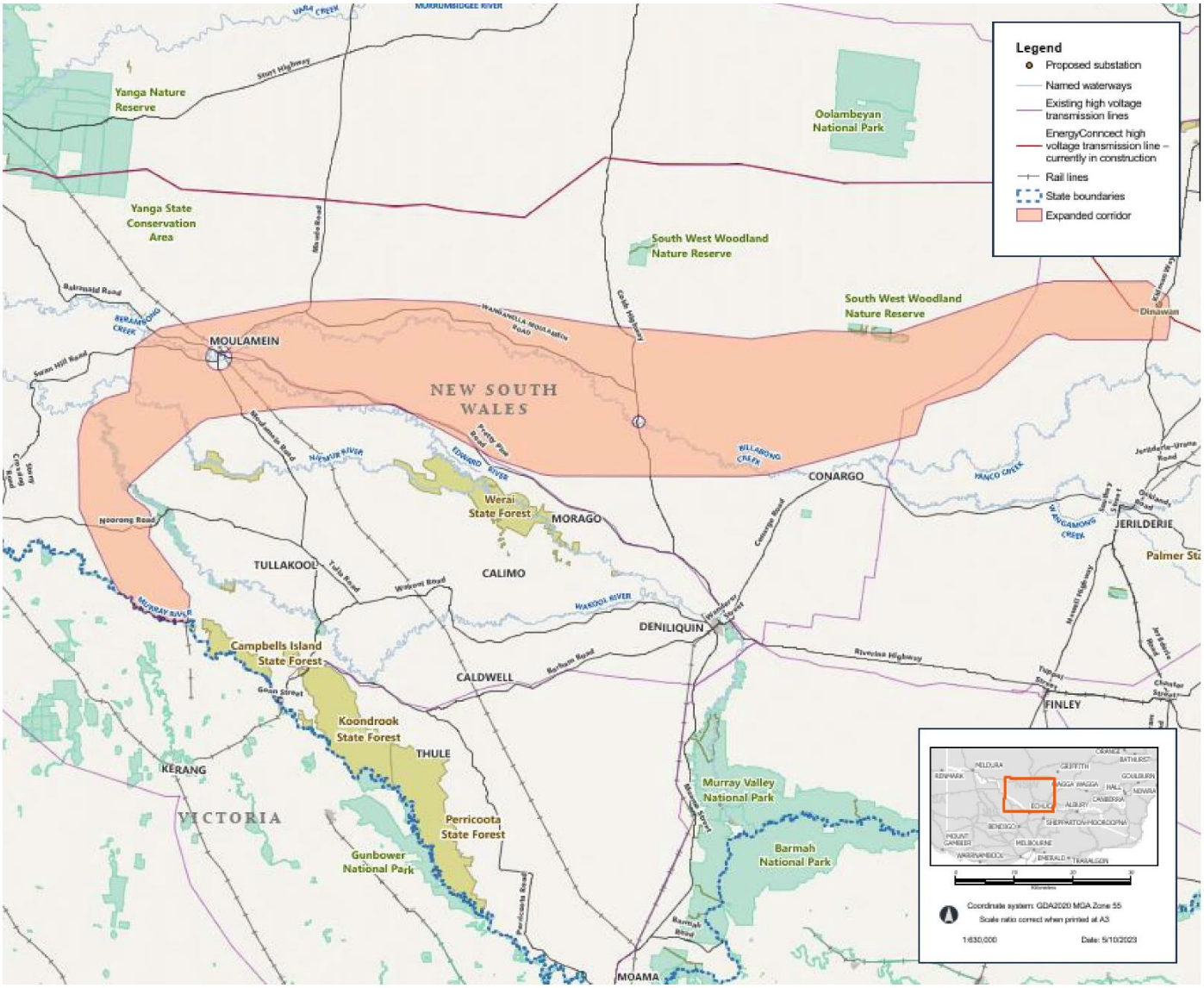


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Wednesday, 20 December 2023

Verna Eade
Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation
vernapappin@gmail.com

Our Reference: **230027**

Dear Ms Eade

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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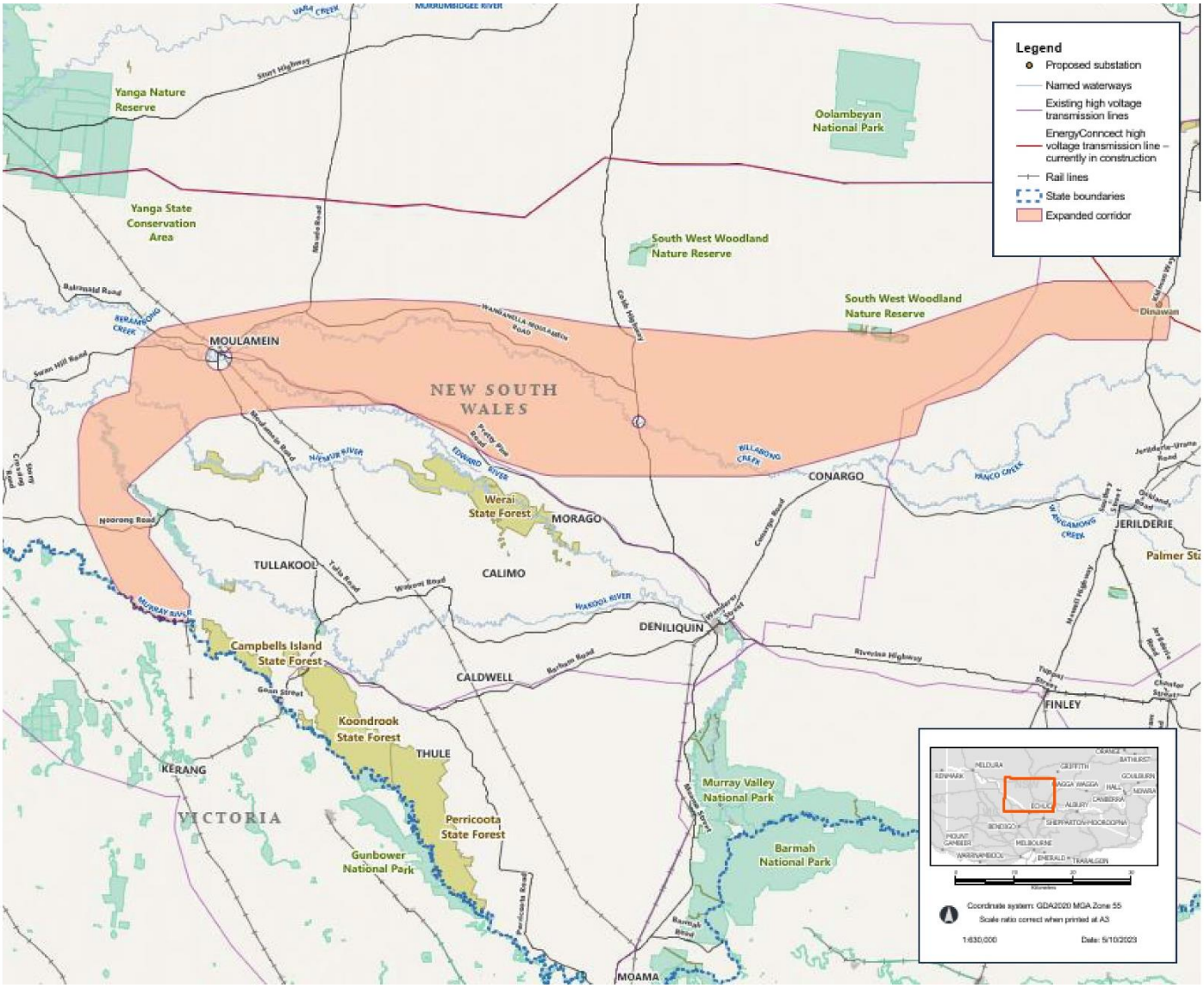


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Wednesday, 20 December 2023

Will Carter
Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation
admin@yiradyuri.au

Our Reference: **230027**

Dear Mr Carter

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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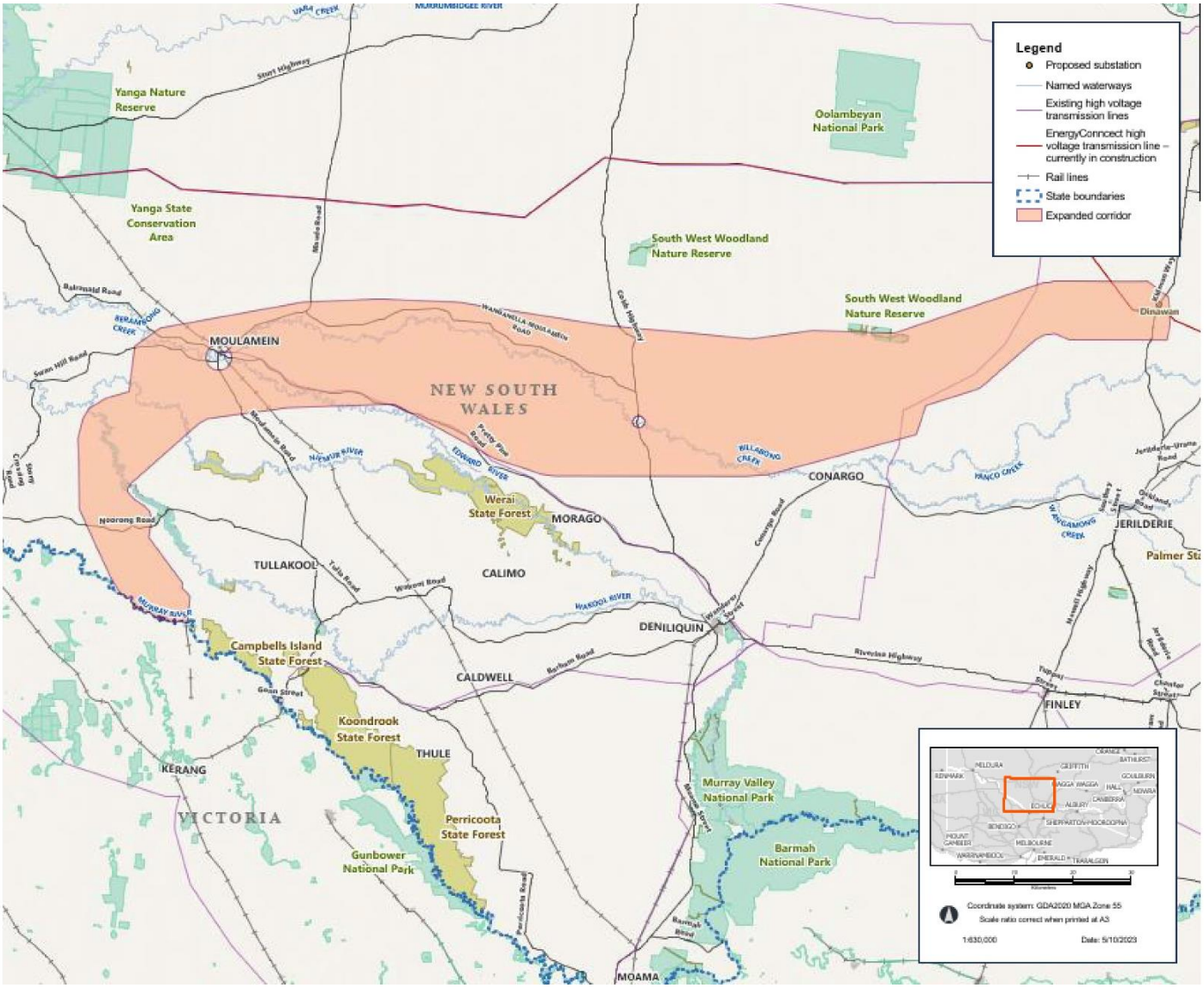


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Wednesday, 20 December 2023

Glen Galway
Waddi Housing & Advancement in Darlington Point
ggalway02@gmail.com

Our Reference: **230027**

Dear Mr Galway

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Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

Please respond in writing within 14 days by 17th January 2024 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

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Yours faithfully

Geoffrey Hudson

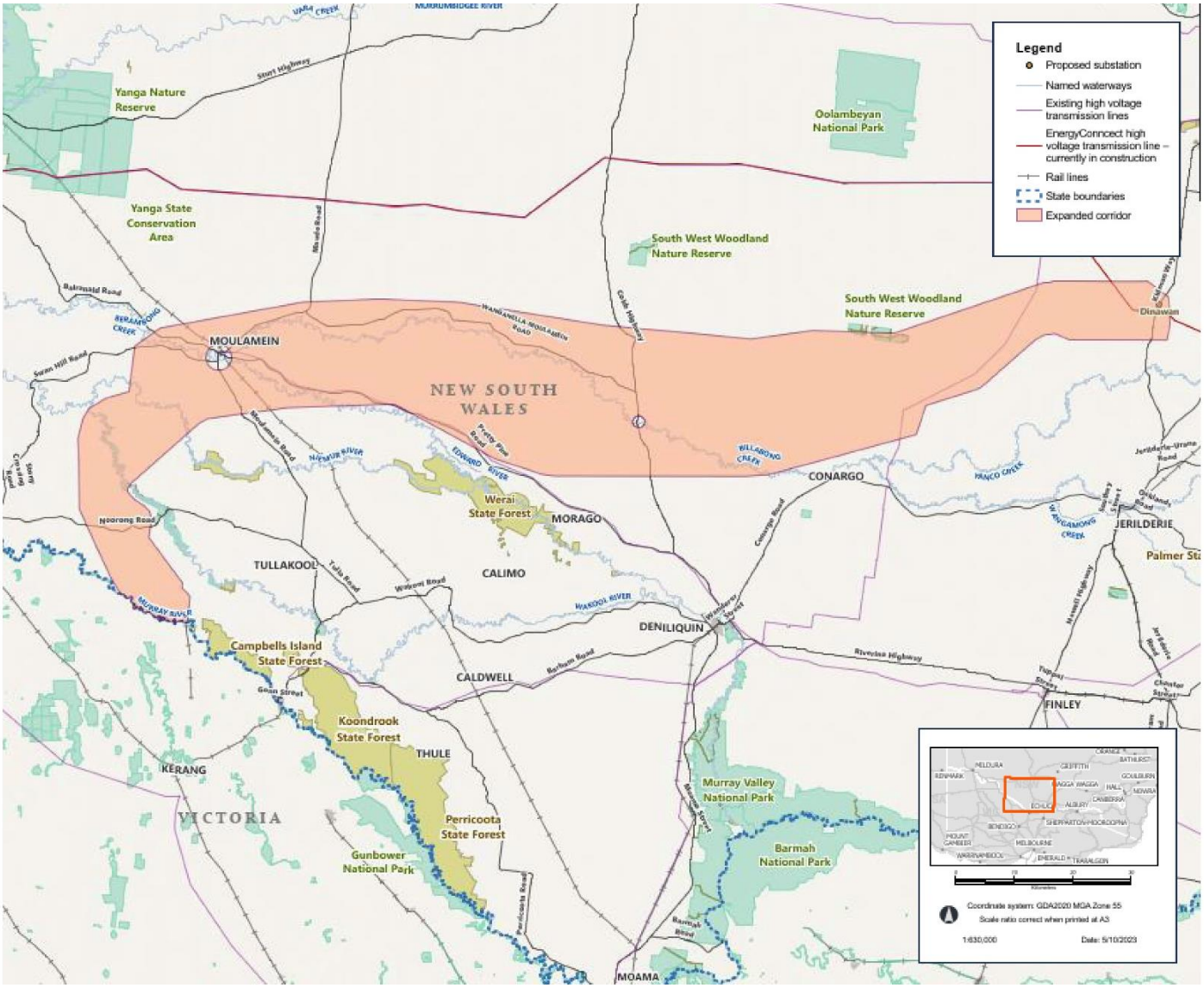


Figure 1 VNI West initial study area

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Auntie Hazel Atkinson
Waddi Housing & Advancement in Darlington Point
hazelatkinson@gmail.com

Our Reference: **230027**

Dear Auntie Hazel

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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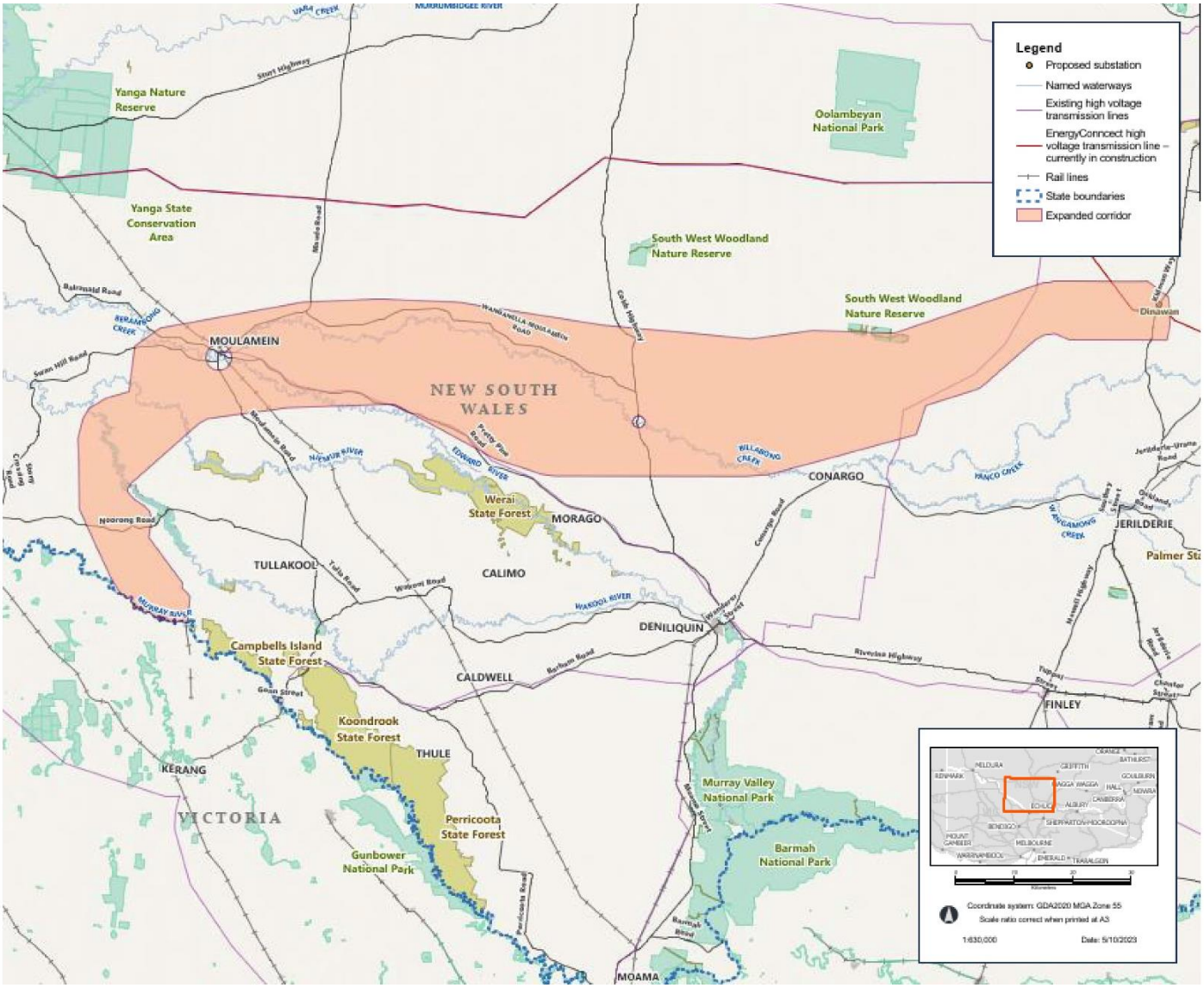


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Wednesday, 20 December 2023

Auntie Karen Kirby
Waddi Housing & Advancement in Darlington Point
kazzkirb63@gmail.com

Our Reference: **230027**

Dear Auntie Karen

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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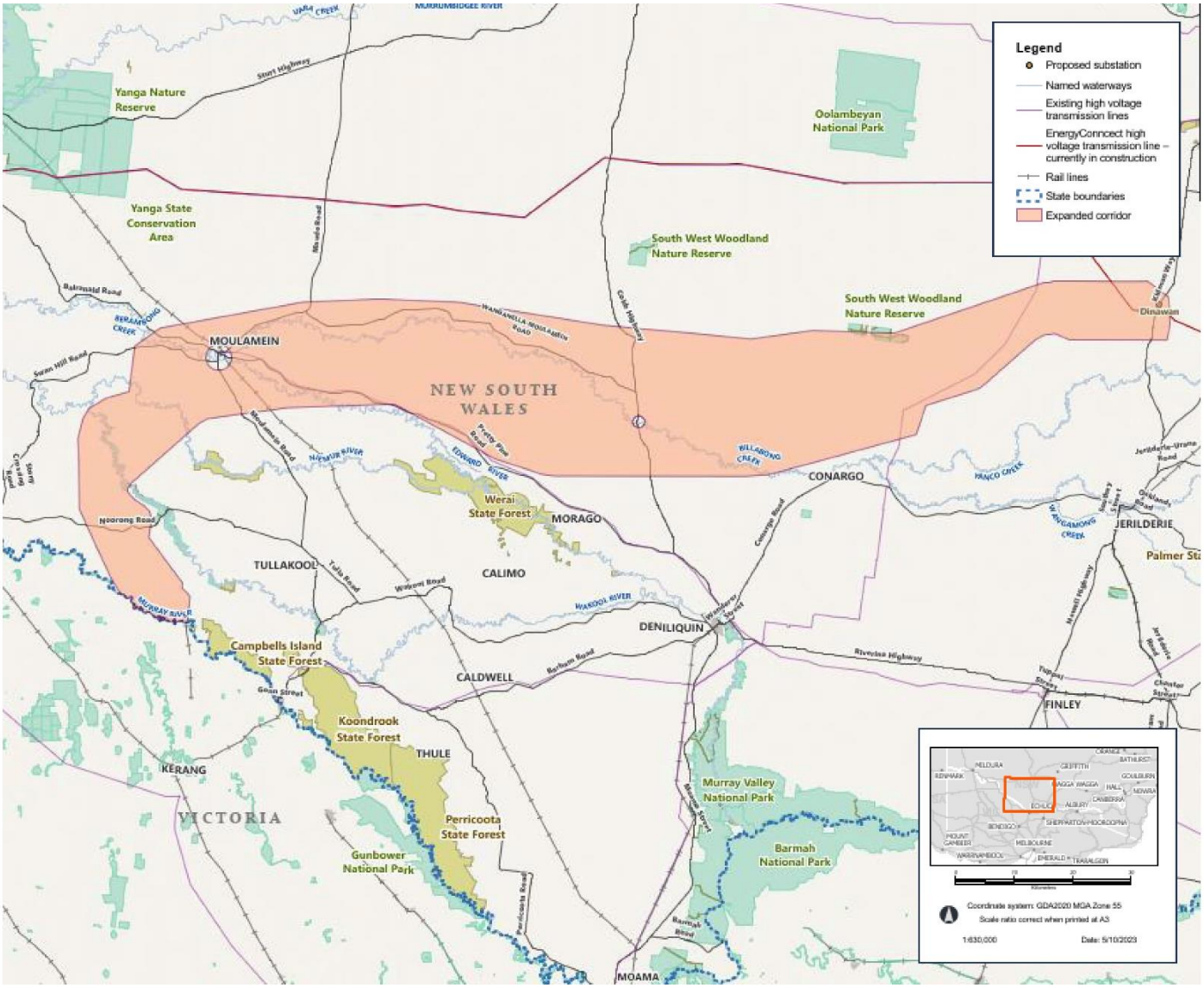


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Wednesday, 20 December 2023

Uncle Neville Whyman
Waddi Housing & Advancement in Darlington Point
bushie60@gmail.com

Our Reference: **230027**

Dear Uncle Neville

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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E: Geoffrey.Hudson@transgrid.com.au

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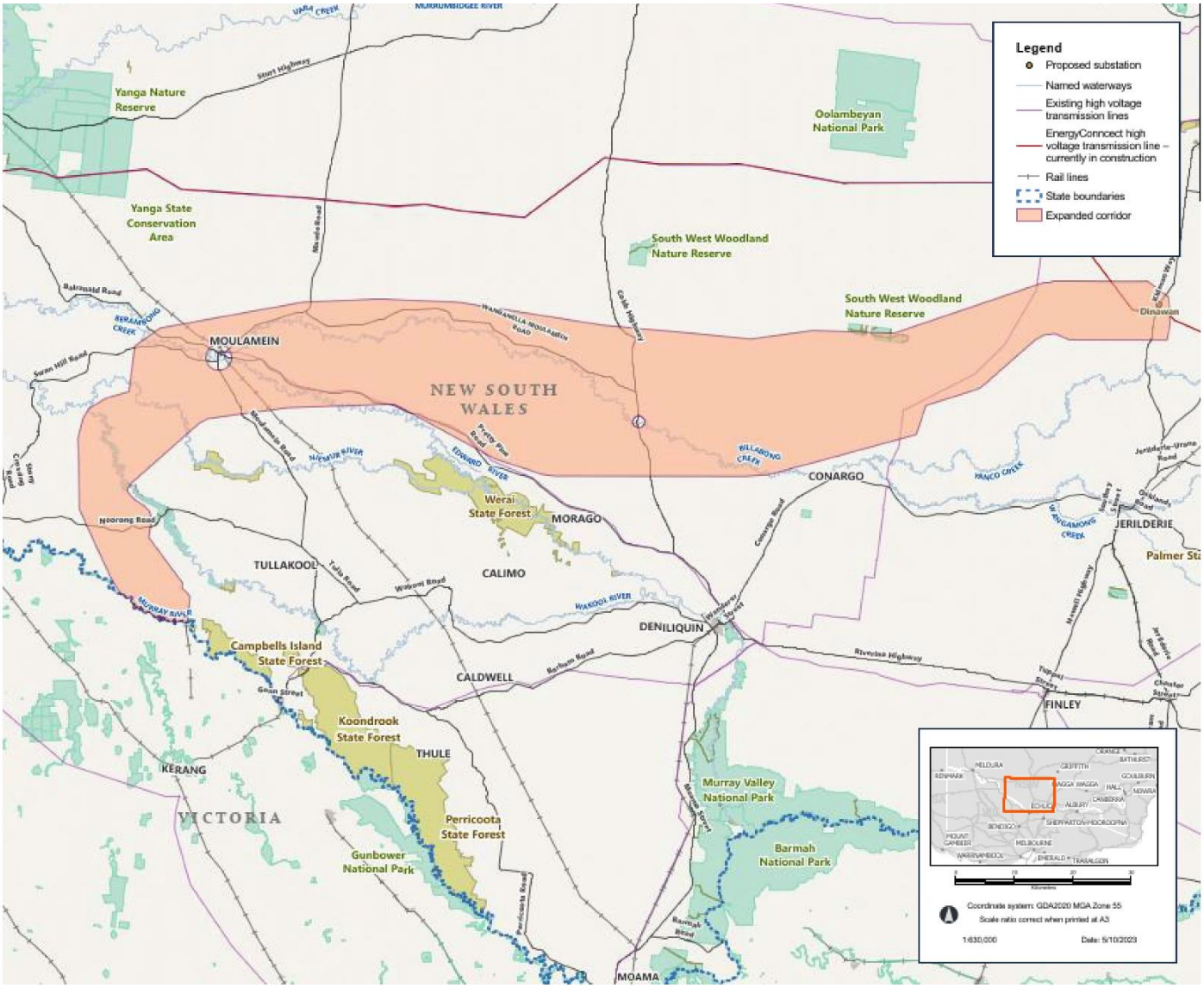


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Wednesday, 20 December 2023

Nicholas Smith
Waddi Housing & Advancement in Darlington Point
Smithnicholas708@gmail.com

Our Reference: **230027**

Dear Mr Smith

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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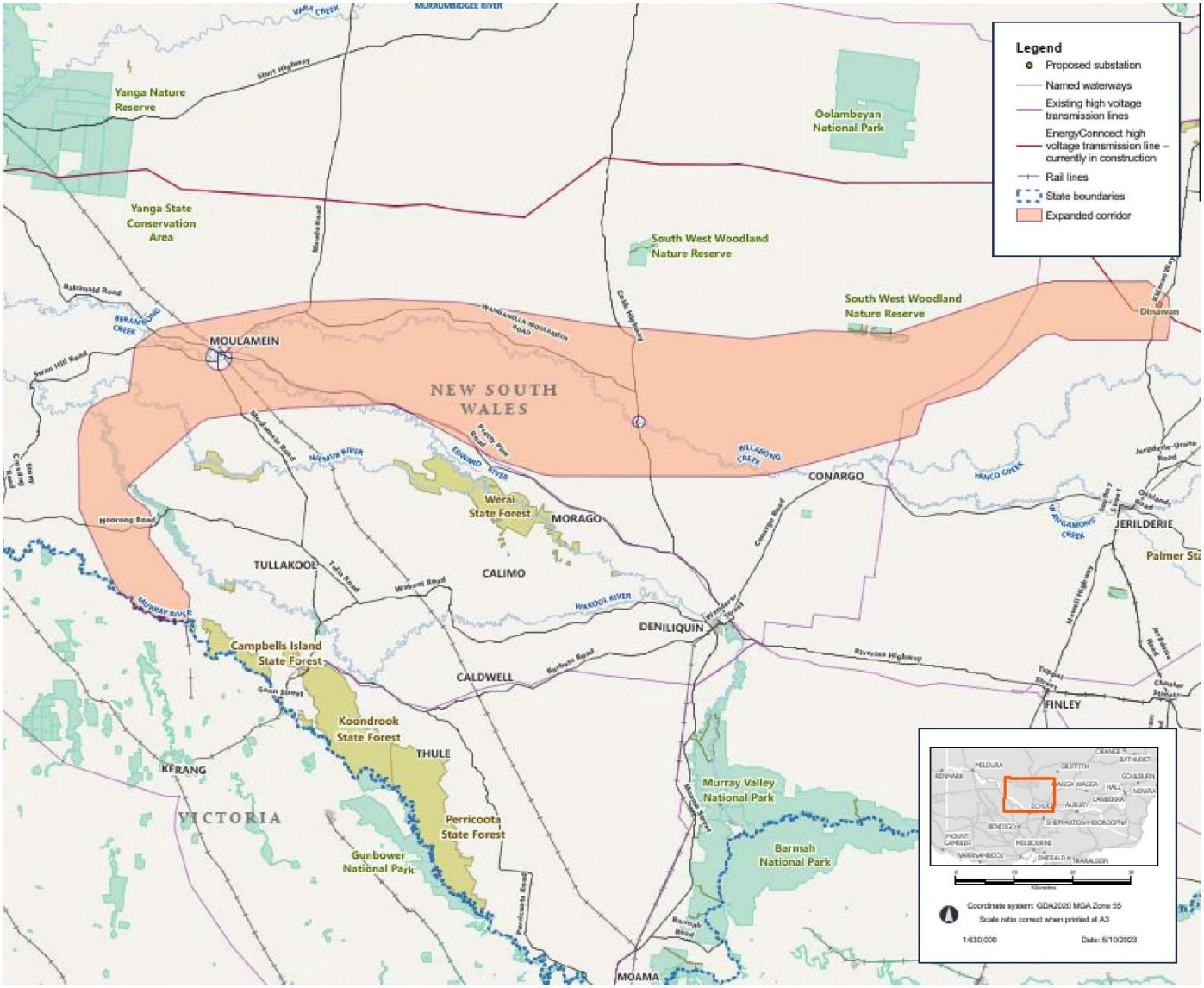


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180 Thomas Street, Sydney
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T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Nick Stewart
Waddi Housing & Advancement in Darlington Point
nickroystewart@gmail.com

Our Reference: **230027**

Dear Mr Stewart

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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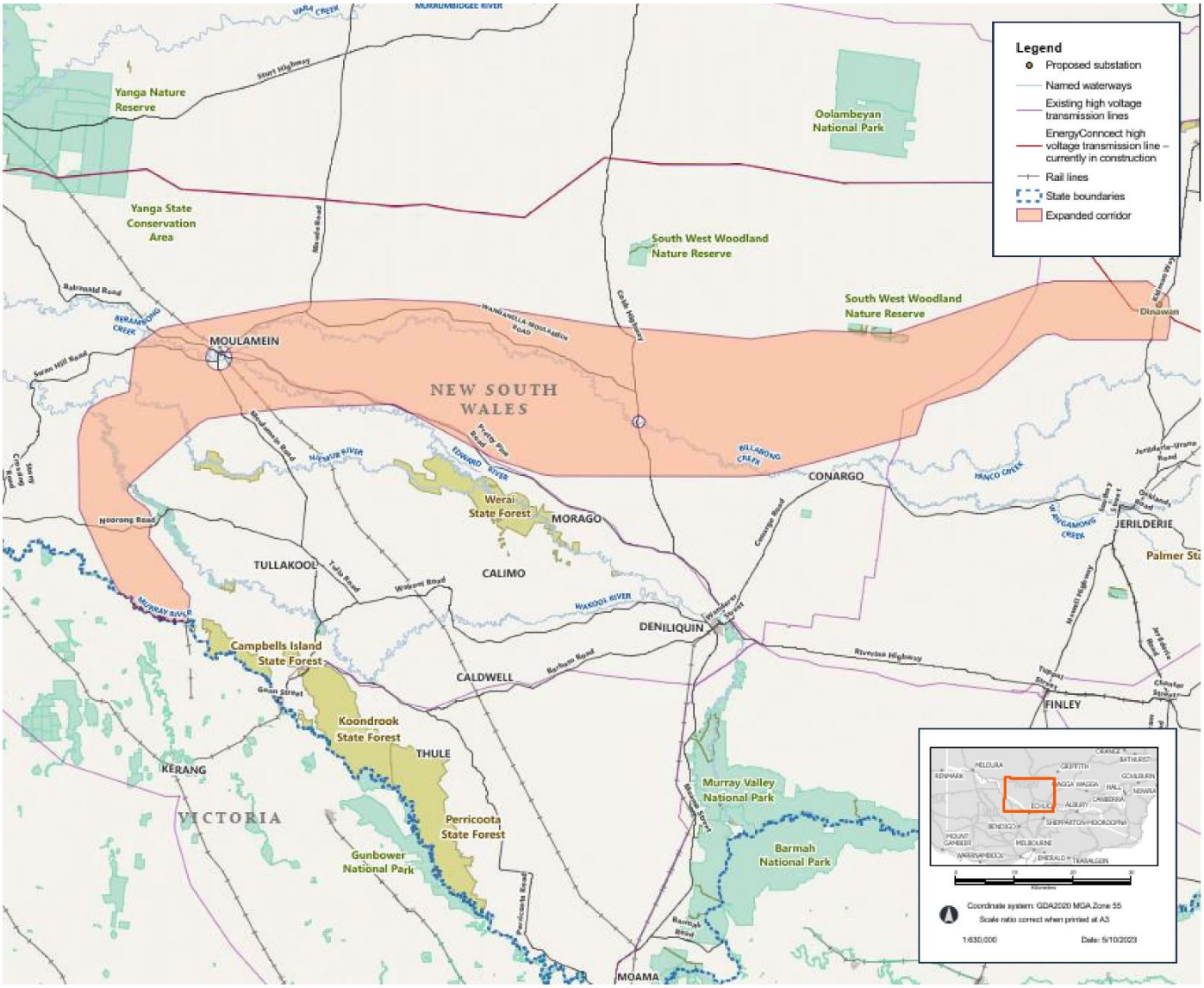


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Wednesday, 20 December 2023

Auntie Rose Kirby
Waddi Housing & Advancement in Darlington Point
kazzkirbinator@gmail.com

Our Reference: **230027**

Dear Auntie Rose

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Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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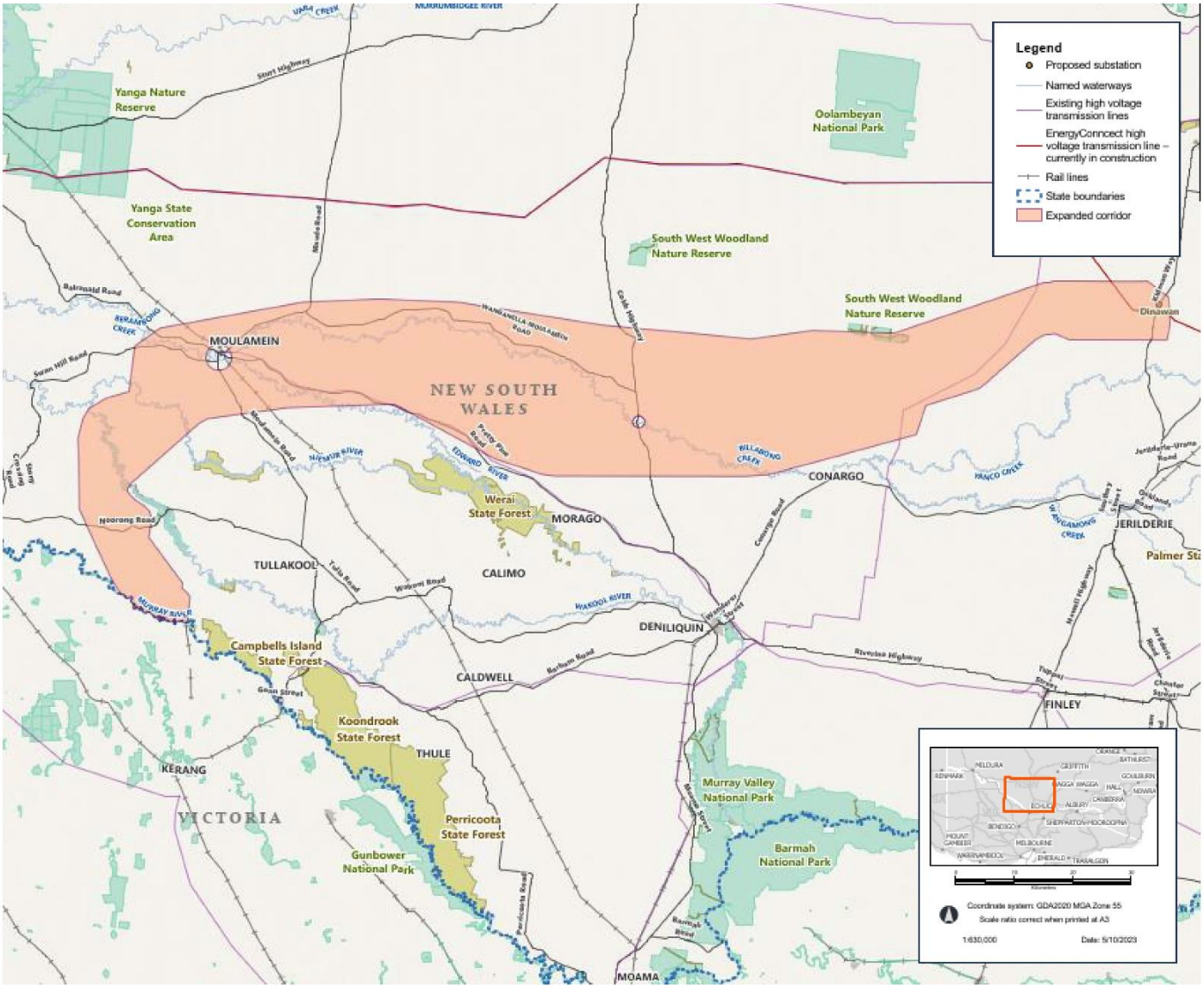


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Wednesday, 20 December 2023

Shanice Whyman Gazzara
Waddi Housing & Advancement in Darlington Point
swhymangazzarra22@gmail.com

Our Reference: **230027**

Dear Ms Whyman Gazzara

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

Please respond in writing within 14 days by 17th January 2024 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

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Yours faithfully

Geoffrey Hudson

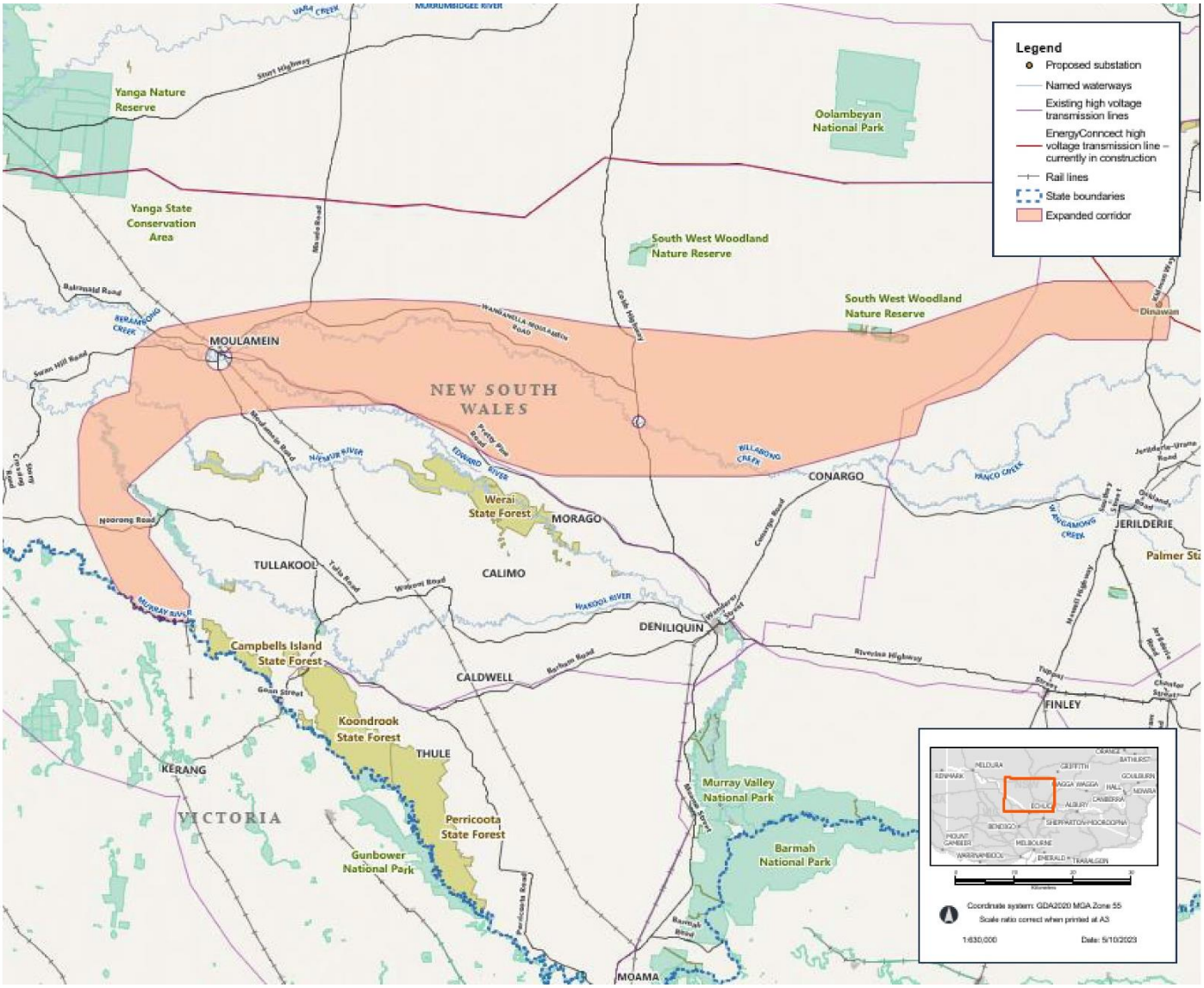


Figure 1 VNI West initial study area

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Tammileigh Chirgwin
Waddi Housing & Advancement in Darlington Point
info@waddihousing.com

Our Reference: **230027**

Dear Ms Chirgwin

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Phone: 0477702814

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Yours faithfully

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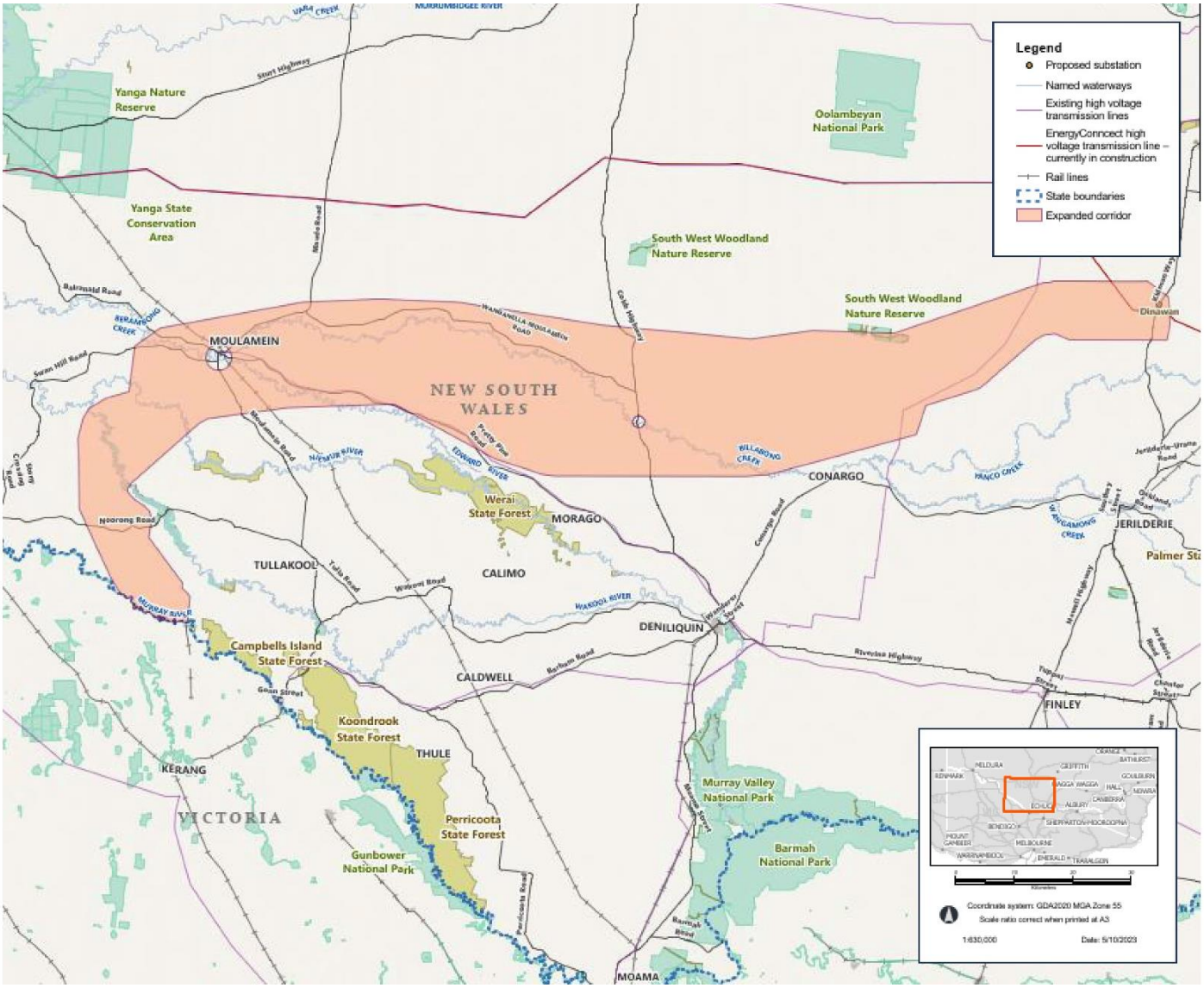


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Wednesday, 20 December 2023

Uncle Kenny Stewart
Waddi Housing & Advancement in Darlington Point
ksrokewood@gmail.com

Our Reference: **230027**

Dear Uncle Kenny

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Geoffrey Hudson

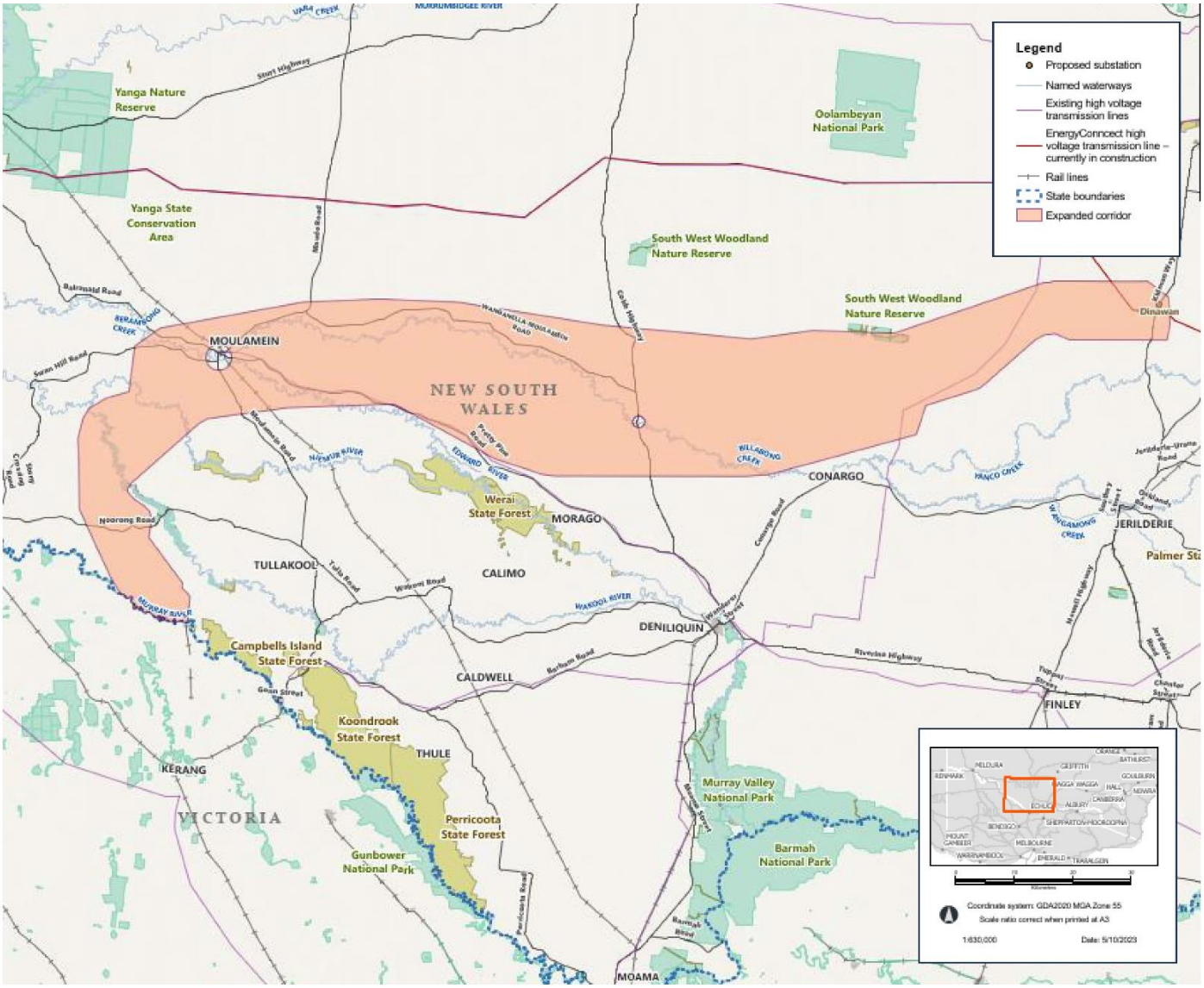


Figure 1 VNI West initial study area

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F (02) 9284 3456

Wednesday, 20 December 2023

Uncle Ron Galway
Waddi Housing & Advancement in Darlington Point
Ron.galway@outlook.com

Our Reference: **230027**

Dear Uncle Ron

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Yours faithfully

Geoffrey Hudson

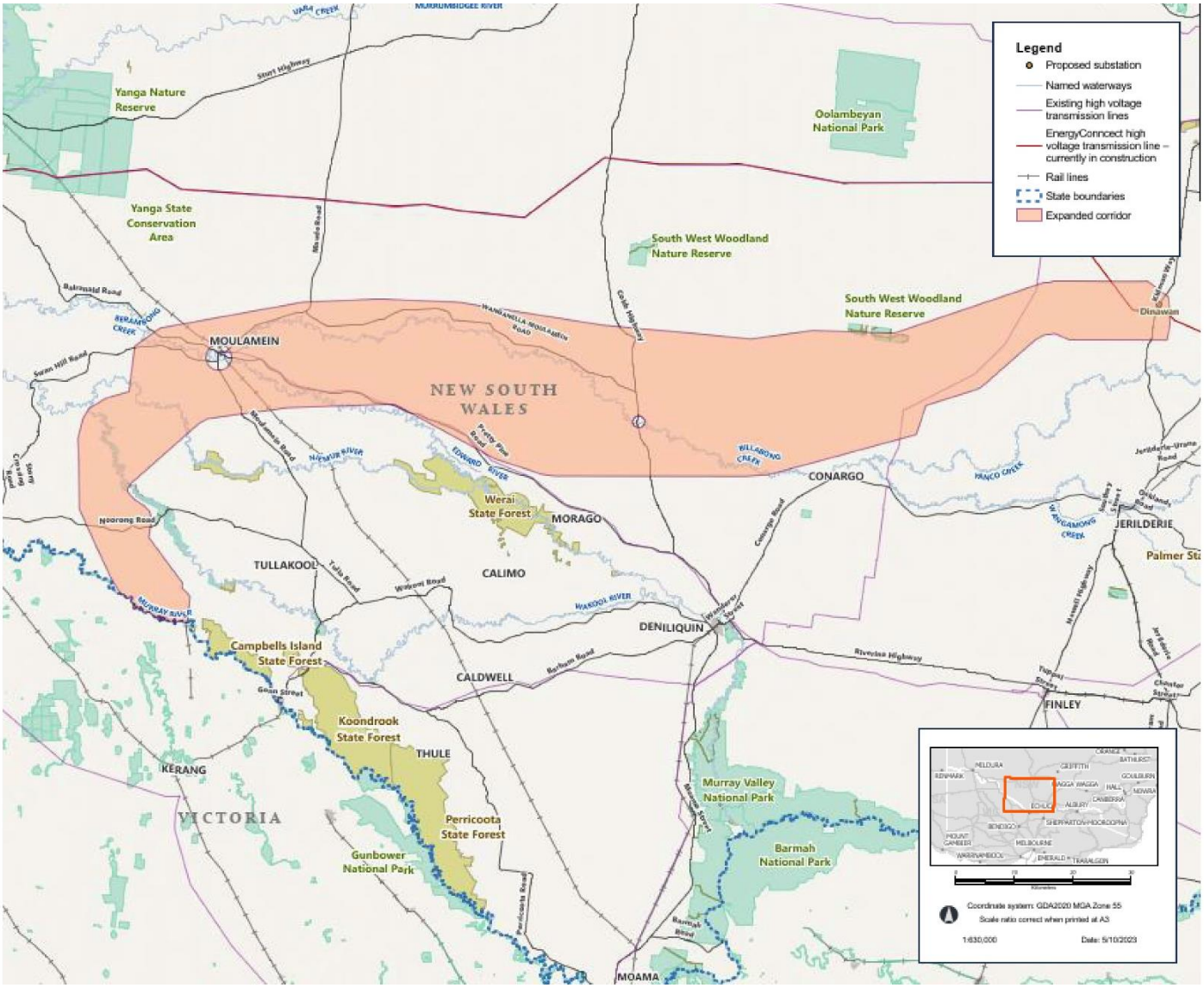


Figure 1 VNI West initial study area

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F (02) 9284 3456

Wednesday, 20 December 2023

Uncle Ross Stewart OAM
Waddi Housing & Advancement in Darlington Point
rossvva@hotmail.com

Our Reference: **230027**

Dear Uncle Ross

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Office Manager
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Phone: 0477702814

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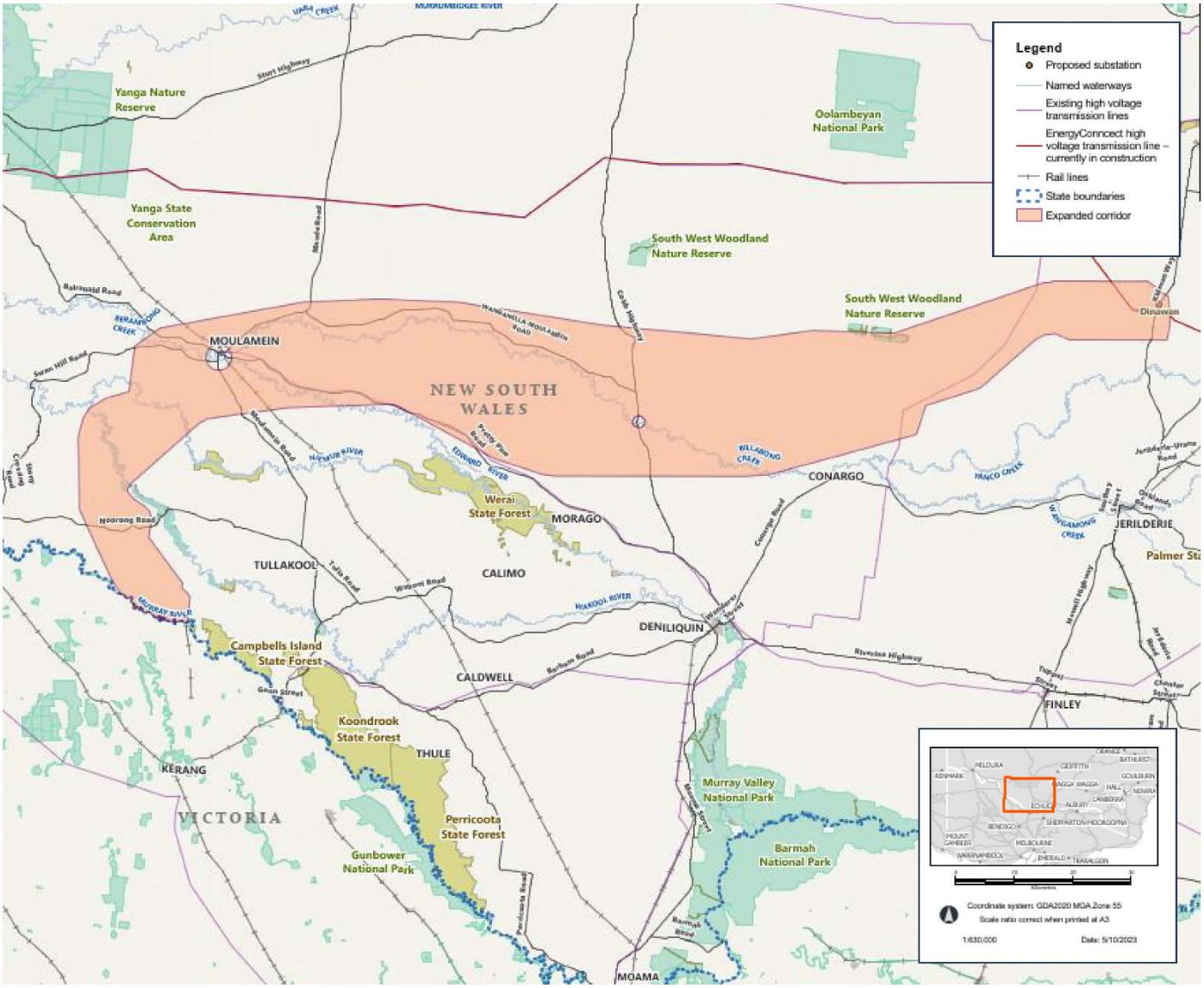


Figure 1 VNI West initial study area

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F (02) 9284 3456

Wednesday, 20 December 2023

Wayne Webster
Waddi Housing & Advancement in Darlington Point
legswebster8@gmail.com

Our Reference: **230027**

Dear Mr Webster

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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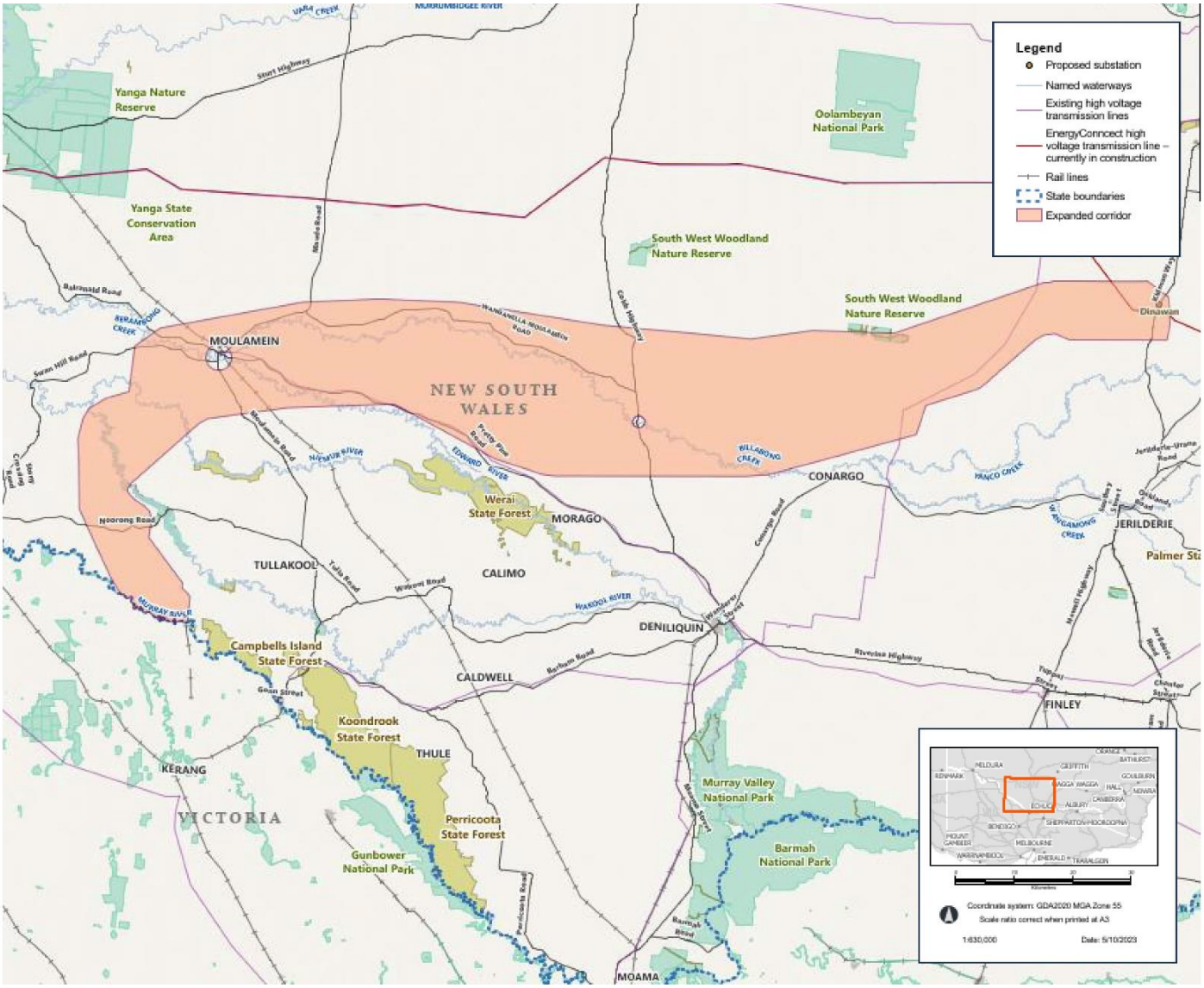


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F (02) 9284 3456

Wednesday, 20 December 2023

Cynthja Pappin
Wakool Indigenous Corporation
info@wakool.com.au

Our Reference: **230027**

Dear Ms Pappin

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Mobile 0436 928 001

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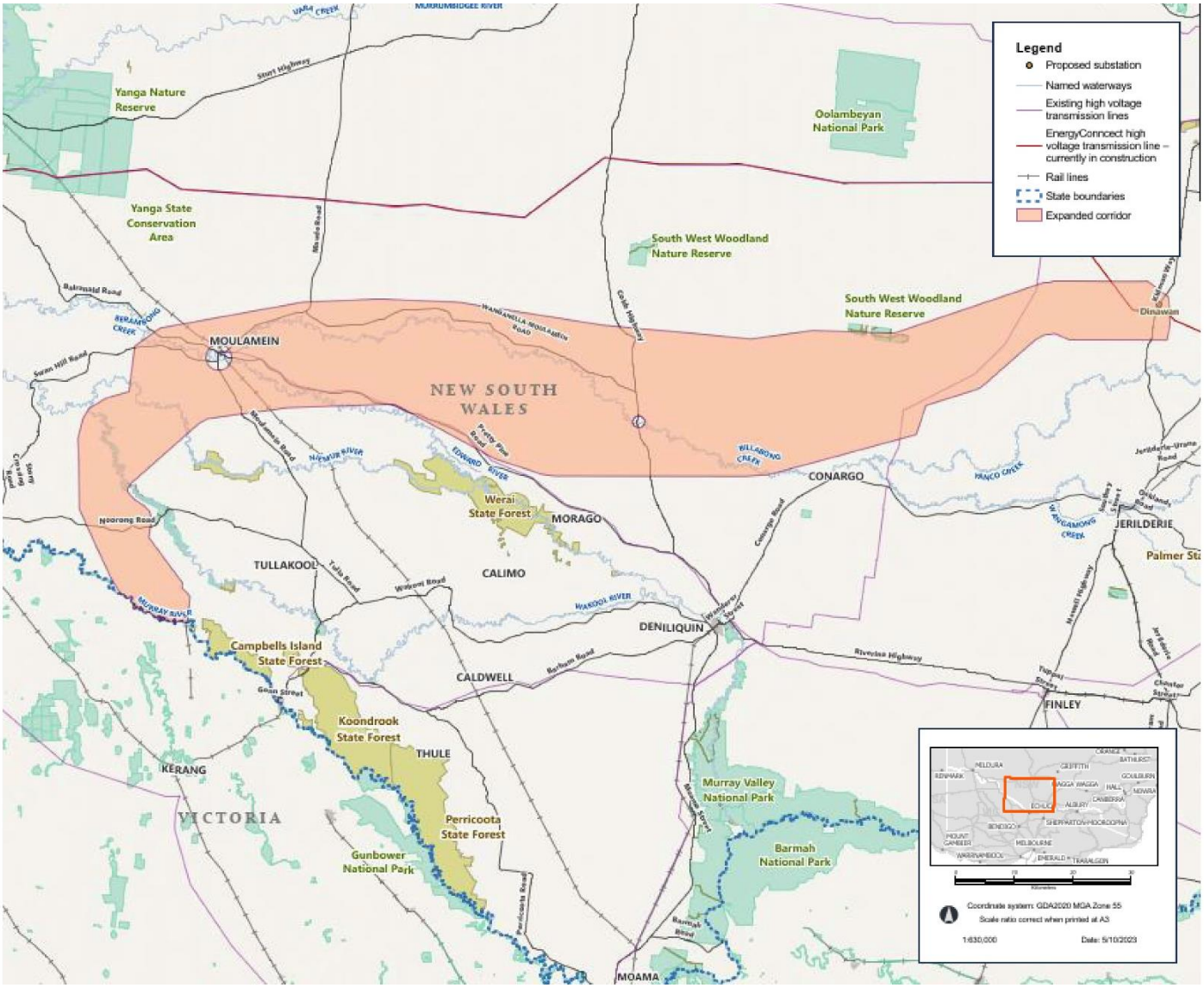


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Wednesday, 20 December 2023

Gary Pappin
Wakool Indigenous Corporation
info@wakool.com.au

Our Reference: **230027**

Dear Mr Pappin

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Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Environment Manager – VNI-West

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KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

Please do not hesitate to contact me for further information at the contact details provided below.

Yours faithfully

Geoffrey Hudson

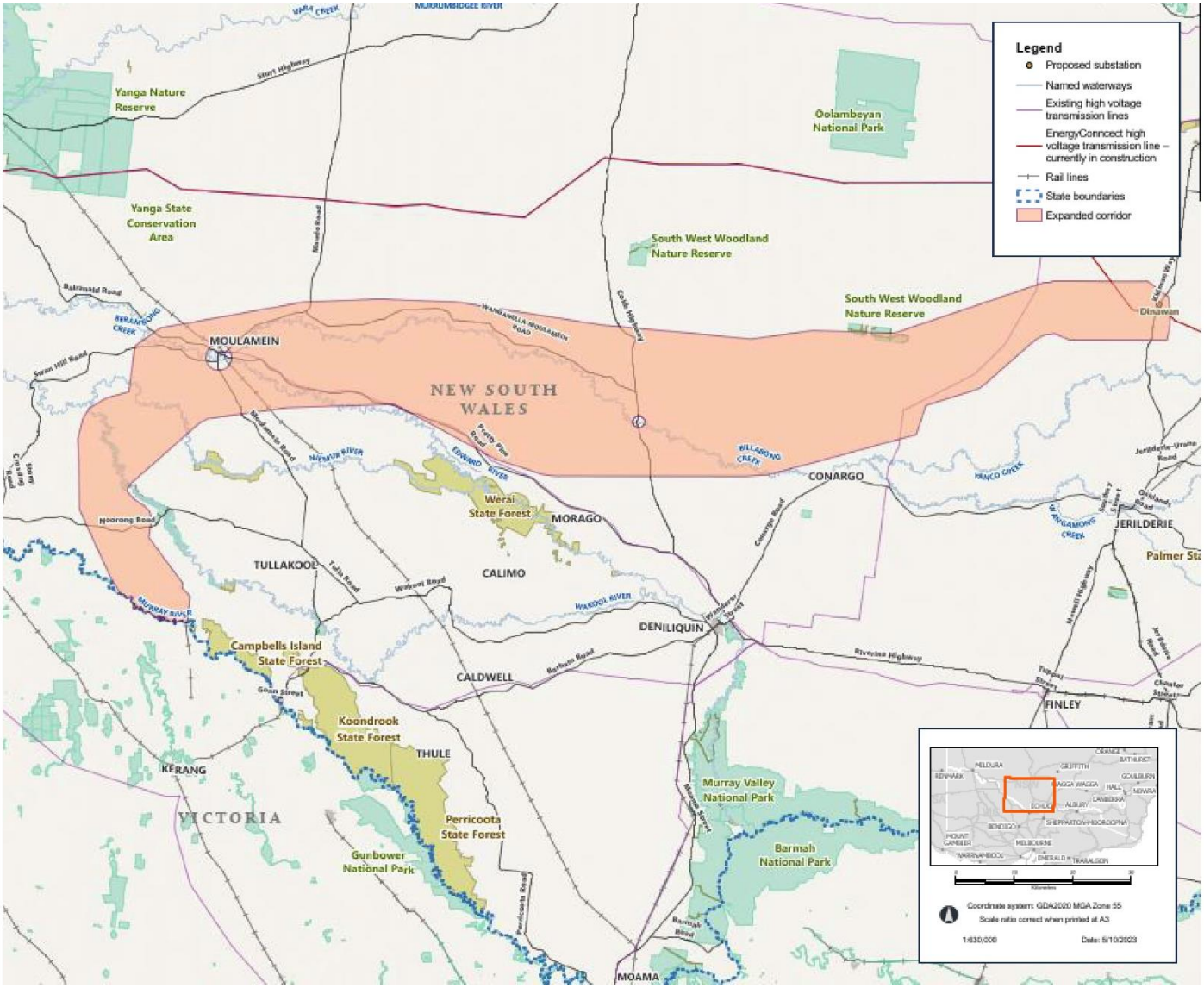


Figure 1 VNI West initial study area

ABN 70 250 995 390
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

Wednesday, 20 December 2023

Will Carter
Wakool Indigenous Corporation
willcarterart@gmail.com

Our Reference: **230027**

Dear Mr Carter

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

Transgrid has identified you / your organisation as an Aboriginal person / organisation who may hold cultural knowledge relevant to determining the significance of Aboriginal objects or places according to Stage 1 (section 4.1.2) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (Department of Environment, Climate Change and Water NSW 2010) (Consultation Requirements). Section 4.1.3 of the Consultation Requirements makes it the proponent's responsibility write to the Aboriginal people whose names were obtained in section 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project.

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

I am therefore writing to you to invite you to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity.

Please respond in writing within 14 days by 17th January 2024 to:

Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

or by email to kthompson@nohc.com.au / navinofficer@nohc.com.au

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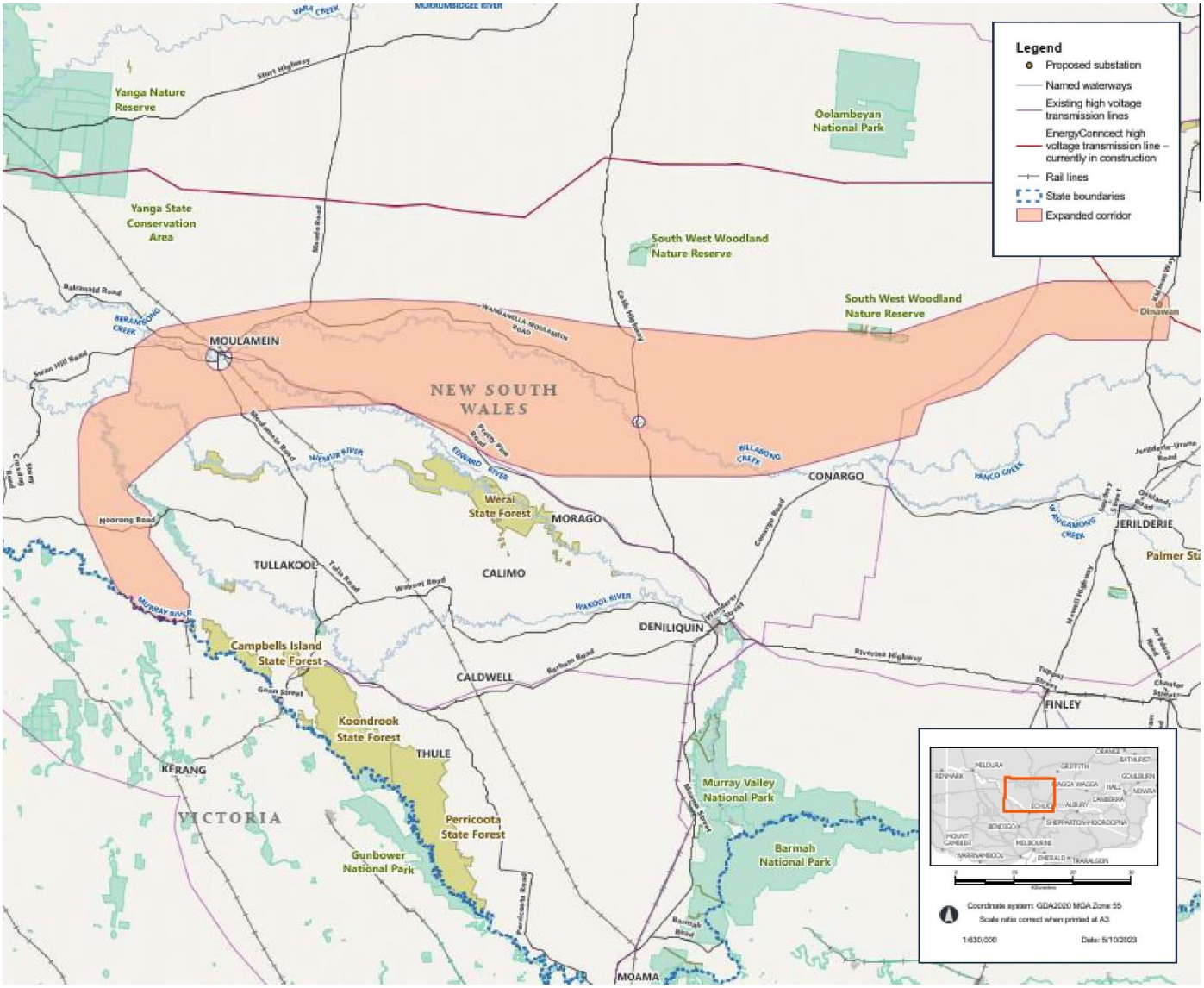


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Wednesday, 20 December 2023

Raymond Moon
Wingarra Wilay Aboriginal Corporation
wingarrawilay@yahoo.com

Our Reference: **230027**

Dear Mr Moon

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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In accordance with the consultation requirements, please note that the relevant client contact for this project is:

Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Navin Officer Heritage Consultants Pty Ltd
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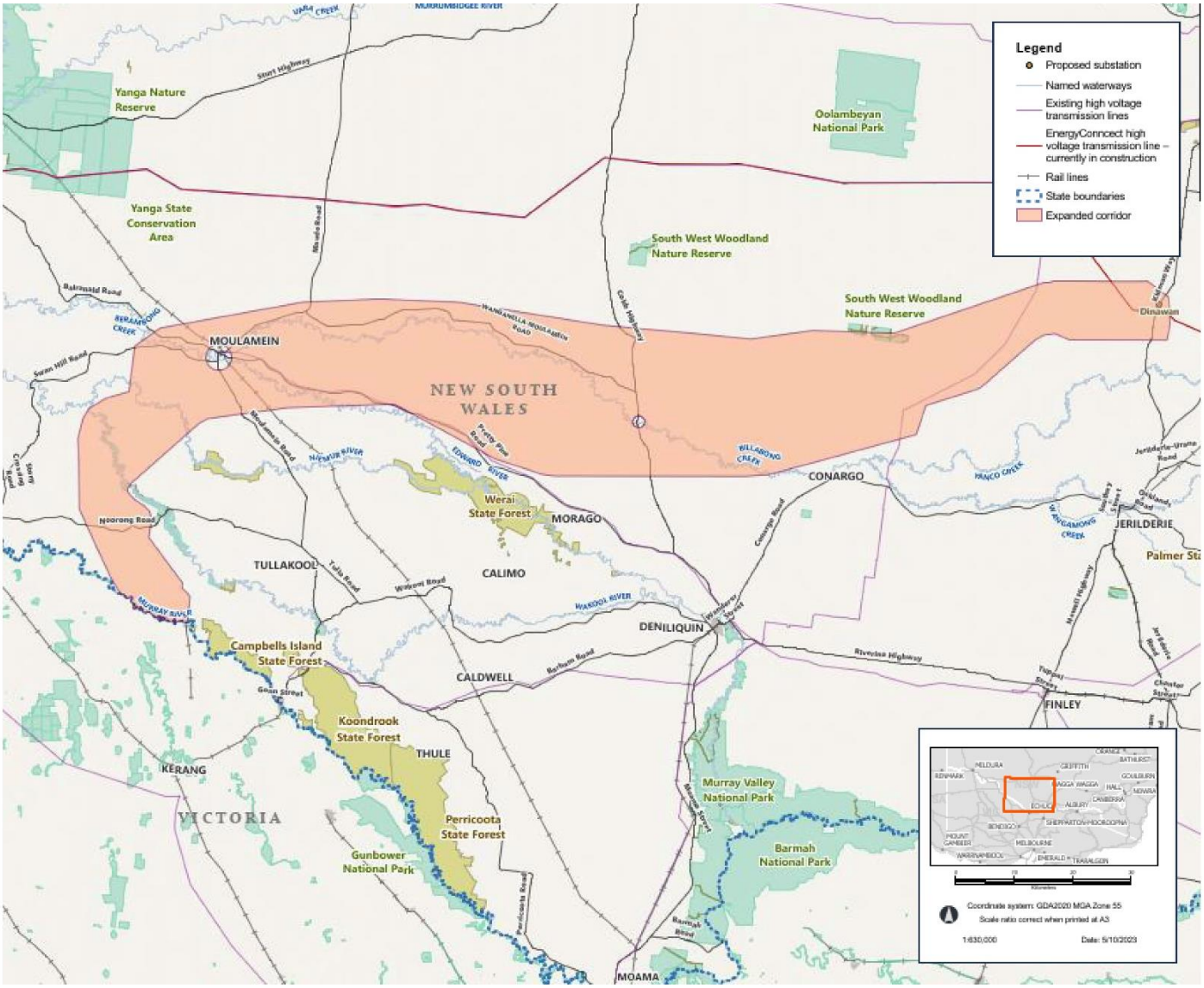


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Wednesday, 20 December 2023

Yalmambirra
Wingarra Wilay Aboriginal Corporation
yalmambirra@outlook.com

Our Reference: **230027**

Dear Yalmambirra

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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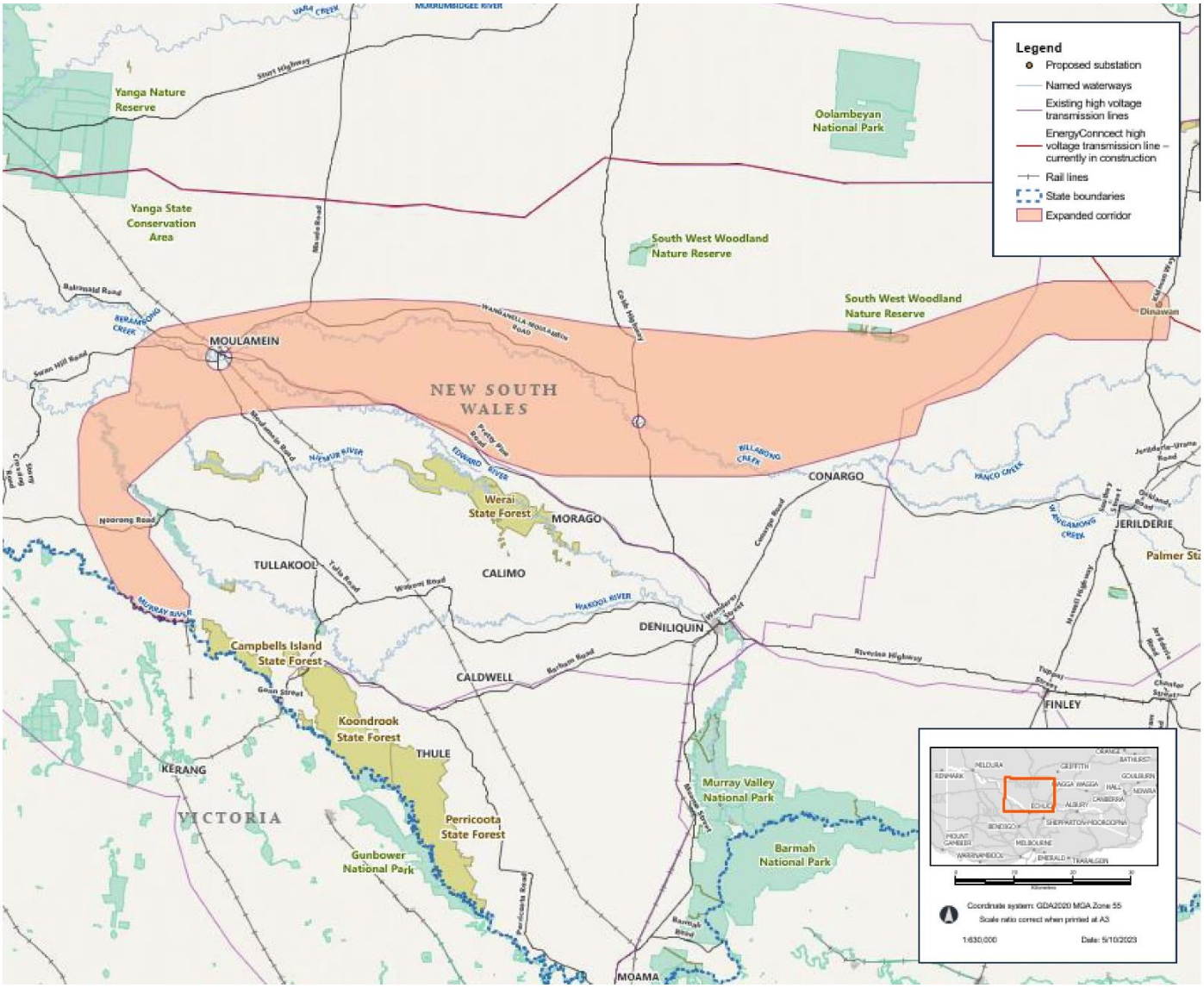


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Wednesday, 20 December 2023

Jeanette Crew
Chairperson
Yarkuwa Indigenous Knowledge Centre
admin@yarkuwa.com

Our Reference: **230027**

Dear Ms Crew

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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Kirsten Thompson

Office Manager
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

Phone: 0477702814

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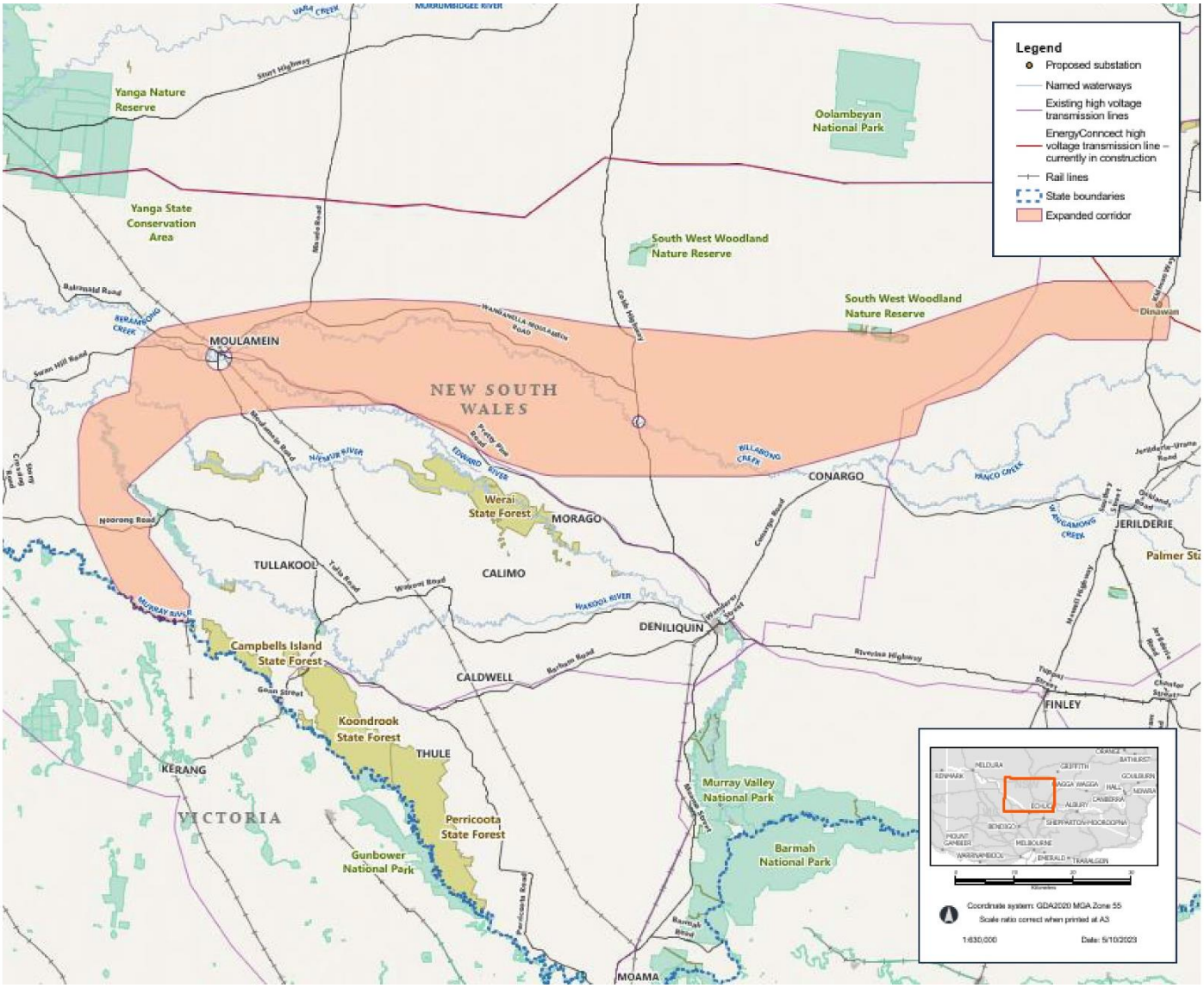


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F (02) 9284 3456

Wednesday, 20 December 2023

Neville Atkinson
Chairperson
Yorta Yorta Nation Aboriginal Corporation
reception@yynac.com.au

Our Reference: **230027**

Dear Mr Atkinson

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

You are receiving this letter to invite you / your organisation to register an interest in a consultation process relating to Aboriginal cultural heritage assessment for the proposed VNI West project.

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Geoffrey Hudson

Environment Manager – VNI-West

Mobile 0436 928 001

E: Geoffrey.Hudson@transgrid.com.au

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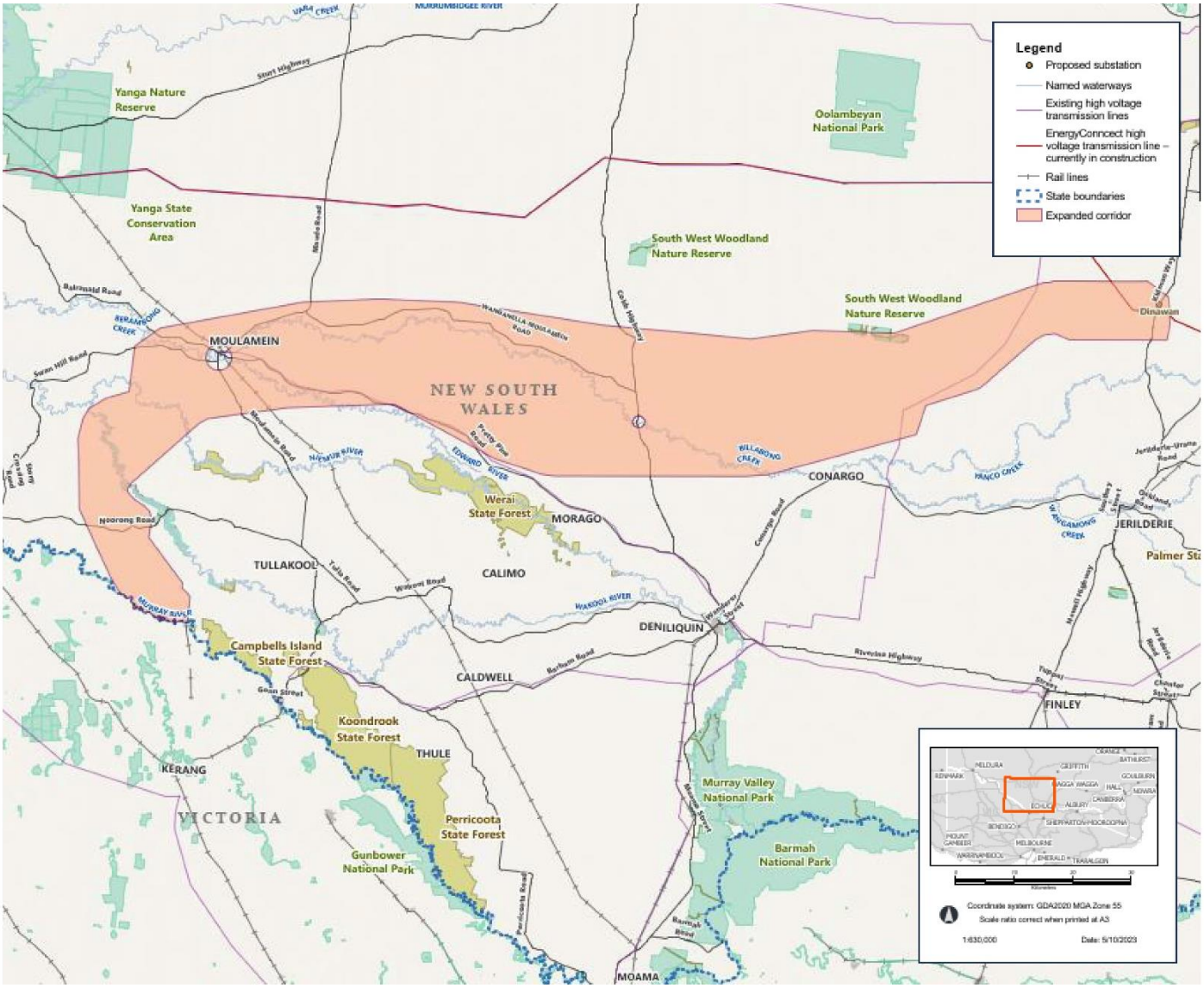


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Wednesday, 20 December 2023

Dean Bell
Yurwang Gundana Consultancy Cultural Heritage Services
ngunawal56@outlook.com

Our Reference: **230027**

Dear Mr Bell

Re: STAGE 1: REQUEST FOR INFORMATION
Aboriginal Cultural Heritage Assessment
Victoria - NSW Interconnector (VNI) West

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Geoffrey Hudson

Environment Manager – VNI-West

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E: Geoffrey.Hudson@transgrid.com.au

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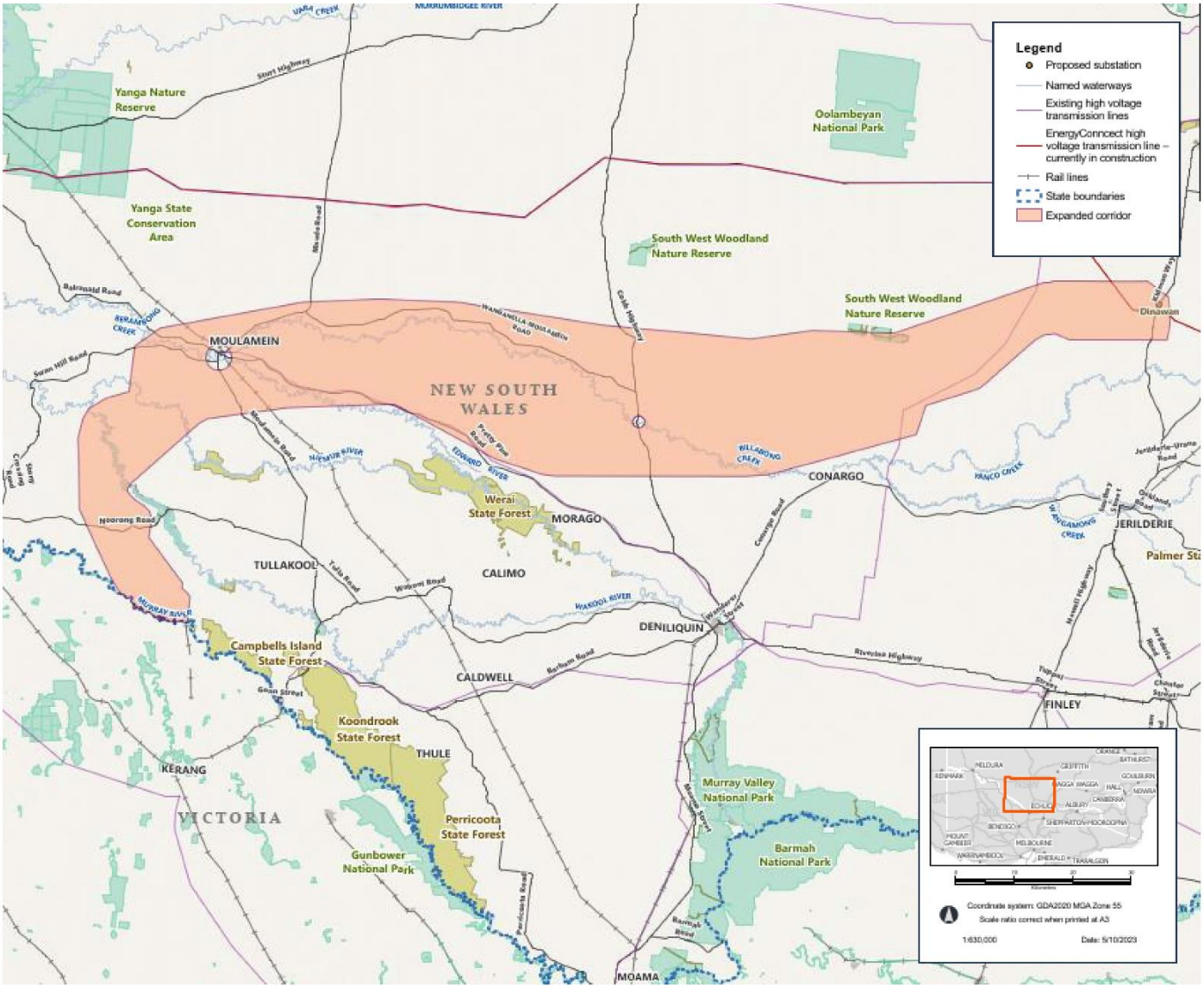


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Wednesday, 20 December 2023

Merekai Bell
Yurwang Gundana Consultancy Cultural Heritage Services
Yurwang.Gundana.C.H.S@outlook.com

Our Reference: **230027**

Dear Ms Bell

Re: STAGE 1: REQUEST FOR INFORMATION
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Geoffrey Hudson

Environment Manager – VNI-West

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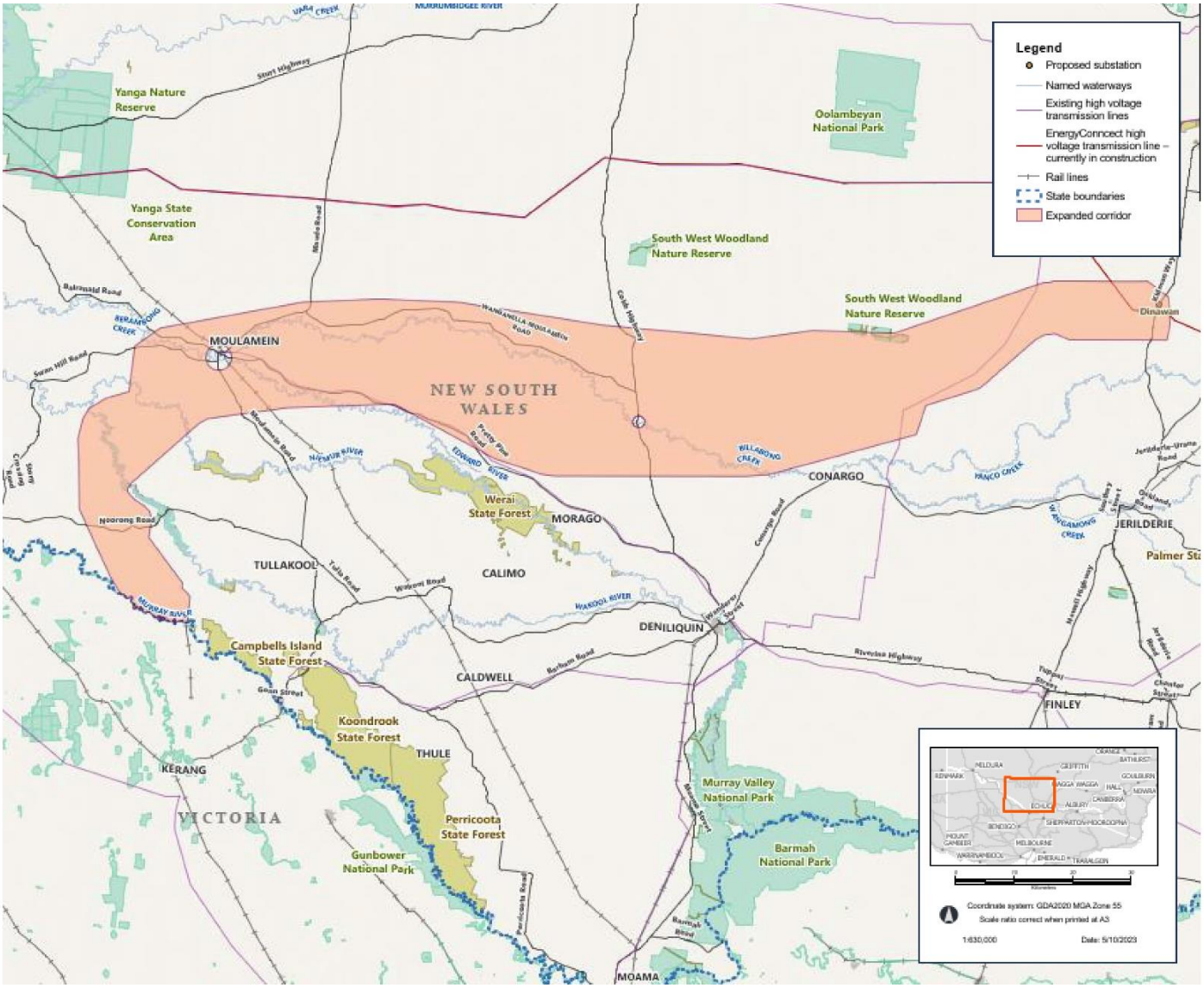


Figure 1 VNI West initial study area

Methodology comments

Cynthja Pappin

There are errors on pages 6, 10, 11, and 12 of the document. These are:

1. Site type expectations and locations will change across the Wiradjuri/Kulin Nation boundary. For example, you will not find carved trees in the west, nor will you find oven mounds in the east. You need to acknowledge this change in cultural boundary and respect it.

2. Restriction of surface visibility is not restricted to 'windblown sands and deposition of soil' etc. It is expected that the entire length of any area with the above regolith be registered as a potential archaeological deposit and subject to further investigation and due care during construction.

3. As you know, the proposed route transects four different tribal lands (those of the Wamba Wemba, Wadi Wadi, Mutthi Mutthi, and Wiradjuri people) it is imperative that the Traditional Owners of each tribe are represented for all survey undertaken within their lands. Local Aboriginal Land Council and RAP representatives may not be sufficient as LALCs are statutory bodies and do not represent Traditional Owners.

4. One week is not enough notice for Registered Aboriginal Parties to organise field workers. As you are well aware there are numerous other developments occurring in the region which RAPs are participating in. We expect at a minimum 4 weeks notification with survey dates, times and locations clearly expressed so that we can organise availability of our volunteers. We also expect contact details of the field officers attending and a contact for the proponent.

5. Transects and transects must be undertaken with a maximum distance of 8m between field participants at all times. 25m is way too far distant to ensure effective survey coverage. Best practice is between 2m and 5m between field participants. It is expected that Navin Officer follow best practice archaeological survey. We will require the survey to be redone if it has been completely insufficiently.

6. Wakool Indigenous Corporation expect two field officers to attend each survey (one male and one female). We will not approve the ACHAR if we have not been offered opportunity to participate. I attach our schedule of rates.

7. Our written submissions will be effective whether written on letterhead or not.

Will Carter

Hearths and earth mounds within the land-form and site contexts are known to have burials and high culturally significant values associated. It's a significant high likelihood of there being an extensive amount of unrecorded sites that are significant within the proposed route, including in extinct river channels and associated sandhills that used to be close to major river courses but as the river has changed course over millennia, are further than the 500m predictive model contained within this report.

It would be important to understand the meanings and classifications of "good" soil and veg vs "bad". Is this a western understanding or does it come from Yiradyuri / First Nations ways of knowing and being?

Proposed Methodology for Cultural Heritage Field Survey

VNI - West

Navin Officer Heritage Consultants Pty Ltd *February 2024*

1. The Purpose of this Document

The purpose of this document is to:

- provide information about the proposed project (referred to as the proposal) to Registered Aboriginal Parties (RAPs);
- provide a proposed methodology for the archaeological survey of Aboriginal and non -Aboriginal heritage in the proposal study area to RAPs for review and comment; and
- provide an opportunity for RAPs to contribute culturally appropriate information that will enable the assessment of the cultural significance of Aboriginal objects and/or places in the proposal study area.

The methodology outlined below has been developed in accordance with the NSW OEH *Code of Practice for Aboriginal cultural heritage consultation requirements for proponents 2010*. In accordance with these guidelines, RAPs are invited to provide comments and suggestions back to Navin Officer Heritage Consultants (NOHC) by 8 March 2024.

NOHC contact information is as follows:

Nicola Hayes
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
Kingston ACT 2604
email: nhayes@nohc.com.au
phone: 02 62829415
fax: 02 62829416

Proponent contact:

Sherrie Anderson
Yura Ngura Indigenous Advisory Manager

Transgrid

T: (02) 9284 3333
M: 0429 889 708
TransGrid
180 Thomas Street, Sydney
PO Box A1000 Sydney South
NSW 1235 Australia
T (02) 9284 3000
F (02) 9284 3456

2. The Proposal

Transgrid and the Transmission Company Victoria (TCV) are jointly developing a new electrical connection between Victoria and NSW called the Victoria NSW Interconnector West project (VNI West). VNI West would form a second transmission link between Victoria and NSW to harness clean, low-cost electricity from Renewable Energy Zones (REZ) in both states and improve the reliability and security of electricity supply.

VNI West is proposed to comprise a high voltage, 500 kilovolt (kV) double-circuit overhead transmission line will connect the high voltage electricity grids in NSW and Victoria. Specifically, VNI West would connect the Western Renewables Link proposal (at Bulgana in Victoria) with the EnergyConnect project (at the new Dinawan substation – currently in construction) via a new substation near Kerang (in Victoria). The VNI West (NSW) proposal and includes the following key components:

- Transmission line works comprising:
    - A new 500kV double circuit transmission line between the NSW/Victoria border near Murrabit and the Dinawan substation (around 228km)
    - Installation of surge arresters on some transmission line towers associated with the approved EnergyConnect project between Dinawan and Wagga Wagga to allow upgrade to 500kV operation
    - Augmentation of a section (around 9 km) of the existing single circuit (Line 51) between the existing Wagga Wagga substation and proposed Gugaa substation (to be constructed as part of the HumeLink project), including demolition and re-construction of the existing infrastructure to provide a double circuit 330kV transmission line, within the existing easement
- Substation works comprising:
    - Expansion of the Dinawan 330kV substation (currently under construction as part of the EnergyConnect project) to include a new 500kV switchyard accommodating two new 500kV bays, one 1500 megavolt-amperes (MVA) transformer, neutral earth resistors, reactors and other electrical equipment
    - Connection and line diversion works at the existing Wagga Wagga substation and proposed Gugaa substation to allow for connection of the newly augmented Wagga to Gugaa section including:
        > Diversion of an existing 330kV line span within Wagga substation
        > Construction of one new 500kV line span within Wagga substation
        > Diversion of the existing 330kV Line 51 to Gugaa substation
        > Construction of one new 500kV line span from 330 kV bays to 500 kV bays within Gugaa substation.
- Ancillary development comprising:
    - new telecommunications hut(s)

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- Works to upgrade or augment existing electricity transmission lines
- Installation and operation of communication facilities along the main VNI West transmission line
- New and upgraded temporary and permanent access tracks and roads
- Construction of utilities infrastructure (as required)
- Temporary facilities required for construction of the proposal e.g. laydown and staging areas, stockpiling areas, concrete batching plants, brake/winch sites, site offices, parking areas, accommodation camps and power supplies.

3. Project Stages

The proposal corridor encompasses the area where VNI West (NSW) assets such as transmission lines, the upgraded Dinawan substation and other ancillary features are likely to be located. The proposal corridor is generally one kilometre wide and includes areas likely to be required for permanent and temporary access tracks, roads and associated infrastructure (such as telecommunications hut(s) and utility works).

The initial proposal corridor was developed in line with Transgrid's Route Selection Guideline (Transgrid, 2023) and use of geo-spatial mapping including technical/engineering, environmental, property and social and community considerations. These considerations were grouped as high risk (no-go or exclusion areas), moderate risk (avoid impact where possible) and low risk (minimise or mitigate) criteria. In addition to these high, moderate and low criteria, several opportunities to minimise impacts and maximise benefits from the proposal were identified including:

- Minimising overall transmission line length to reduce costs, impacts and construction time
- Targeting areas of public land such as travelling stock routes as well as areas of existing disturbance, such as roads, tracks and property boundaries to reduce environmental and property impacts
- Locating the new transmission line to avoid areas of potential environmental impact such as known areas of important vegetation, threatened species habitats, known areas of heritage and watercourse and flood prone areas.

To refine and narrow the initial proposal area to the current proposal corridor, Transgrid undertook a range of assessments and preliminary environmental investigations, landowner and stakeholder engagements, and concept engineering design studies.

The outcomes of this process combined with further feasibility studies has informed the identification of the current proposal corridor. The current corridor has been narrowed to 1 kilometre along most of its length.

A further process of refinement will also be completed to further refine the corridor to 200 metres along its length. Further assessment will be carried out in conjunction with the development of the ongoing design of the proposal. In assessing the proposal, the key focus would be avoidance and minimisation of impacts on the environment, local communities and land holders, where reasonable and feasible, while also taking into consideration engineering

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constraints, cost implications as well as opportunities to provide additional benefits to the region where the infrastructure would be located.

Following receipt of the SEARs, Transgrid will prepare the EIS for the proposal. An Aboriginal Cultural Heritage Assessment Report (ACHAR) will form part of the EIS assessment.

4. Impact Assessment Process

The cultural heritage impact assessment process will involve:

- Consulting with RAPs to finalise this methodology
- Undertaking a targeted field survey
- Completing a preliminary assessment report for the scoping report
- Consultation with RAPs on a potential test excavation methodology
- Completing detailed field survey and possible test excavation program
- Completing an Aboriginal cultural heritage assessment report (ACHAR)
- Consulting on the ACHAR with RAPs
- Finalising the ACHAR.

5. Critical Timelines

The following timelines are relevant to this assessment:

- **28 day** comment period on this methodology
- **20 days** (approximate) to undertake field survey. This will commence approximately 2 weeks following the end of the comment period
- **28 day** comment period for the draft ACHAR, this will be provided within 2 months following field survey

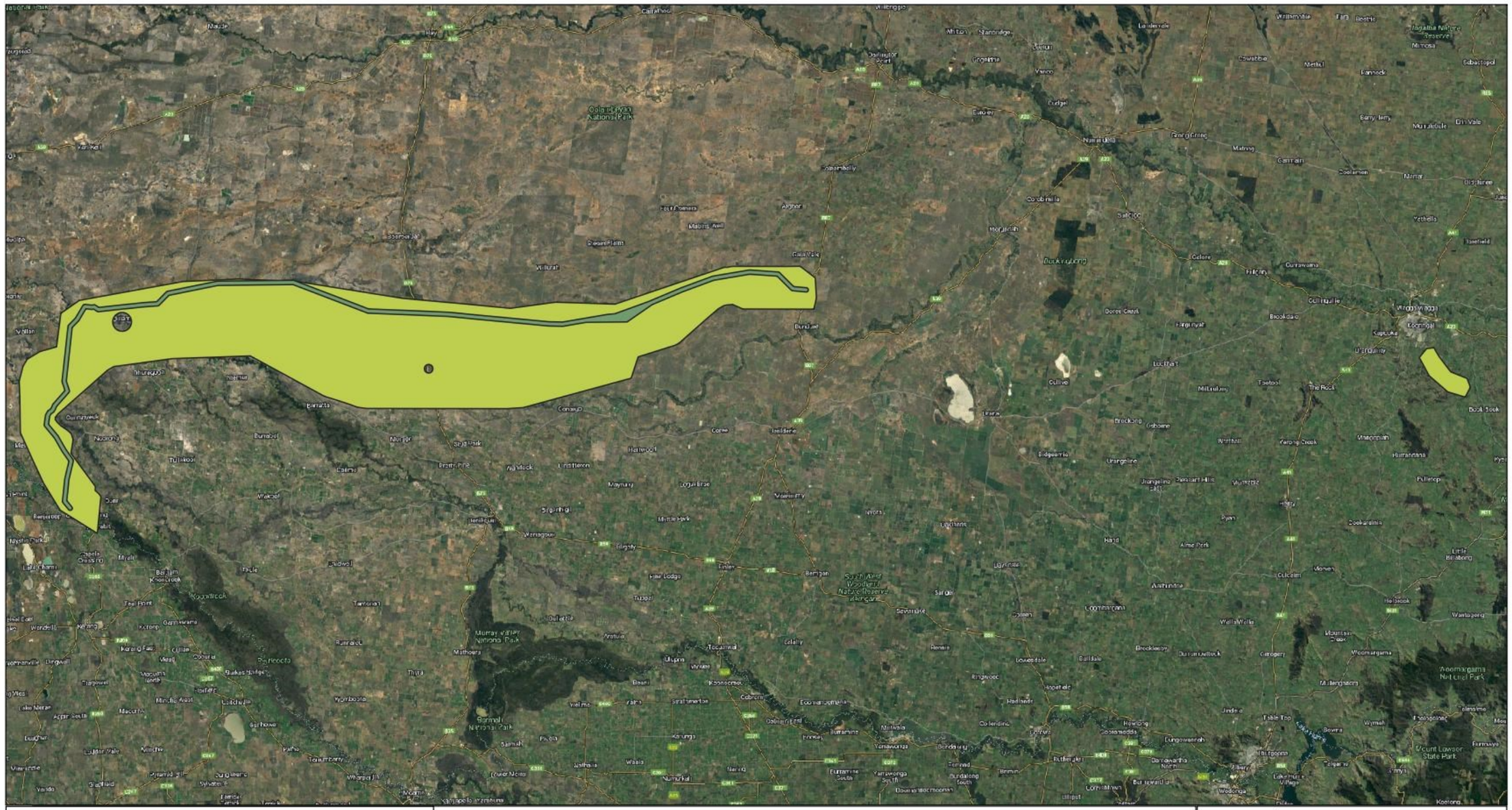


Figure 1 Overview of the proposal study area

6. Previously Identified Sites

AHIMS site searches were conducted of the preferred corridor between 18/8/2023, 28/8/2023 and 2/02/2024. A search was also undertaken of the NSW Aboriginal Places inventory, no Aboriginal Places are located in the study area.

There are 233 Aboriginal cultural sites listed on AHIMS in the preferred corridor. Figure 2 shows the locations of the AHIMS listed Aboriginal sites. The following site types/features are identified in the AHIMS data.

Site type/feature	No.
Artefact	52
Artefact, Burial, Hearth, Non-Human Bone and Organic Material	1
Artefact, Earth Mound, Hearth	1
Artefact, Hearth	6
Artefact, Non-Human Bone and Organic Material, Burial, Hearth, Potential Archaeological Deposit (PAD)	1
Artefact, Stone Quarry	1
Burial	7
Burial, Artefact	2
Burial, Hearth, Non-Human Bone and Organic Material, Shell	1
Burial, Hearth, Shell	1
Burial, Modified Tree (Carved or Scarred), Earth Mound, Shell, Artefact	1
Earth Mound	33
Earth Mound, Hearth	8
Hearth	14
Hearth, Artefact	3
Modified Tree (Carved or Scarred)	83
PAD	4
Shell	1
Stone quarry	1
with no site type identified on the AHIMS database	12

Of the above there are 9 sites within the preferred route. They include five artefact scatters sites, two modified trees and two hearth sites. See Appendix 1 for the details of these sites.

The most common site types in the corridor are modified trees, artefact sites and earth mounds. It is likely that these sites will be the most common site types that will be found during field assessment. The AHIMS data also shows large gaps in the location of sites, which indicates that there would be a very large number of unrecorded sites in the preferred corridor.

The AHIMS data shows clustering of sites in various locations. The clusters are typically associated with areas where archaeological assessment has been completed and are typically around waterways and wetland areas which are of higher archaeological sensitivity.

To assist in assessing the likelihood of unrecorded Aboriginal sites an Aboriginal archaeological sensitivity model for the preferred corridor has been compiled and is presented below.

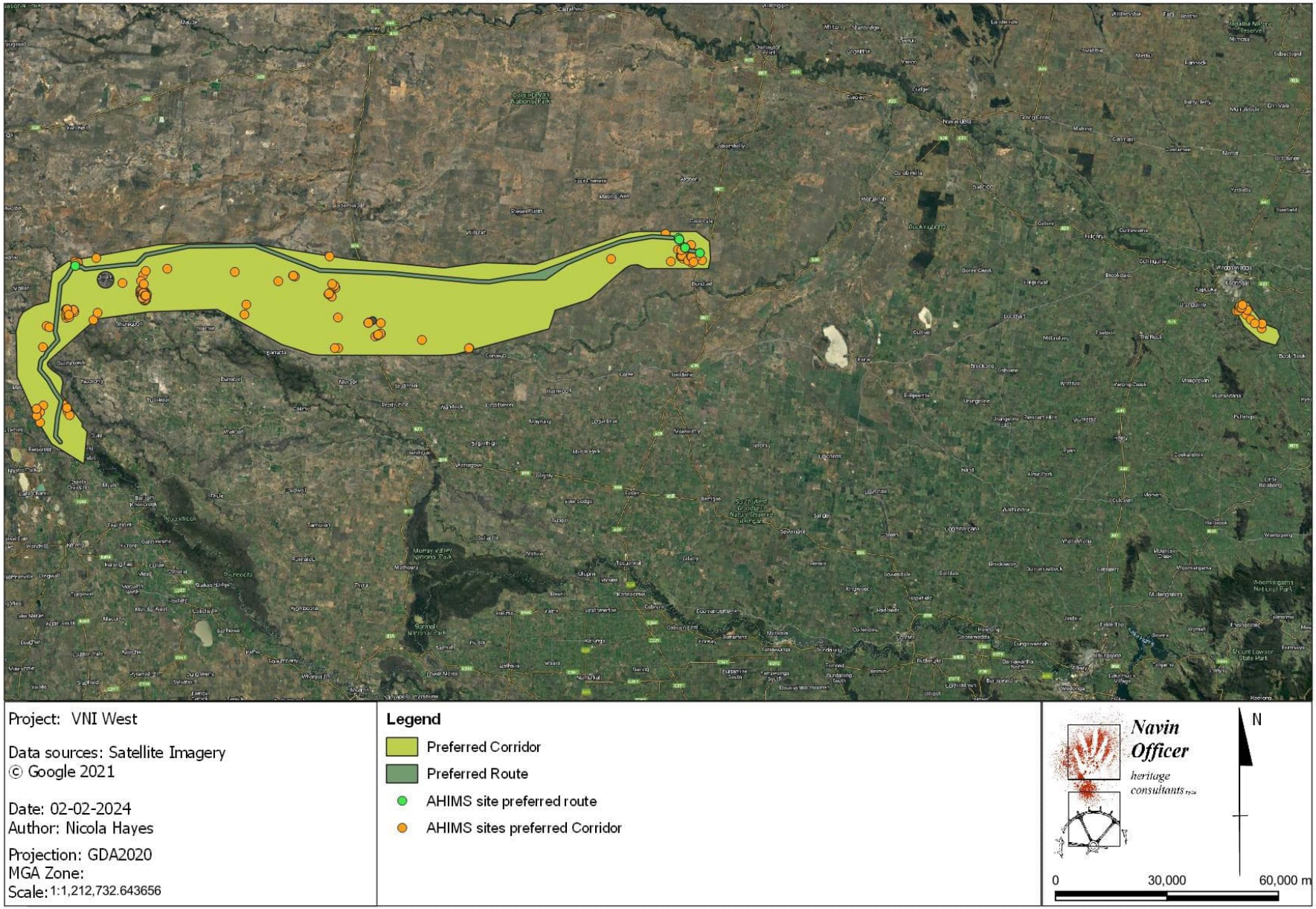


Figure 2 AHIMS recorded site in relation to the proposal study area and heritage study corridor (Overview)

Aboriginal Archaeological Sensitivity model

The preferred corridor, not including the Wagga section of the project, was split into two areas of interest “AOI” based on overall average landscape.

One AOI was the more riverine landscape which encompassed a 10km buffer around the Edward River and all areas south of that. The other AOI was the more Hay plain type landscape which comprised the rest of the corridor.

Soil type, Vegetation type and proximity to water sources were used as variables in this model. Around 1058 AHIMS sites within the AOI’s and surrounding similar landscapes were compared with these parameters to see how close sites were to sources of water and what types of soil and vegetation they were typically found in.

Major sources of water were classified as named bodies of water “creeks, lakes, lagoons” wet swamps, and streams classified as Strahler order 3 and above.

Based on these results soil and vegetation classes were reclassified into high medium and low. High meaning there were higher concentrations of sites found in these types. Medium meaning there were lower concentrations of sites found in these types. Low meaning there were extremely few to no sites found in these types.

It was determined that 75% of sites were found within 500 metres of a major water source with the majority of sites identified within 200 metres of major water sources.

A 50m buffer and a 100m buffer were created around existing AHIMS sites.

The breakdown of parameters by sensitivity class are as follows:

High
- “Good” soil
- “Good” vegetation
- 200m buffer around hydrology except in areas of “bad” soil and “bad” vegetation
- 50m buffer existing AHIMS sites

Moderate
- 500m buffer around hydrology except in areas of “bad” soil and “bad” vegetation
- 100m buffer around existing AHIMS sites

Low
- All remaining areas

High sensitivity areas will typically be found in moderate to good soil and vegetation landscapes close to major sources of water and in good soil and vegetation landscapes if further away from major sources of water.

Moderately sensitive areas will be within 500m of major sources of water and in “moderate” soil and vegetation landscapes.

Low sensitivity areas will typically be in “moderate” and “poor” soil and vegetation landscapes and farther away from major sources of water.

This assessment has not undergone any ground truthing within the corridor and is not definitive in terms of finding Aboriginal sites. The model also does not predict areas of cultural value.

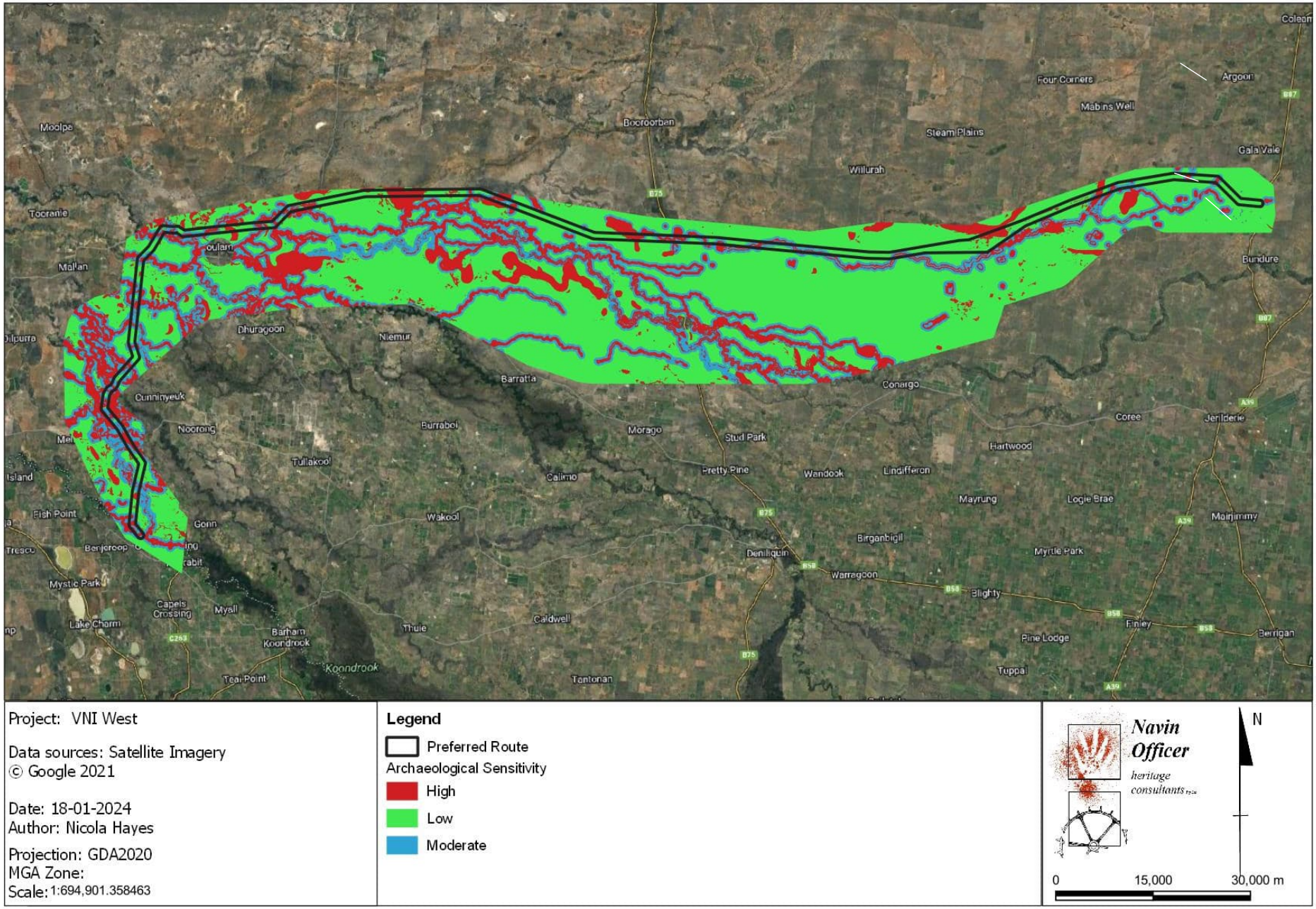


Figure 4 Predicted archaeological sensitivity associated with the proposal

8. Field Survey Methodology

Survey Aims

The aims of the survey program is to identify archaeological sites and areas of potential archaeological deposit (PAD) not previously recorded, assess all areas of identified moderate and high archaeologically sensitivity, sample areas of low archaeological sensitivity, and find, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database (shown in Figure 2 and listed in Appendix A).

Survey Strategy and Priority

The current project area has been refined to a 1 kilometre wide corridor with the final corridor to be refined to a 200 metre wide corridor. As well, there are some private property sections of the route that are not accessible for survey. This means that complete coverage of the study area is currently not possible. As a result, a staged survey approach is being proposed as follows:

1. **Stage 1 survey** (prior to the scoping report – 1 kilometre wide corridor) this stage of survey will occur in areas of accessible land (i.e. based on a land holder granting access for the survey to occur now). This will focus on lands which are predicted to be of moderate and high archaeological sensitivity within the proposal study area. Some survey is also proposed in the low archaeological sensitivity areas.
2. **Stage 2 survey** – (following the scoping report – 200 metre wide corridor) – this stage of the survey will focus on areas of land which have not been completed surveyed, including those which were not previously accessible, and which would be impacted by the proposal. It is likely that this stage will also involve a test excavation program of any identified PADs.

A staged archaeological assessment approach is the most appropriate methodology to assess the proposal impacts for the following reasons:

- Not all properties will be available to access during the stage 1 survey program
- As the tower structures would be located between about 300 and 600 metres apart this provides an opportunity to avoid impact to sites if possible
- Windblown sands and deposition of soil or other material via running water, regularly cover land surfaces in the study area, this means that full surface visibility of site is not expected to be achieved within the study area.

The survey is proposed to be undertaken by multiple teams (up to 4) each undertaking survey in different sections of the proposal study area.

The updates for all RAPs and Heritage NSW will occur at least one week before the survey begins in the areas where access has been granted, signifying the locations slated for survey.

Following the stage 1 survey an updated methodology will be distributed for comment that will include the areas for stage 2 survey and any subsurface test excavation methodology.

It is expected that the survey results and refined predictive archaeological mapping will help inform the exact location of transmission line structures. Further in field archaeological assessment of the land required for construction of the proposal and towers will be undertaken once these locations are known, this may not occur until the detailed design stage of the project.

The Field Survey Will Involve:

1. *By-foot survey of the proposal focussed on the proposal centreline*

   The archaeological field survey will be focused within the study area on high and moderate sensitivity areas and sampling some low potential areas in the survey sections. Within these areas survey would be completed on foot by at least two archaeologists, and RAPs walking systematic transects and/or selected traverses (straight lines), spaced a regular distance apart e.g. 5-25 metres apart.

   The exact nature and location of the walkover will depend on an in-field assessment of the visible constraints and cultural and archaeological sensitivity.

   The survey will also include opportunistic inspection of any existing exposed ground in the study area.

   Survey variables, such as ground surface visibility, traverse locations and landform category will be recorded, as required by Heritage NSW standards and requirements.

   Where feasible, all old-growth native trees in the survey area will be inspected for the presence of culturally derived scars.

2. *Field Consultation with Representative Aboriginal Parties (RAPs)*

   RAP field participants will be invited to communicate any knowledge that they may have regarding the cultural heritage values of the proposal study area, archaeological and cultural sites, and the overall landscape.

   The project team will act in a culturally sensitive manner and treat the information provided with respect (and in confidence, where requested and required).

3. *Site recording*

   All surface archaeological sites, potential archaeological deposits and places of Aboriginal cultural value will be documented. All sites will have the following details recorded using standard recording forms.

   - Site name, recorder and date
   - Site type
   - GPS coordinates
   - Landscape and landform character
   - Site dimensions
   - Site condition and potential to be larger
   - Site content including numbers and artefact types, raw materials and detailed recording of a sample of artefacts.
   - Photos
   - Any other relevant information, such as oral information and informant details.

9. Report preparation

Following the stage 1 survey a preliminary archaeological report will be compiled. This will inform the scoping study and the refined 200 metre wide project alignment.

The results of the investigation including stage 1 and 2 survey and any test excavation program will be documented in an Aboriginal cultural heritage assessment report (ACHAR), consistent with DPIE NSW *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The ACHAR will document the results of the investigation including site assessment and recommendations for management and mitigative measures as necessary. The need and scope of further archaeological investigations such as site collection, archival recording and salvage, will be defined.

10. Registered Aboriginal Party Participation in Field Work

Transgrid is committed to providing an opportunity to the representatives of RAPs to participate in the field survey program.

11. Cultural Input from Registered Stakeholders

To assess the possible impacts of this proposed development, it is important to assess any potential effects on Aboriginal cultural values. Only Aboriginal people can assess the impacts to Aboriginal cultural values; therefore you (or your organisation or group) are asked to identify whether there are any Aboriginal objects (artefacts) of places of cultural value to Aboriginal people in the area of the project. We also seek your views of the potential management options for any sites/objects that may be found in the project area during the investigation.

To do this, you (or your organisation or group) are invited to provide a written submission on its views. Your report will be provided to government authorities responsible for making decisions about the development proposal. Your report will be most effective if it is provided on the letterhead of your organisation and signed by an executive office holder.

Your report will also be included in the ACHAR. The draft ACHAR will be provided to registered stakeholders for comment. Comments and the assessment of potential development impacts on cultural sensitivity will then be incorporated into the final ACHAR where appropriate.

Non-written input can also be made at any time throughout the project by directly contacting NOHC. Nicola Hayes will be the project manager for this process, she can be contacted on 0421 274 470 or on 02 6282 9415.

13. References

NSW Office of Environment and Heritage 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects New South Wales*. Department of Environment, Climate Change and Water (DECCW)

Witter, D. 2004 Regional variation of the archaeology in western New South Wales. *Rangeland Journal* 26(2):129-149.

Appendix A

AHIMS Recordings within Preferred Route

Site ID	Site name	Site status	Site features	Recorders	Longitude	Latitude G
53-3-0061	Mooloomoon IF 3	Valid	Artefact	NGH Heritage	[redacted]	[redacted]
55-1-0058	PEC-E-48	Valid	Modified Tree (Carved or Scarred)	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0056	PEC-E-46	Valid	Artefact	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0054	PEC-E-44	Valid	Artefact	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0085	DEHS-2023-AS3	Valid	Artefact	EMM Consulting	[redacted]	[redacted]
55-1-0059	PEC-E-49	Valid	Modified Tree (Carved or Scarred)	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0060	PEC-E-50	Valid	Hearth	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0057	PEC-E-47	Valid	Hearth	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]
55-1-0055	PEC-E-45	Valid	Artefact	Navin Officer Heritage Consultants Pty Ltd	[redacted]	[redacted]

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : VNI West
Client Service ID : 860586

SiteID	SiteName	Datum	[redacted]	ontext	Site Status **	SiteFeatures	SiteTypes	Reports
56-1-0036	Wagga Tip 2;	AGD		pen site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders				Permits		
56-1-0671	Gregadoo SF IF 5	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		- Fyshwick		Permits		
56-1-0739	BBESS23 IF3	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		dividual users,Miss.Amber Morgan		Permits		
56-1-0741	BBESS AS1	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		dividual users,Miss.Amber Morgan		Permits		
56-1-0729	HL-01	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0740	BBESS23 CMT1	GDA		pen site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders		dividual users,Miss.Amber Morgan		Permits		
56-1-0744	PEC-E-92	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0035	Wagga Tip 1;	AGD		pen site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders				Permits		
56-1-0622	Gregadoo SF Reburial 1	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		- Fyshwick		Permits		
56-1-0540	Gregadoo Solar IF1	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		- Fyshwick		Permits		
56-1-0731	HL-03	GDA		pen site	Valid	Artefact : -		
	Contact	Recorders		Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0493	Big Springs Gregardoo TSR 1	GDA		pen site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders				Permits		
56-1-0494	Big Springs Gregardoo TSR 2	GDA		pen site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders				Permits		
56-1-0497	Simpson TSR 1	GDA		pen site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders				Permits		

Report generated by AHIMS Web Service on 02/02/2024 for Nicola Hayes for the following area at Search using shape-file Wagga Section with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 24

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 1 of 2

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : VNI West
Client Service ID : 860586

SiteID	SiteName	Datum	[redacted]	Context	Site Status **	SiteFeatures	SiteTypes	Reports
56-1-0038	Wagga Tip 4;	AGD		Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders				Permits		
56-1-0530	Gregadoo SF 360	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders				Permits		
56-1-0527	Gregadoo SF 463	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders				Permits		
56-1-0730	HL-02	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		s Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0539	Gregadoo Solar IF3	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		e - Fyshwick		Permits		
56-1-0541	Gregadoo SF IF2	GDA		Open site	Destroyed	Artefact : -		
	Contact	Recorders		Barber,NGH Heritage - Fyshwick,NGH Heritage - F		Permits		
56-1-0742	WAS02-01	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		s Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0037	Wagga Tip 3;	AGD		Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders				Permits		
56-1-0529	Gregadoo SF 393	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders				Permits		
56-1-0531	Gregadoo SF 645	GDA		Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders				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 02/02/2024 for Nicola Hayes for the following area at Search using shape-file Wagga Section with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 24

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Proposed methodology for archaeological survey and test excavation of Potential Archaeological Deposits (PADs)

VNI - West

Navin Officer Heritage Consultants Pty Ltd *July 2024*

1. Background

Transgrid and the Transmission Company Victoria (TCV) are jointly developing a new electrical transmission connection between Victoria and NSW called VNI West. Transgrid is responsible for delivery of the NSW based VNI West components and it is these aspects which form the project. Further detail on the project is provided in Section 3.

Transgrid is progressing the project through the required environmental assessment and planning approval processes at both NSW and Commonwealth levels and as part of these processes an environmental impact statement (EIS) is required. An Aboriginal Cultural Heritage Assessment Report (ACHAR) is required to support the EIS. Navin Officer Heritage Consultants (NOHC) are leading the preparation of the ACHAR and as part of the assessment process are undertaking field survey and investigation activities.

NOHC have previously developed a methodology for field walkover archaeological surveys and comments were sought on the methodology from Registered Aboriginal Parties (RAPs). The methodology was finalised, and the field walkover archaeological surveys have commenced. Some changes in approach to the proposed methodology (primarily related to removing staging) have been required and these changes are documented in this report.

Initial archaeological surveys have been completed and they have indicated the presence of Potential Archaeological Deposits (PADs) on some of the potentially impacted properties. Further investigations, in the form of text excavations, are now being proposed in these PAD areas. The methodology proposed to undertake these test excavation works has been prepared by NOHC and is documented in this report. This report now consolidates the revised field walkover archaeological survey methodology, and the proposed test excavation works methodology.

Additionally, since the initial field walkover archaeological methodology was produced and provided for RAP comment there have also been some project components and proposed location updates. These updates are documented in this report.

2. The purpose of this document

The purpose of this document is to:

- Provide updated information about the proposed project (referred to as the project) to Registered Aboriginal Parties (RAPs);
- Provide a an updated methodology for the field walkover archaeological survey;
- Provide a methodology for the test excavations of PADs of Aboriginal heritage in the project study area to RAPs for review and comment; and
- Provide an opportunity for RAPs to contribute culturally appropriate information that will enable the assessment of the cultural significance of Aboriginal objects and/or places in the proposal study area.

The methodology outlined below has been developed in accordance with the Heritage NSW's *Code of Practice for Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010). RAPs are invited to provide comments and suggestions back to Navin Officer Heritage Consultants (NOHC) by 30 August 2024**.**

NOHC contact information is as follows:

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Proponent contact:

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3. The Project

Transgrid and the Transmission Company Victoria (TCV) are jointly developing a new electrical connection between Victoria and NSW called VNI West. VNI West would form a new transmission link between Victoria and NSW to harness clean, low-cost electricity from Renewable Energy Zones (REZ) in both states and improve the reliability and security of electricity supply.

Transgrid is the proponent for developing the NSW component of VNI West (referred to in this Document as 'the project' or 'VNI West (NSW)') in the Riverina Region of NSW between the NSW/ Victorian border and the Dinawan substation and associated additional works between Wagga Wagga substation and Gugaa substation.

The key elements of the project would include infrastructure such as the transmission lines, transmission line structures, the expanded Dinawan substation and some other ancillary features. The scope of the proposal includes the following key components:

- transmission line works comprising:
    - a new 500 kV double-circuit overhead transmission line between the NSW/Victoria border near Murrabit and the Dinawan 330 kV substation (around 235 kilometres)
    - replacement of around nine kilometres of an existing single circuit transmission line (Line 51) between Ivydale Road at Gregadoo and the proposed Gugaa 500 kV substation (which is subject to a separate planning approval – HumeLink, SSI-36656827) as a double circuit 330 kV transmission line
    - connection and line diversion works of the existing Project EnergyConnect 330 kV transmission lines at the Dinawan 330 kV substation to allow for connection of the VNI West 500 kV switch yard
- substation works comprising:
    - expansion of the Dinawan 330 kV substation (currently under construction as part of Project EnergyConnect (NSW Eastern Section)) to include two new 330 kV bays and a new 500 kV switchyard
    - connection and line diversion works at the existing Wagga 330 kV substation and the proposed Gugaa 500 kV substation to allow for connection to the newly augmented Line 51
- ancillary activities comprising:
    - works to upgrade or augment existing electricity transmission lines and substation infrastructure
    - new and upgraded temporary and permanent access tracks
    - installation and operation of communication facilities along the transmission line
    - temporary facilities required for construction of the project including construction compounds, worker accommodation facilities, laydown and staging areas, stockpiling areas, concrete batching plants, brake/winch sites, site offices, parking areas, and power supplies.

The key components of the project are shown in Figure 1.

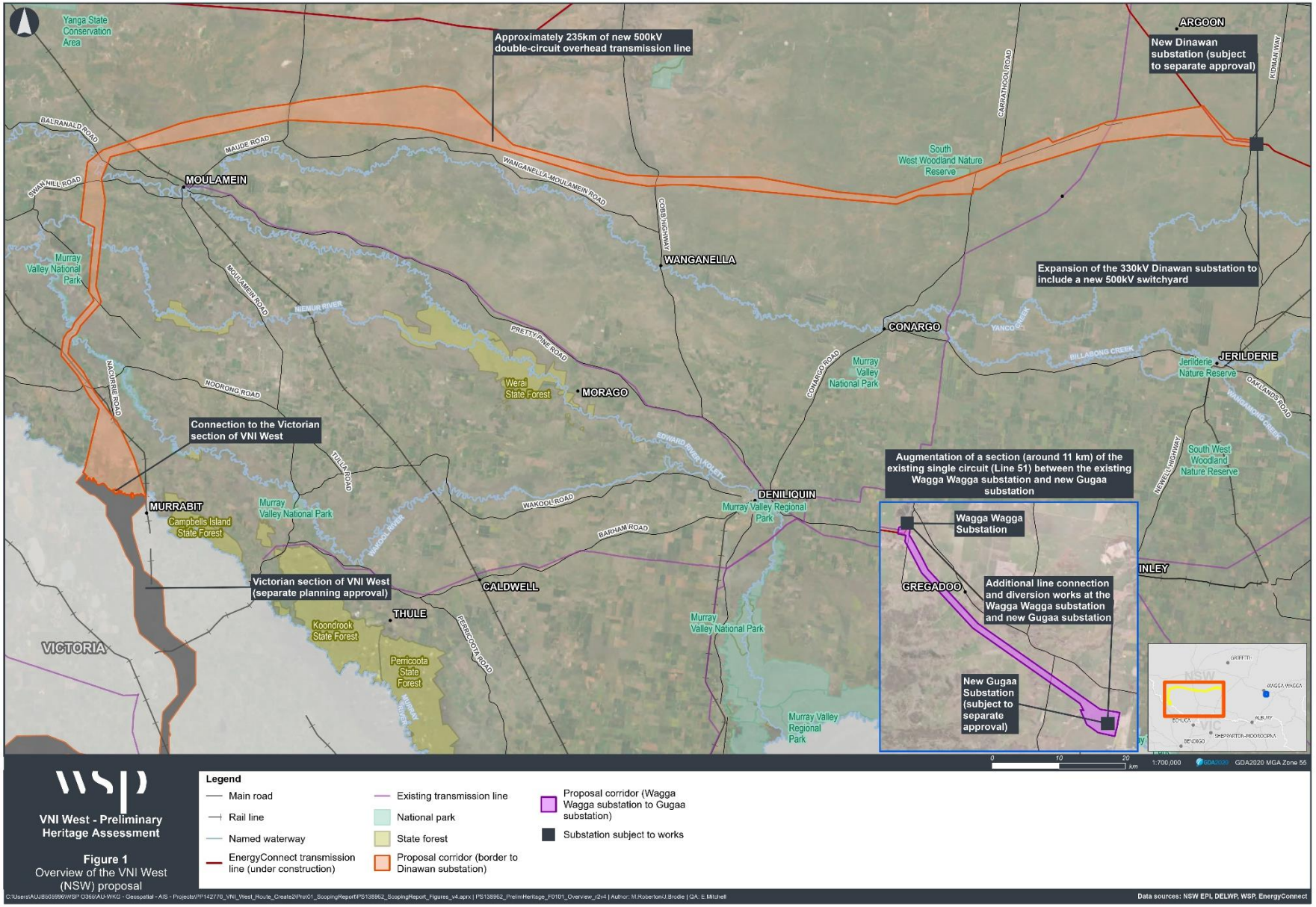


Figure 1 Overview of VNI West (NSW) proposal

3. Impact assessment process

The cultural heritage impact assessment process involves:

- Consulting with RAPs to finalise the field walkover archaeological survey methodology (completed)
- Completing a preliminary Aboriginal Heritage Assessment report for the scoping report (completed)
- Consultation with RAPs on a potential test excavation methodology (**this document**)
- Completing detailed field survey and test excavation program throughout 2024
- Completing an Aboriginal cultural heritage assessment report (ACHAR) (late 2024)
- Consulting on the ACHAR with RAPs (late 2024/early 2025)
- Finalising the ACHAR.

4. Critical timelines

The following timelines are relevant to this assessment:

- 28 day comment period on this methodology
- 20 days (approximate) to undertake field survey and test excavation (pending land access). This will commence approximately 2 weeks following the end of the comment period
- 28 day comment period for the draft ACHAR, this will be provided within 2 months following completion of the field survey and test excavation program

5. Previously identified sites

AHIMS site searches were conducted including the proposal corridor and surrounds on the 18/8/2023, 28/8/2023, 12/03/2024 and 10/7/2024. A search of the NSW Aboriginal Places inventory was also undertaken and no Aboriginal Places are located in the proposal corridor. There are 50 Aboriginal cultural sites listed on AHIMS in the proposal corridor. The following site types/features were identified in the AHIMS data (Table 1).

Table 1 Site types and feature within the preferred route

Site type/feature	No.
Aboriginal Resource and Gathering	3
Art	1
Artefact	22
Artefact, hearth	5
Artefact, hearth, PAD	2
Artefact, PAD	1
Burial	4
Burial, artefact	1
Burial, Modified Tree (Carved or Scarred), Earth Mound, Shell, Artefact	1
Hearth	2
Modified Tree (Carved or Scarred)	8

See Appendix A for the details of these sites. The location of AHIMS sites are shown on Figure 2 and Figure 3.

The most common site types in the corridor are artefact sites. It is likely that these sites will be the most common site types that will be found during field assessment. The AHIMS data also shows large gaps in the location of sites, which indicates that there is likely to be a large number of unrecorded sites in the preferred route.

The AHIMS data shows clustering of sites in various locations. The clusters are typically associated with areas where archaeological assessment has been completed and are predominantly around waterways and wetland areas which are of greater archaeological sensitivity than areas which are distant from water sources. To assist in assessing the likelihood of unrecorded Aboriginal sites the landscape has been analysed to develop an Aboriginal archaeological sensitivity model for the preferred route which is presented below.

Aboriginal archaeological sensitivity model

The preferred corridor, not including the Wagga section of the project, was split into two areas of interest (AOI) based on overall average landscape.

One AOI was the riverine landscape which encompassed a 10km buffer around the Edward River and all areas south. The other AOI was the Hay Plain soil type, vegetation type and proximity to water sources were used as variables in this model. 1058 AHIMS sites within the AOIs and surrounding similar landscapes were compared with these parameters to see how close sites were to sources of water and what types of soil and vegetation they were typically associated with.

Major sources of water were classified as named bodies of water “creeks, lakes, lagoons” wet swamps, and streams classified as Strahler order 3 and above. Based on these results the land in the preferred route was reclassified into landscapes of high, medium and low likelihood to contain Aboriginal cultural heritage sites (see Figure 2-1 to 2-3). High meaning there were higher concentrations of sites found in these types of landscape; medium, there were lower concentrations of sites found in these types of landscape; and low, there were extremely few to no sites found in these types of landscape.

It was determined that 75% of sites were found within 500 metres of a major water source with most sites identified within 200 metres of major water sources. A 50m buffer and a 100m buffer were created around existing AHIMS sites.

The AHIMS data was also used to classify vegetation and soil types that are more or less likely to be associated with recorded sites. The breakdown of parameters by sensitivity class are as follows:

High

- “Indicative” soil
- “Indicative” vegetation
- 200m buffer around hydrology except in areas of “non-indicative” soil and non-indicative vegetation”
- 50m buffer existing AHIMS sites

Moderate

- 500m buffer around hydrology except in areas of non-indicative soil and non-indicative vegetation
- 100m buffer around existing AHIMS sites

Low

- All remaining areas

The sensitivity model will be used as a tool to help to assess the archaeological potential of the project area and will be verified and refined throughout the assessment. It is best able to predict habitation sites (such as artefact scatters, earth mounds, hearths etc.) but not sites of cultural value. In other words, sites found in areas of high sensitivity are not assumed to be of higher cultural significance than sites found in areas of moderate or low sensitivity.

High sensitivity areas were typically found in moderate to indicative soil and indicative vegetation landscapes close to major sources of water and in indicative soil and indicative vegetation landscapes if further away from major sources of water.

Moderately sensitive areas will be within 500m of major sources of water and in non- indicative soil and non- indicative vegetation landscapes.

Low sensitivity areas will typically be in non-indicative soil and non- indicative vegetation landscapes and farther away from major sources of water.

The results are the modelling are shown in Figures 4 and 5.

Update to model following field surveys

Following the initial field survey season during May 2024, some ground truthing has been undertaken. Figure 6 shows a 37 km stretch of the preferred route (spanning Willaruh Rd) which has been surveyed and with various types of sites recorded. The results of sensitivity modelling are also included in Figure 6 for comparison. The recorded sites occurred in areas predicted by the model to be of high and low archaeological sensitivity. This finding highlights the complexities of sensitivity modelling in a landscape containing palaeo-channels and associated sediments of considerable geological antiquity (dating of these channels across the preferred route is mostly Late Pleistocene: Banerjee et al., 2002). The sensitivity model assumes that the present landscape is indicative of past conditions and human settlement patterns as it is not possible to model hydrological, soil and vegetation changes over the past 50,000 years or more in the region. The model will be reviewed through the life of the assessment and new data sources utilised to try to address these limitations.

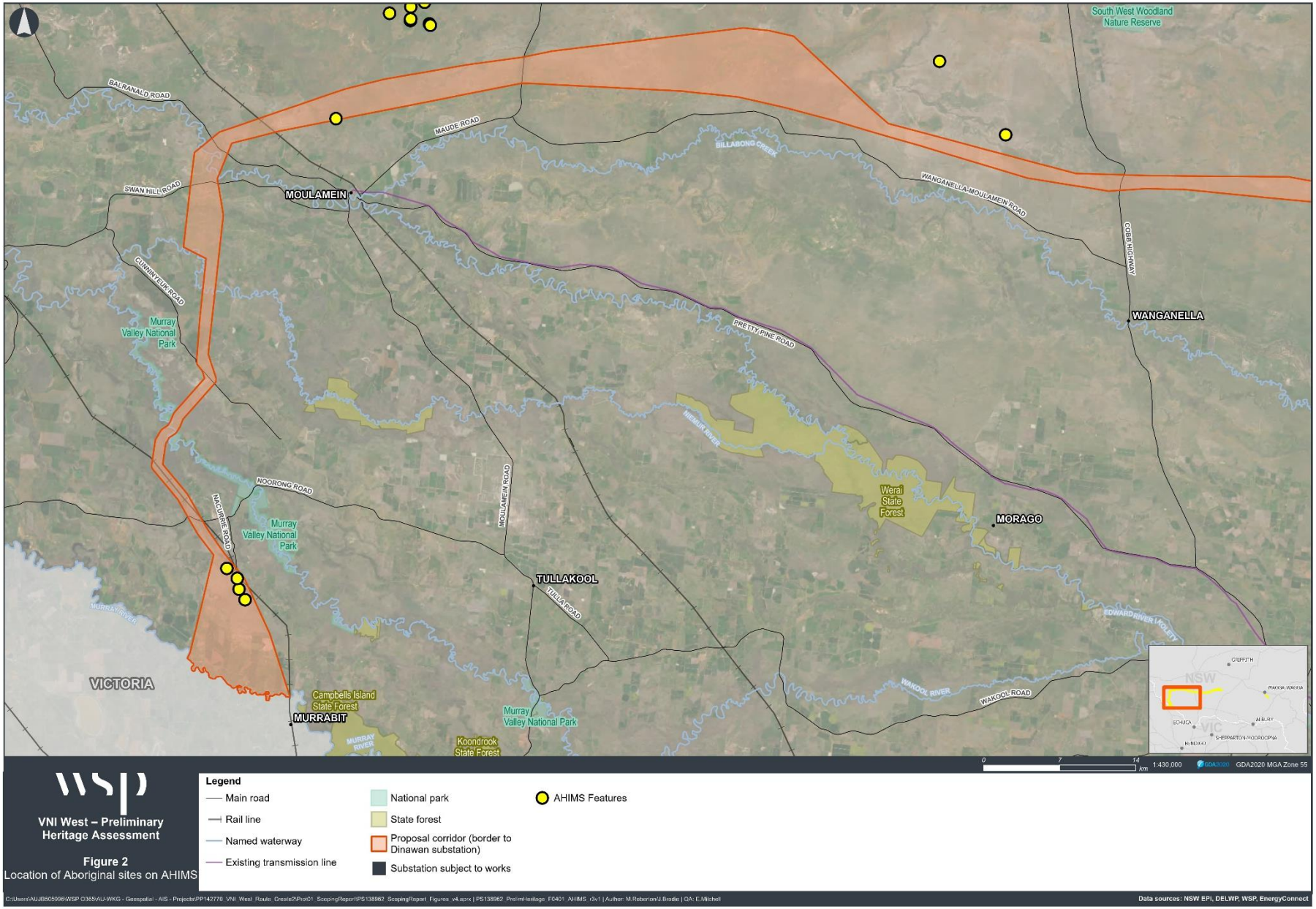


Figure 2 Location of Aboriginal sites on AHIMS in the NSW/Victoria border to Dinawan substation proposal corridor

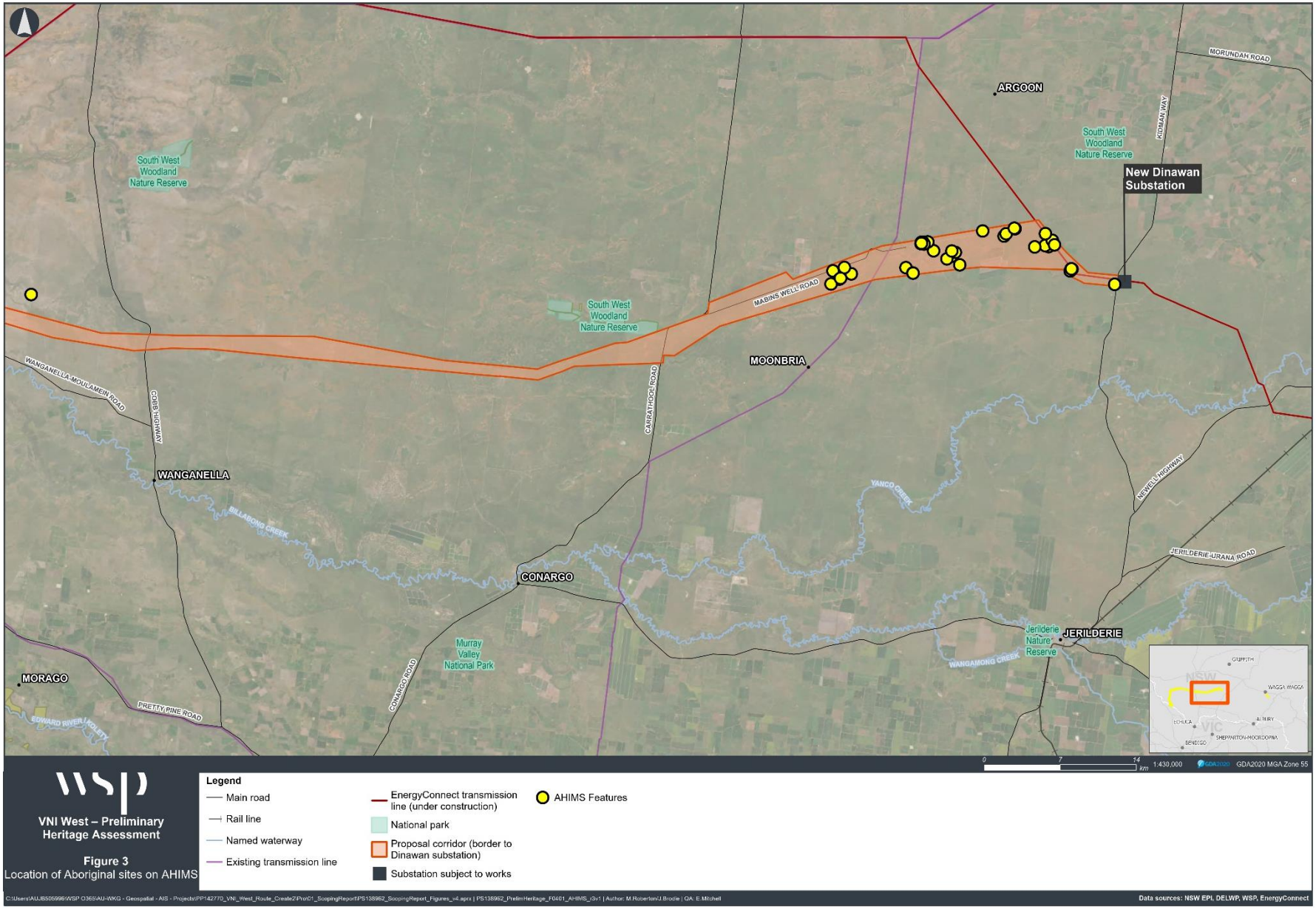


Figure 3 Location of Aboriginal sites on AHIMS in the NSW/Victoria border to Dinawan substation proposal corridor

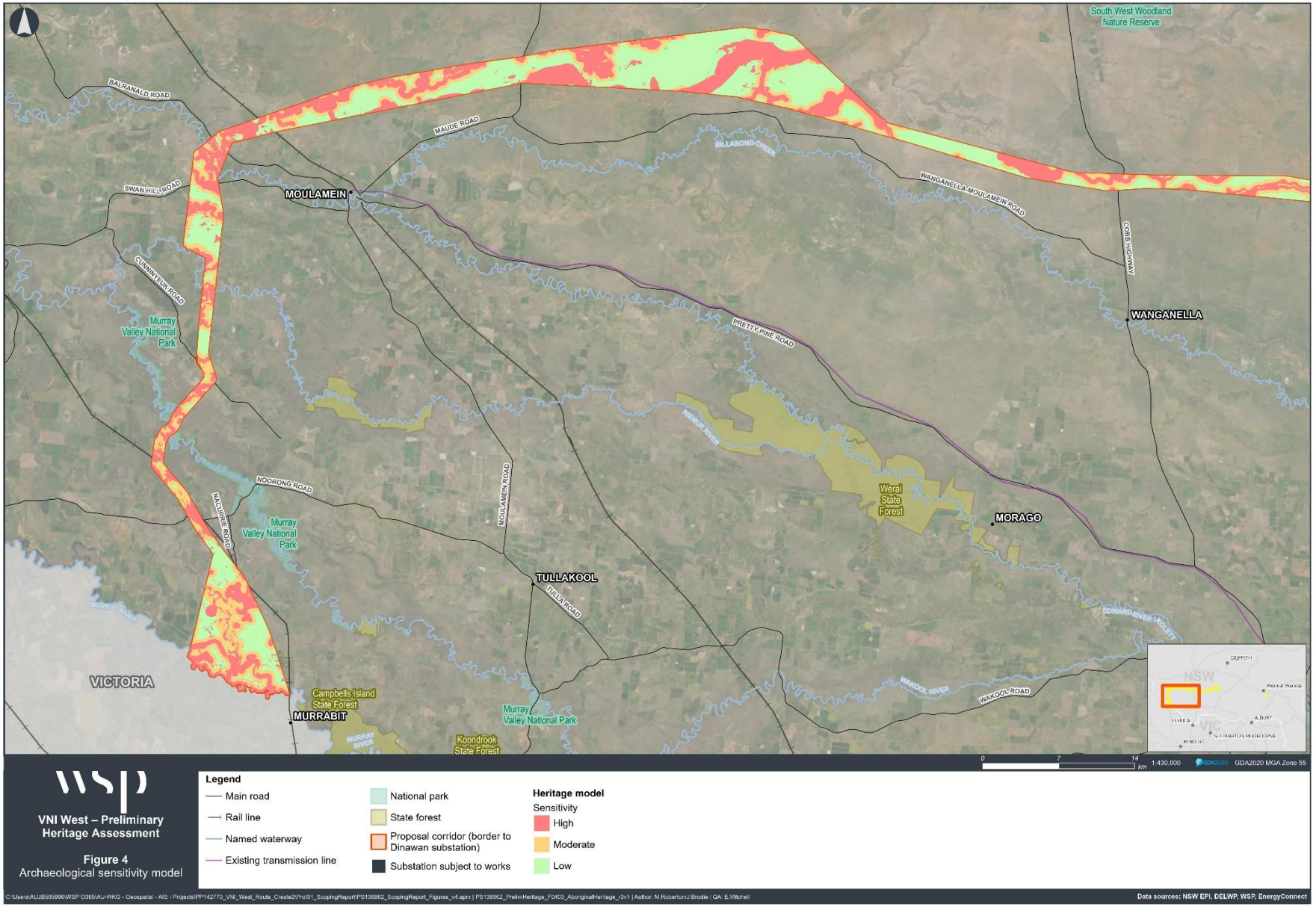


Figure 4 Archaeological sensitivity model NSW/Victoria border to Dinawan substation proposal corridor

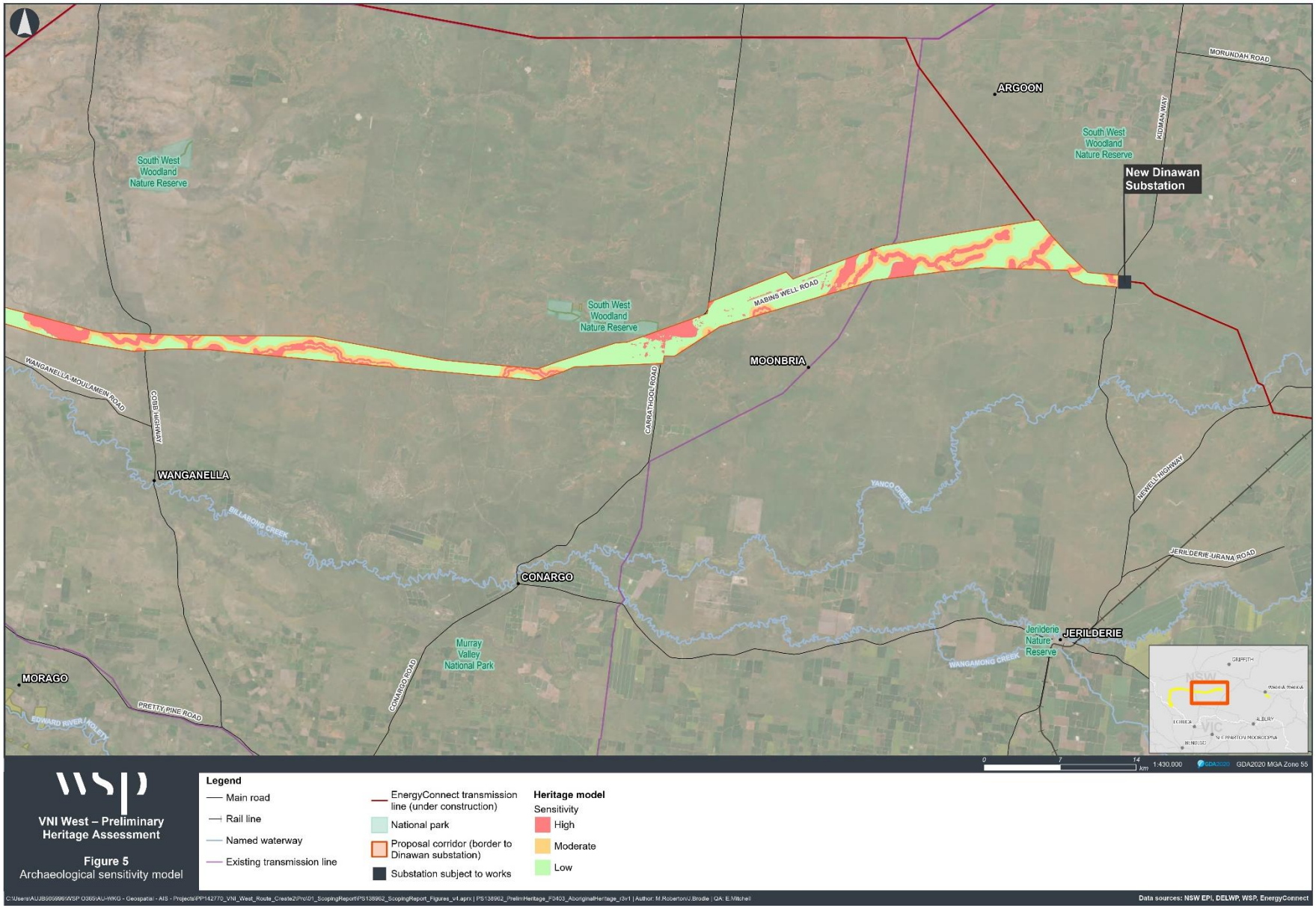


Figure 5 Archaeological sensitivity model NSW/Victoria border to Dinawan substation proposal corridor

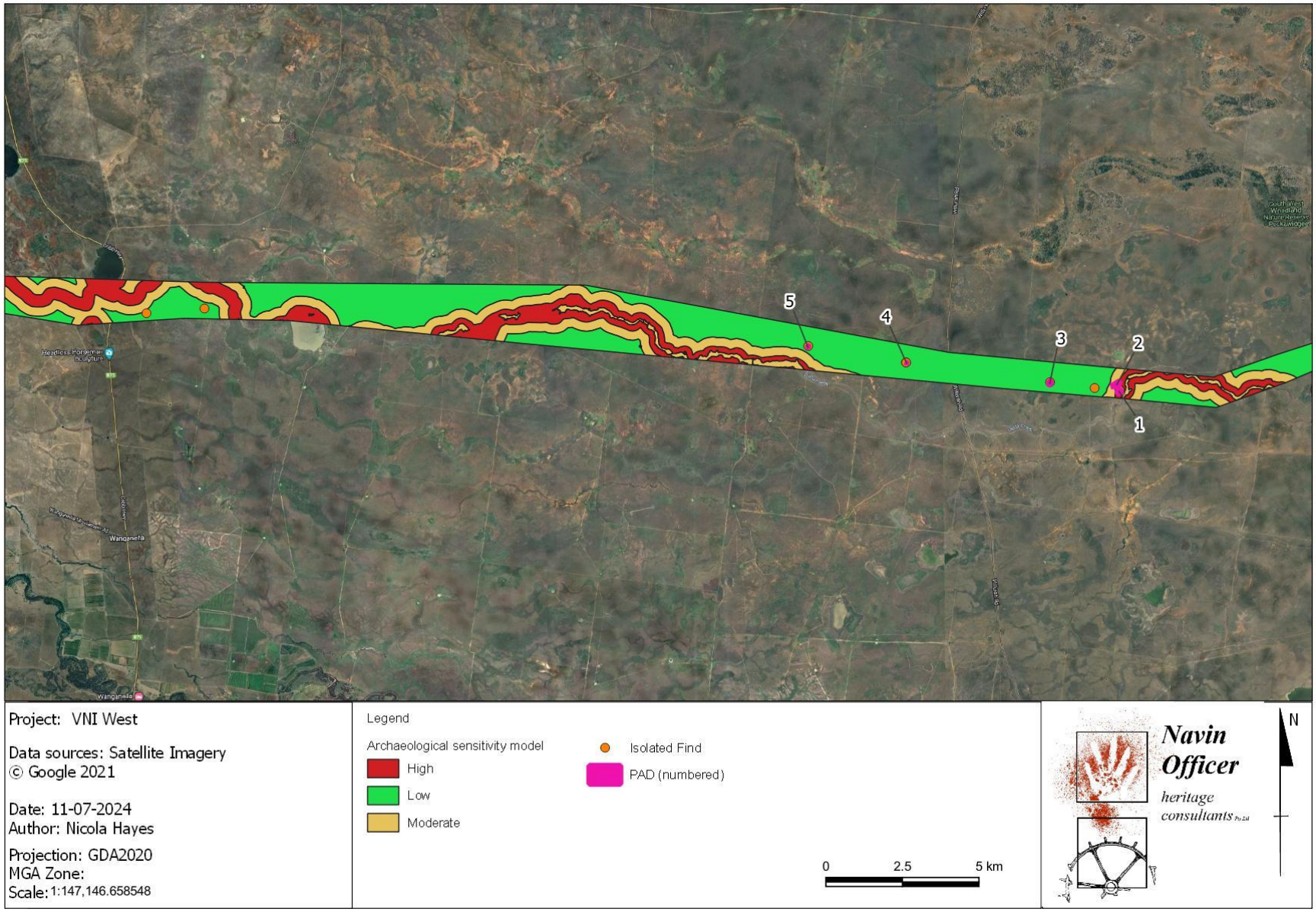


Figure 6 Surveyed section of the preferred route indicating the location of recorded sites and PADs with the predictions of the sensitivity model

6. Updated Assessment Strategy

Assessment aims

The aims of the assessment program are to identify archaeological sites and PADs not previously recorded, assess all areas of identified moderate and high archaeologically sensitivity, sample areas of low archaeological sensitivity, find, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database (shown in Figure 1 and listed in Appendix A) and further assess through test excavation identified PADs.

Updated Survey strategy

The current project area has been refined to an approximate 200 metre wide corridor generally within the preferred route. The original survey strategy included a two-stage approach to assess the broader preferred route and then to a narrower corridor. The approach has now changed and the approach has gone straight to assessing the narrower corridor, therefore the survey will be undertaken as follows:

- Survey will occur in areas of land which would be impacted by the project as they become accessible (i.e. based on the land holder granting access for the survey to occur).
- Previously unidentified archaeological sites, cultural sites identified by the RAPs and PADs will be recorded
- Existing AHIMS sites will be revisited
- A test excavation program of identified PADs will be undertaken.

It is expected that the survey results will refine the predictive archaeological mapping and that both identified sites and the refined predictive model will help inform the location of transmission line structures. Further in-field archaeological assessment of the land required for construction of the proposal and towers will be undertaken if required once these locations are known, this may not occur until the detailed design stage of the project.

Survey completed to date

The first campaign of field survey was undertaken in May 2024. RAPs were involved in each day of the survey effort. It occurred within a combined 80 km section of accessible private land holdings and crown land within the preferred route.

Overall, ground surface visibility and ground surface exposure were found to be poor in many areas due to high vegetation cover, which made site identification challenging. Major segments of mapped waterways such as Delta Creek were dry and heavily vegetated. These palaeo-river channels have evidently not contained permanent water for a very long time and intensive human activity, that would result in a rich archaeological record, must have occurred in the very distant past (i.e., many millennia ago). Younger archaeological objects in such areas are likely to represent transient use of the landscape in more recent climatically dry periods (i.e., during the last 4,000 years). In areas north of Moulamein, land clearing, overgrazing and excessive drought in the recent past has resulted in the removal of large areas of topsoil with areas of archaeologically sterile clay (B horizon) exposed on the surface. Due to more recent rainfall, many areas of exposed sandy scalds which are visible on satellite maps have been recolonised by vegetation and were not apparent in the landscape along much of the survey area.

Twenty-nine Aboriginal sites and PADs were recorded during the initial field surveys. The sites are newly identified sites which include isolated finds, artefact scatters, hearths, earth mounds, modified trees, cultural resource sites, and PADs. **Table 2** details the number of each site type recorded and see Figure 7 for their location.

Table 2 Aboriginal sites recorded in May 2024

Site type/feature	No.
Artefact isolated finds	9
Artefact scatters	2
Hearth	2
Earth mound areas	2
Modified Tree (Carved or Scarred)	5
Cultural resource site	2
PADs	7

As detailed above, the sensitivity model has also been reviewed as part of the field assessment. This will continue to be updated to include the results of the rest of the survey effort.

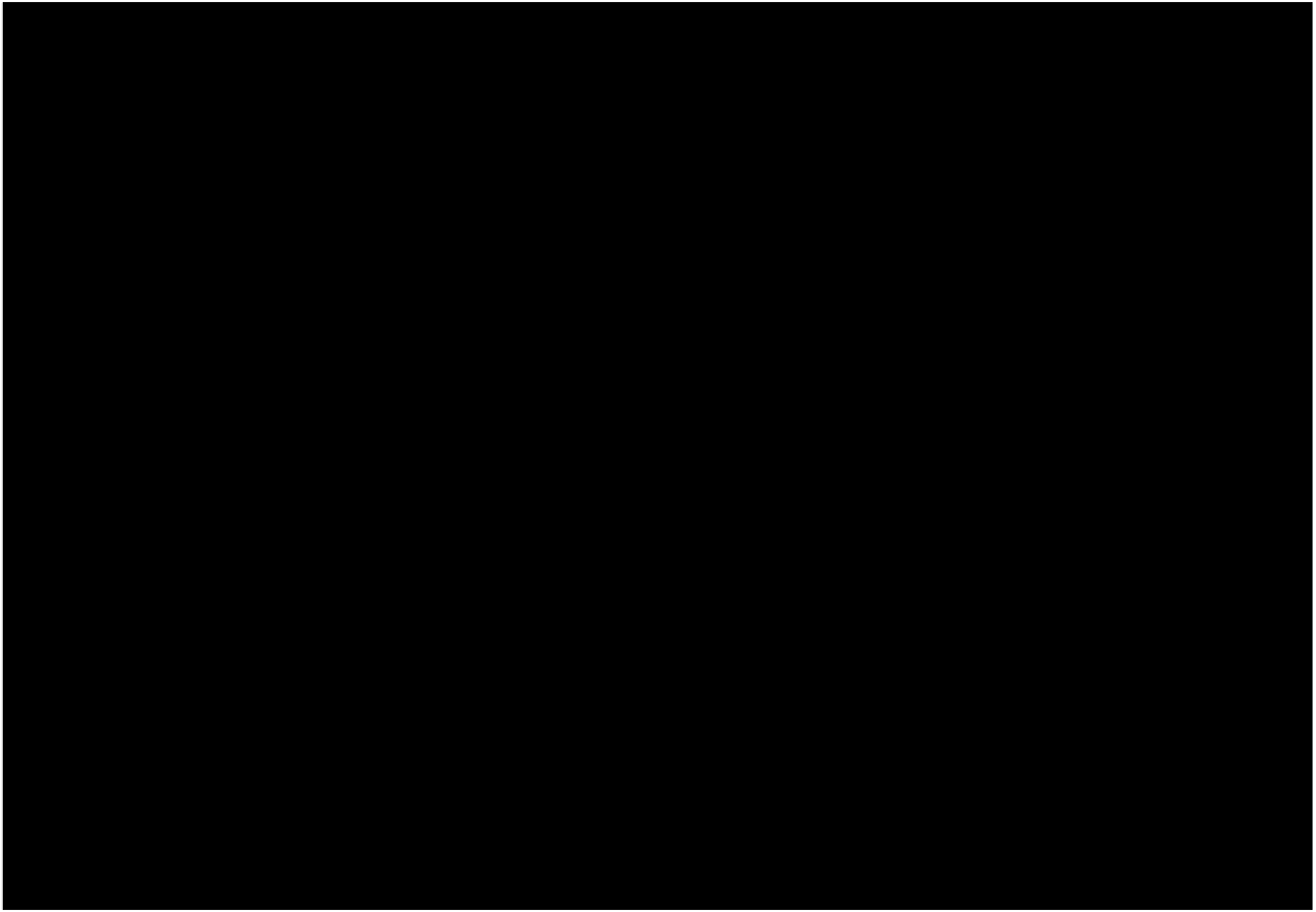


Figure 7 Sites recorded in May 2024 during field survey (numbers are PADs)

Test Excavations

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is moderate or high, relative to the surrounding landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. The boundaries of PADs are defined by the extent of micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit due to poor ground surface visibility.

Test excavations aim to collect information about the nature, extent and archaeological significance of sub-surface Aboriginal objects will be undertaken at PADs recorded during field survey. The resulting information will inform the refinement of the predictive model, Transgrid's conservation goals and the development of mitigation measures to reduce harm arising from the project.

The following test excavation methodology has been developed in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). As the code precludes excavations within 50 m of earth mounds, test excavations will not be undertaken at earth mound sites or at PADs within 50 m of earth mounds.

Of the seen PADs identified to date four will be the subject of test excavation as the remaining three have mounds associated with them. These are PADs, 1, 2, 5 and 7 (see Figures 8, 9 and 10 and Table 3).

Table 3 PADs identified to be tested following recent surveys

PAD	No. test pits	Holding number	LGA	LALC
1	14	32	Edward River	Deniliquin
2	20	32	Edward River	Deniliquin
5	7	32	Edward River	Deniliquin
7	8	401	Murray River	Wamba Wamba

The following method will be used to sample each PAD:

- 50 cm x 50 cm pits will be placed along a transect ("primary transect") aligned to the long axis of the PAD (see Figures 9). For large PADs, a secondary transect will be placed perpendicular to the primary transect at either the point of maximum width of the PAD or half-way along the primary transect depending on its shape (see Figure 8).
- Pits will be placed in intervals of 10–20 m, with larger intervals for larger size PADs, ensuring the maximum surface area of test excavations for the PAD does not exceed 0.5% of its area.
- Excavations using hand tools will be conducted in 5 cm spits (Pit 1 in each transect) or 10 cm spits (all other pits in a transect) until 10cm has been removed from the B-horizon unless cultural material is identified and then to sterile deposit.
- Excavated sediments will be sieved using nested sieves of 5 mm and 3 mm diameter. Sieving will be conducted over a tarpaulin, directly adjacent to each excavation pit, and all

excavated soil will be transferred from the tarpaulin back to the pit immediately upon completion of each pit is excavated.

- Detailed recording of each test pit will be undertaken, requiring the completion of an excavation recording form for each excavated spit. Each form will contain detailed descriptions of the soil profile, any evidence of disturbance and/or features, as well as depth of excavation and the number of artefacts and inclusions present. Photographic recording will occur at the completion of each pit and if an archaeological feature is uncovered.
- Pits will be backfilled immediately after pit recording and sediment sieving are completed.

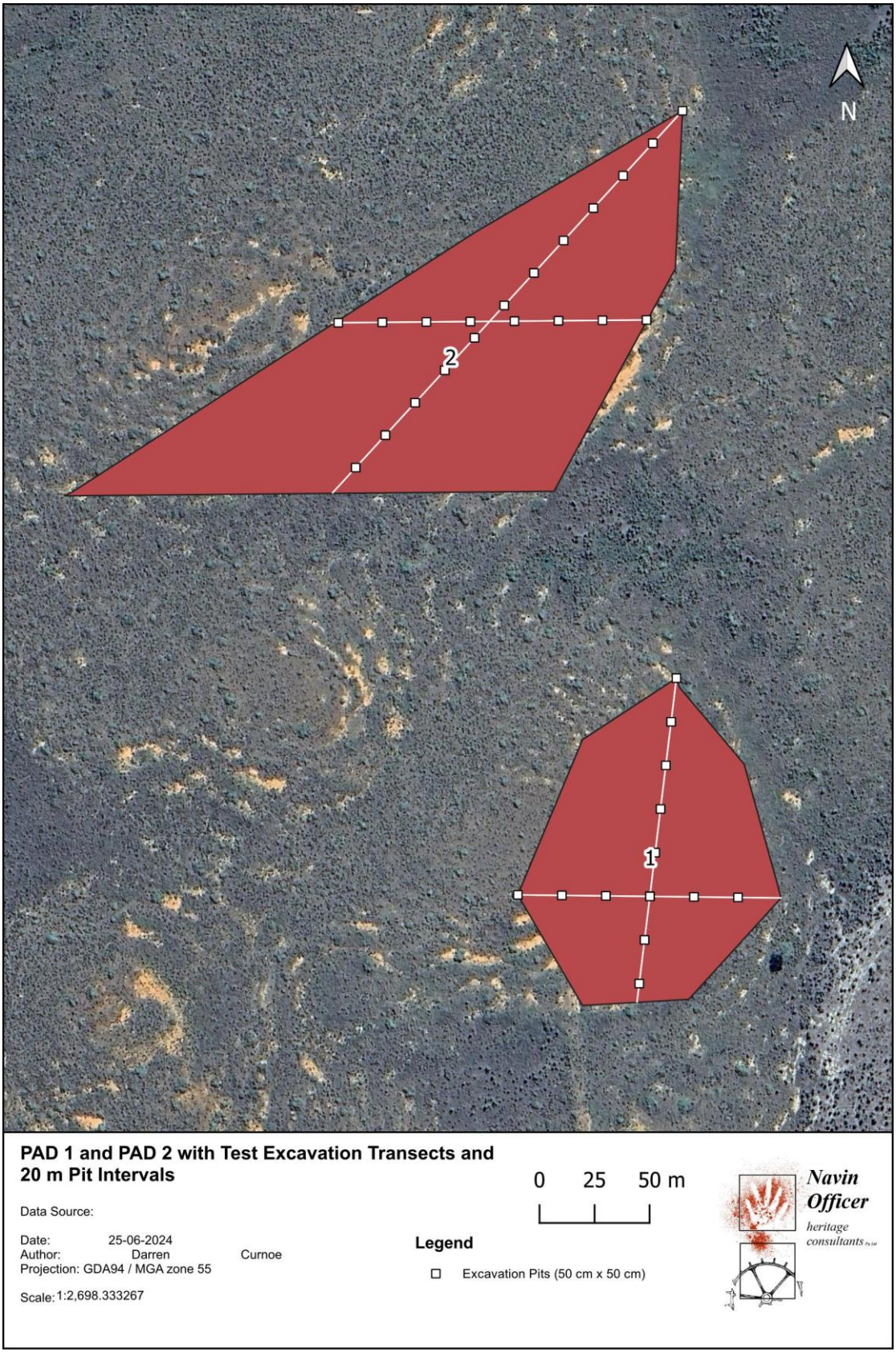


Figure 8 PAD 1 and PAD 2 with mapped primary and secondary transects and excavation pits



Figure 9 PAD 5 with mapped primary transect and excavation pits



Figure 10 PAD 7 with mapped primary transect and excavation pits

9. Materials Analysis

Lithic (stone) items

All lithic items would be examined in detail by a lithic specialist using a low-power binocular microscope and incident illumination and/or hand lens. Descriptive recording of collected material would be to a level concomitant with the stated testing and salvage aims of the investigation, and the number of artefacts/type of material recovered.

Attributes for each artefact in the assemblage would be entered into a relational database and digital photographs may be taken of selected artefacts, where appropriate. Information for each specimen recorded in the analysis would be provided in an appendix in the final report. The analysis would specifically address the following:

- Source information. What raw material resources were used; where did they come from; and what does this tell us about Aboriginal use of the region in the past?
- Stone reduction technology. How was the stone worked and used? Does this change over time? Can the function of the site be inferred from the artefact assemblage? What does this tell us about Aboriginal occupation, use, settlement and activities undertaken through time in this region?
- Post-depositional influences. What post-depositional influences have impacted the assemblage, and what does this tell us about the integrity and significance of the site?
- Site chronology. When was the site occupied? Was the assemblage the product of repeated occupations or a single event? Is there spatial patterning in the assemblage, and what does this tell us about repeated use, activities and/or occupation of the region through time?

If suitable material is identified during the excavation, conjoin analysis (re-fitting) on a sample of artefacts may be undertaken. Refitting analysis consist of the partial reconstruction of the pieces of stone so that they almost resemble their original form.

The primary aim of the analysis of the lithic items retrieved from the test locations would be to assist in the assessment of the significance of the sites/deposits and to identify appropriate management strategies.

The analysis will be consistent with standards and guidelines defined by Heritage NSW.

Midden (shell) and animal bone

Bioarchaeological materials such as midden (shell) and animal bone will be examined by a trained Bioarchaeologist, using a stereoscope and/or hand lens. Descriptive recording of collected material would be to a level concomitant with the stated testing and salvage aims of the investigation, and the amount of material recovered. Analysis of bioarcheological material varies based on the mode of collection, which would be either:

- Bulk collected materials
- Isolated finds and materials from sieves.

Material collected in bulk (e.g., from middens or hearths) would be processed in the NOHC lab. Organic materials, including faunal bone, shell, macrobotanicals, and charcoals, will be separated and available for further analysis. All material will be entered into a relational database and photographs may be taken of selected materials, where appropriate. Shell and faunal materials will be further analysed to

understand aspects of past life ways. Shells and faunal assemblages will be analysed using quantitative methods. Information for each specimen recorded in the analysis would be provided in an appendix in the final ACHAR. The analysis would specifically address the following:

- Assemblage composition. What species are recovered; are these endemic, native or introduced; and what do they tell us about past subsistence patterns or past environments?
- Anthropic modifications. is there evidence of butchery or other modifications (e.g., tools); and how does this contribute to regional models of tool production?
- Post-depositional influences. What agents have impacted the assemblage; what does this tell us about natural or anthropic assemblage origins; and how does this influence site formation models and significance assessments?

The analysis will be consistent with standards and guidelines defined by Heritage NSW.

Hearth material

If hearths are identified during excavation, these will be recorded using digital photography and/or drawn in plan and section. Charcoal, if present, will be sampled to allow radiometric dating and other appropriate analysis to be undertaken. Samples may be taken of hearth heat retainers be they stone or clay.

10. Protocol to be followed if suspected human remains are encountered

In the event that suspected human remains are encountered during any of the proposed test or salvage excavations, protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Attachment 1) will be adopted.

11. Care and Management of Recovered Artefacts

Disposition and storage of collected stone artefact assemblages during this test excavation will be dealt with in accordance with the Code of Practice (Part 6 *National Parks and Wildlife Act 1974*) under Requirement 26. The material will be recorded and temporarily stored at the NOHC lab premises in Fyshwick, ACT. For material collected from Wiradjuri country the material will be kept at the Transgrid Wagga Discovery Hub.

After examination and measurement, all recovered artefacts will be stored individually in standard resealable plastic bags or bagged in appropriate and identifiable units. The bags will be labelled using a permanent black pen with the item's unique identification number (where generated and appropriate), and/or details of its provenance within the excavation (as appropriate).

Following completion of the analysis of the recovered artefacts; the long-term management of the artefacts will be discussed with the RAPs as outlined in Requirement 26 of the Code of Practice. One option for the long-term management is that Aboriginal objects be repositioned back into the landscape (‘returned to country’). All locations of repositioned artefacts would be recorded on appropriate AHIMS recording forms and lodged with the AHIMS.

11. Report preparation

The results of the investigation including the survey and the test excavation program will be documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR), consistent with the *Code*

of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010). The ACHAR will document the results of the investigation including site assessment and recommendations for management and mitigation measures as necessary. The need and scope of further archaeological investigations such as site collection, archival recording and salvage will be defined.

12. Registered Aboriginal Party participation in field work

Transgrid is committed to providing an opportunity to the representatives of RAPs to participate in the field survey program. RAPs will continue to be involved in the field survey and test excavation program.

The field survey is likely to take an additional two to three weeks, divided over at least two survey efforts (pending land access being provided). Generally, on each survey team there are two archaeologists and two RAP representatives.

The test excavation program is likely to take a minimum of two weeks to complete using two field teams. Any additional PADs found during the field survey will be added to the test excavation program. Each field team is expected to comprise of:

- One primary archaeologist: Excavation Director from Navin Officer Heritage Consultants (NOHC).
- Three assisting archaeologists/field assistants (NOHC).
- Four Aboriginal Site Officers.

Inclement weather (such as wet weather, storms, heat or fire rating) or COVID restrictions may delay or extend the program.

13. Environmental Safeguards

Minimal vegetation will be removed to facilitate the testing program. Where necessary pits would be moved to avoid trees. All pits will be backfilled as soon as practicable after completion of test excavation using material that is excavated from the pits to prevent possible sediment contamination from backfilling with introduced soil. Access to the excavation areas by vehicle will use existing formed tracks where practicable. Test pits left open overnight when the team is off site will be fenced to avoid impact from and to stock or passers-by. Biosecurity needs for properties will be complied with and may include washing of vehicles and tools when moving from one property to the next.

14. Cultural input from Registered Aboriginal Parties

To assess the possible impacts of this proposed development, it is important to assess any potential effects on Aboriginal cultural values. Information on the Aboriginal cultural values of sites and landscapes comes from the Aboriginal people who hold those values. The gathering of this information will be ongoing throughout the assessment process therefore you (or your organisation or group) are asked to identify whether there are any Aboriginal objects (artefacts) or places of cultural value to Aboriginal people in the area of the project. We also seek your views of the potential management options for any sites/objects that may be found in the project area during the investigation.

To do this, you (or your organisation or group) are invited to provide a written submission. Your report will be provided to government authorities responsible for making decisions about the development proposal. Your report will be most effective if it is provided on the letterhead of your organisation and signed by an executive office holder.

Your report will also be included in the ACHAR. The draft ACHAR will be provided to Registered Aboriginal Parties for comment. Comments and the assessment of potential development impacts on cultural sensitivity will then be incorporated into the final ACHAR where appropriate.

Non-written input can also be made at any time throughout the project by directly contacting NOHC. Nicola Hayes will be the project manager for this process, she can be contacted on 0421 274 470 or on 02 6282 9415.

13. References

NSW Office of Environment and Heritage 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects New South Wales. Department of Environment, Climate Change and Water (DECCW)

Navin Officer Heritage Consultants (NOHC) 2023 Victoria - NSW Interconnector (VNI) West. Preferred Corridor Desktop Assessment. Aboriginal and Non-Aboriginal Heritage

Transgrid, 2024b. *VNI West Preferred Route Report*

Appendix A

AHIMS Recordings within Preferred Route

Site ID	Site name	Easting	Northing	Context	Site status	Site features	Site types
53-3-0018	Gonn Rd Site 1;	[redacted]	[redacted]	Open site	Valid	Burial : -	Burial/s
53-3-0019	Gonn Rd Site 3	[redacted]	[redacted]	Open site	Valid	Burial : -, Modified Tree (Carved or Scarred) : -, Earth Mound : -, Shell : -, Artefact : -	Burial/s,Midden,Scarred Tree
53-3-0020	Gonn Rd Site 2;	[redacted]	[redacted]	Open site	Valid	Burial : -, Artefact : -	Burial/s,Open Camp Site
53-3-0021	Gonn Rd Site 4;	[redacted]	[redacted]	Open site	Valid	Burial : -	Burial/s
53-3-0022	Gonn Rd/ Nucurrie 6;	[redacted]	[redacted]	Open site	Valid	Burial : -	Burial/s
54-1-0010	Gonn Rd site 5;	[redacted]	[redacted]	Open site	Valid	Burial : -	Burial/s
54-1-0188	Mooloomoon IF 1	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0052	PEC-E-G2	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0053	PEC-E-43	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0054	PEC-E-44	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0055	PEC-E-45	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0056	PEC-E-46	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0057	PEC-E-47	[redacted]	[redacted]	Open site	Valid	Hearth : -	
55-1-0058	PEC-E-48	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0059	PEC-E-49	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0060	PEC-E-50	[redacted]	[redacted]	Open site	Valid	Hearth : -	
55-1-0085	DEHS-2023-AS3	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0094	DEHS-2023-AS7	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0110	Yanco Delta AS 07	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0111	Yanco Delta AS 05	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0113	Yanco Delta AS 03	[redacted]	[redacted]	Open site	Valid	Art (Pigment or Engraved) : -	
55-1-0114	Yanco Delta AS 02	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0115	Yanco Delta ISO 08	[redacted]	[redacted]	Open site	Valid	Artefact : -	

Site ID	Site name	Easting	Northing	Context	Site status	Site features	Site types
55-1-0117	Yanco Delta ISO 06	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0118	Yanco Delta ISO 05	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0124	Yanco Delta AS Hearth 03	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -	
55-1-0128	Yanco Delta Scarred Tree 02	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0131	PEC-E-95	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0135	DEHW-2023-AS22	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0136	DEHW-2023-AS21	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0138	DEHW-2023-AS8	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0141	DEHW-2023-AS5	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0142	DEHW-2023-IF14	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0144	DEHW-2023-ST12	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0145	DEHW-2023-ST11	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0146	DEHW-2023-ST7	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0147	DEHW-2023-ST6	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0148	DEHW-2023-ST5	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) : -	
55-1-0152	DEHW-2023-ASPAD8	[redacted]	[redacted]	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -	
55-1-0153	DEHW-2023-ASPAD5	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -	
55-1-0158	DEHW-2023-AS24	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0161	DEHW-2023-HASPAD1	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -	
55-1-0162	DEHW-2023-HAS13	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -	
55-1-0164	DEHW-2023-HAS9	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -	
55-1-0165	DEHW-2023-HAS7	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -	
55-1-0166	DEHW-2023-IF7	[redacted]	[redacted]	Open site	Valid	Artefact : -	
55-1-0167	DEHW-2023-HIF3	[redacted]	[redacted]	Open site	Valid	Artefact : -, Hearth : -	

Official

Site ID	Site name	Easting	Northing	Context	Site status	Site features	Site types
55-1-0169	DEHW-OA8	[redacted]	[redacted]	Open site	Valid	Aboriginal Resource and Gathering : -	
55-1-0171	DEHW-OA7	[redacted]	[redacted]	Open site	Valid	Aboriginal Resource and Gathering : -	
55-1-0172	DEHW-OA1	[redacted]	[redacted]	Open site	Valid	Aboriginal Resource and Gathering : -	
56-1-0035	Wagga Tip 1;	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree
56-1-0036	Wagga Tip 2;	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree
56-1-0037	Wagga Tip 3;	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :-	Scarred Tree
56-1-0038	Wagga Tip 4;	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	Scarred Tree
56-1-0493	Big Springs Gregardoo TSR 1	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	
56-1-0494	Big Springs Gregardoo TSR 2	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	
56-1-0497	Simpson TSR 1	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	
56-1-0527	Gregadoo SF 463	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0529	Gregadoo SF 393	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0530	Gregadoo SF 360	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0531	Gregadoo SF 645	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0539	Gregadoo Solar IF3	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0540	Gregadoo Solar IF1	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0541	Gregadoo SF IF2	[redacted]	[redacted]	Open site	Destroyed	Artefact : -	
56-1-0622	Gregadoo SF Reburial 1	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0671	Gregadoo SF IF 5	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0729	HL-01	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0730	HL-02	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0731	HL-03	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0739	BBESS23 IF3	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0740	BBESS23 CMT1	[redacted]	[redacted]	Open site	Valid	Modified Tree (Carved or Scarred) :	
56-1-0741	BBESS AS1	[redacted]	[redacted]	Open site	Valid	Artefact : -	

Site ID	Site name	Easting	Northing	Context	Site status	Site features	Site types
56-1-0742	WAS02-01	[redacted]	[redacted]	Open site	Valid	Artefact : -	
56-1-0744	PEC-E-92	[redacted]	[redacted]	Open site	Valid	Artefact : -	

Attachment B

Protocol to be followed in the event that suspected human remains are encountered

1. All ground surface disturbance in the area of the finds should cease immediately after the finds are uncovered.

    a. The discoverer of the find(s) will notify all field workers and machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    b. The excavation director, site supervisor and representatives of the proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context (be aware that the site may be considered a crime scene containing forensic). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. On verification that the bone is or potentially is of human origin, the Excavation Director will immediately notify Transgrid who will ensure the following are notified of the discovery:

    a. The local Police (this is required by law);

    b. NSW Department of Planning and Environment (DPE);

    c. An archaeologist or Aboriginal Heritage Officer (as appropriate) from Heritage NSW (Environment hotline: 131 555);

    d. Representative(s) from the registered Aboriginal parties (as appropriate).

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Excavation works in the area of the find(s) may not resume until the proponent receives written approval from the relevant statutory authority: from the Police or Coroner in the event of an investigation, or from Heritage NSW in the case of Aboriginal or Non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.

In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage NSW, then all or some of the following steps *may* be conducted:

6. Facilitate, in co-operation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

7. If the specialist determines that the remains are human, then the proceeding course of action may be of three types:

    a. The remains are of an Aboriginal or non-Aboriginal person who died less than 100 years ago. All further decisions and responsibilities regarding the remains and find location rest with the Police and/or the State Coroner.

b. The remains are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

   i. Ascertain the requirements of the Heritage NSW, the proponent, the project archaeologist, and the views of any relevant community stakeholders;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains in situ (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

      3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

c. The remains are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

   i. Ascertain the requirements of the relevant registered Aboriginal parties, Heritage NSW, the proponent, and the project archaeologist;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains in situ, (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds

      3. Scientific description (including excavation where necessary and where an AHIP has been issued), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the registered Aboriginal parties and Heritage NSW.

No removal of human remains will take place unless an AHIP has been issued.

Reference/Sources:

Donlan, D., McIntyre-Tamwoy, S. and A. Thorne 2002 Aboriginal Skeletal Remains Manual. NSW National Parks and Wildlife Service, Hurstville.

Heritage Office, NSW 1998 *Skeletal Remains Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977*.

National Committee on Soil and Terrain. 2009. *Australian Soil and Land Survey Field Handbook*. 3rd ed. Collingwood, Vic.: CSIRO Publishing.

From: Nicola Hayes
To: Nicola Hayes
Bcc: [redacted]
Subject: FW: Transgrid VNI West Aboriginal Cultural Heritage Assessment Report
Date: Monday, 19 May 2025 12:12:00 PM
Attachments: image001.png

Good morning

As you are aware Navin Officer Heritage Consultants (NOHC) has been commissioned by WSP on behalf of Transgrid to conduct a cultural heritage assessment for the VNI West project.

Please find a link to download the VNI West ACHA Report for your review.

TG-VNIW-ENV-EIS-RPT-000076.D_final.pdf

We are pleased to provide this document to your organisation as part of:

- Enabling you/your organisation to provide further information or comment on the site significance assessments as identified within the proposed project footprint;
- Enabling your organisation to comment on the proposed salvage and impact mitigation actions;
- Enabling you to have input into the development of any cultural heritage management options; and
- To provide an opportunity for your organisation to comment on the report's archaeological findings and recommendations.

Given that an assessment of the Aboriginal cultural values of sites can only be made by the Aboriginal community, we invite your organisation to review the report and provide feedback giving your views.

In order for your views to be taken into account during the 28 day review period, we ask that you provide a response by **16 June 2025** by return email (nhayes@nohc.com.au) or by post to:

Nicola Hayes
Navin Officer Heritage Consultants
4/71 Leichhardt St
Kingston ACT 2604

Kind regards,

Nicola Hayes
Associate Director

Navin Officer heritage consultants

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5 Sexton St
Aeroglen QLD 4870
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NOHC is a proud sponsor of the Corroboree Frog conservation and captive breeding program.

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Meeting Minutes

Aboriginal Focus Group - Wiradjuri

Meeting title:	Wiradjuri Aboriginal Focus Group	**Date:**	4 June 2025
Location:	Wagga Wagga Discovery Hub	**Time:**	11:00am – 1:00pm
Chairperson:	Nicola Hayes/Geoff Hudson		
Attendees:			**Apologies:**
Geoff Hudson (GH) Nicola Hayes (NH) Aaron Atkinson (AA) Ricardo Servin (RS) Nikki Hansell (Nikki H) Peta Macpherson (PM)	Robert Carroll (RC) Neerim Carroll (NC) Hewitt Whyman (HW) Dylan Ingram (DI) Maxine Kirby (MK) Jason Matthews (JM)	Carl Little (CL) Stephen Young (SC) Cody Cosson (CC) Dorothy Whyman (DW) Mary Atkinson (MA)	

Agenda items

Agenda item	Notes	Decisions / actions
1. Introduction & Project Overview	• Introduction of the role of the AFG's and the reason for separating the AFG's by country. • Overview of the VNI West project, explained what stage of the project we are in. Clarified that we are 1 & ½ years away from beginning construction. • Question: How will the VNI West AFG interact with the Humelink AFG's? • Explained that AFG's will continue throughout construction. • HW: wanted clarification on the role of the AFG's on the VNI West Project. • AA: Explained which Aboriginal groups are being consulted by VNI West. • Discussion: why the AFG's are separated by country. Wanted clarification on how the AFG's have been separated into 3 groups & wanted clarification on what they would be called as a group.	**ACTION:** Resend the AFG protocols. **ACTION:** Transgrid to check for consistency between the VNI AFG's and Humelink West AFG's. **ACTION:** Send out map of the VNI West project to the AFG's. **ACTION:** Send out a map of which AFG is covering what areas, countries and LGA's. **ACTION:** AFG's to come back to Transgrid with how they would like be called.
2. SEARs/ methodology	• NH: provided an explanation on the methodology of how the ACHAR report was conducted.	**ACTION:** Send RAP's the presentation.

Agenda item	Notes	Decisions / actions
3. Overview of results & Assessment of impacts	• Focused on the previously recorded sites from Humelink and the sites for possible camps/laydown areas • NOHC found 4 additional sites which were not identified by Humelink • Most sites were artefact scatters and scar trees. • RC: asked what happens to the identified sites. • NH: explained that we will consult with the RAPs to develop a management plan if we have to disturb any of the identified sites. Includes what happens to the artefacts if they are removed. • Land Council was involved in the survey and the field walk over. • Clarified that the location of the transmission line has not been finalised – will be finalised to avoid the identified sites. • HW: wanted clarification that if artefacts are uncovered, the traditional owners will determine what happens to any scattered artefacts. • HW: asked about the PAD size. • NH: NOHC has requested testing on the PAD. Will only go ahead if Transgrid decides to go ahead with the site. If it does, RAPs can request further testing. Testing will be completed until clay is hit. • Nikki H: clarified that we are going to use existing access tracks to minimise damage to environment and cultural heritage. • Explained the purpose of the purchase of the Concord Property as a biodiversity offset. Looking at regenerating the property with local aboriginal groups. Will set up a stewardship agreement. • SY: asked for Clarification that the Land Council is involved if any artefacts are found. Noted that the Griffith LALC have not been engaged in PEC during construction.	
4. Cultural Values Assessment		
5. Mitigation Measures	• NH: explained the recommendations to be made: ongoing consultation with RAPs, prioritising avoiding sites of cultural significance.	

Agenda item	Notes	Decisions / actions
	• Plan to survey and test identified PAD on the Wagga side of the project. • Other recommendations: cultural awareness training for all construction workers, unexpected finds protocols, recommended that Transgrid keeps a database of the cultural significant sites.	
6. Next steps and RAP/KO review	• All comments from the RAPs to the ACHAR will be addressed in the ACHAR appendix. • SY: requested that NOHC or Transgrid will visit RAPs and talk through the main points of the ACHAR to receive their comments. • GH: Expressed that Transgrid did not do a good job of consultation and employment of Aboriginal people for PEC. Will take lesson learnt from PEC and improve on actions. • SY: Requested that we send out the Reconciliation Action Plan & asked that we refer to how we are meeting our commitments in the Reconciliation action plan. • SY: Asked how often the AFG meetings will take place and requested that they occur quarterly as a minimum.	
7. Others	• HW & RC: Asked about an employment strategy for Aboriginal people beyond the heritage survey phases. Are there employment strategies for Aboriginal people for the construction of the projects. • SY: Asked for clarification of how VNI West can ensure that there will be aboriginal employment outcomes? Raised that they were not happy with the outcome of PEC & expressed wanting greater commitment from VNI West. Expressed concerns that local Aboriginal Groups are not being adequately compensated from the impacts of the Transmission Projects. Wants Aboriginal people involved throughout the entire project. Expressed that the Aboriginal Community did not see the benefits of the $83 million from PEC. • AA: Clarified that Transgrid engages a contractor to do the construction. Requires engagement with the contractor for ~~aboriginal~~ Aboriginal employment opportunities. • DW: explained that Humelink West had a process for Aboriginal Groups to tender for work opportunities. Collected information from the forums to develop a strategy for Aboriginal Employment. • DW: asked for clarification about whether there will be an accommodation camp. Raised that Aboriginal	**ACTION –** Look at what Humelink West has done in regards for Aboriginal Employment Opportunities.

Agenda item	Notes	Decisions / actions
	companies could be used to cook, clean, maintain the camp etc. • SY: requested that Aboriginal Groups are present on site throughout the Construction of the project. • GH: Transgrid is taking on lessons learnt from PEC. Will discuss with the environment manager from PEC. • HW: Expressed that he would like a statement of commitment from Transgrid. • HW: Shared knowledge from when he visited an indigenous group in Florida. Explained that they have set up a central bank from compensatory funds that come from projects. Allows local groups to access a fund, that everyone agrees to. • SY: Expressed that he can provide cultural heritage training. Take people out to missions, significant sites, etc. • SY: Provided examples of AHO and the NSW Health Hospital of good engagement of Aboriginal Business and the employment of Aboriginal People. • Agreed on the name Gugaa Focus Group.	

Meeting Minutes

Aboriginal Focus Group – Barapa Barapa

Meeting title:	Barapa Barapa Aboriginal Focus Group	**Date:**	3 June 2025
Location:	Deneliquin RSL	**Time:**	11:00am – 1:00pm
Chairperson:	Nicola Hayes/Geoff Hudson		
Attendees:			**Apologies:**
Geoff Hudson (GH) Nicola Hayes (NH) Aaron Atkinson (AA) Nikki Hansell (Nikki H) Ricardo Peta Macpherson (PM)	Rose Dunn (RD) Warren Parsons (WP) David Crew (DC) Tracy Shemar Day (SD) Haydon Love (HL)	Roy Atkinson (Roy A) Kevin Atkinson (KA) Roland Atkinson (RA)	

Agenda items

Agenda item	Notes	Decisions / actions
1. Introduction & Project Overview	• GH: Explained VNI west route & explained that we are separating AFG's by country	
2. SEARs/ methodology	NH: explained purpose of ACHAR & methodology. Department of Climate Change, Energy and Water – covers heritage, water, soils, etc. (Heritage NSW is part of the department which covers aboriginal heritage) 66% of total project footprint was surveyed. Reason for gap in surveyed land – landowners have not given Transgrid access. Explained how a predictive model was used for the likelihood of significant sites. NH: explained plan going forward is that if NOH~~R~~C can get access to these sites during the submission phase - they will visit the sites and do a survey & report. DC: raised question about whether geomorphology has been used to find paleochannels. Referenced CSIRO geomorphology study that was done	**ACTION** - ~~NOHR~~ NOHC to examine looking at paleochannels for significant sites. (geomorphology studies)
3. Overview of results & Assessment of impacts	NH: Explained the main findings including the number of areas of PADs found. Explained that there are rules about how to excavate some of the areas of PAD (due to mounds & dunes). May need to work with the	

Agenda item	Notes	Decisions / actions
	RAPs to determine a methodology to excavate the PADs. DC: why would we be impacting the areas of PADs and can we avoid it? GH: Clarified that we are assessing 200m wide corridor not the 70m wide easement. There are opportunities for micromovement to avoid significant areas. ~~NOHR~~ NOHC are testing the PADs to determine how significant they are. Explained possibility of using helicopters or drones for stringing – reduce impact. Transgrid aims as much as possible to use existing access tracks rather than building new ones. - Transgrid are assessing 200m wide corridor, camp locations & access tracks to corridors. Clarified that if there are any changes to access track locations, etc. the new locations will require an assessment. Transgrid is trying to do partial clearing to reduce the impact. Will remove trees above 4m but will try to keep smaller plants. Transgrid must go through a biodiversity offset process. Transgrid will also look at regeneration on other sites.	**ACTION** - Transgrid will send the RAPs the EIS definitions. (Check that they are the same in the ACHAR and the EIS)
4. Cultural Values Assessment	CVA report is currently being finalised with identified knowledge holders. CVA is sensitive: it will not be released until we have confirmed that the information is correct and that they are happy for other Aboriginal groups to see it. The information is not released to the public (redacted from the EIS). The department will receive the information.	
5. Mitigation Measures	All recommendations will be put into the heritage management subplan for the contractor to take. RAPS will continue to be consulted throughout the construction phase – including if we have any unexpected finds of cultural heritage sites. We will engage with the relevant RAPs at locations to develop the management plans. This will be more	

Agenda item	Notes	Decisions / actions
	relevant to the second phase of the project (Greenfield Transmission Line works). David Crew: raised that they avoid assigning significance to a site (low, medium, high, etc.). ACHAR details methods to go into the management plan about the protocols for unanticipated discovery protocols and methodologies for further assessment works. Transgrid is looking at the possibility of the RAPs leading cultural training at significant sites. David Crew: Raised the question of what management processes will be in place if a cultural significant site is identified. Will Transgrid remediate/maintain the site?	**ACTION** - Transgrid to look at how any identified culturally significant sites will be maintained? Does Transgrid take responsibility to do some maintenance/remediation work on the site?
6. Next steps and RAP/KO review	Roland Atkinson: Raised issue of being paid to read the ACHAR report. Takes 1-2 days to read the report. Raised that if it's a priority it should be paid. Pay for 2 people for X hours. David Crew: Raised that Transgrid can't assume that not getting a response by a deadline means that there are no issues. David Crew: Suggested another session to come back together with all the RAPs to share the feedback and comments. Kevin Atkinson: Suggested that still have individual AFG where they can see the comments from the all the RAPs. Allows them to give feedback on where they agree/disagree.	**ACTION** – Transgrid to examine the possibility of paying RAPs for reading the ACHAR

Meeting Minutes

Meeting title:	Wamba Wemba Aboriginal Focus Group	**Date:**	4 June 2025
Location:	Moulemain Bowling Club~~Wagga Wagga Discovery Hub~~	**Time:**	11:00am – 1:00pm
Chairperson:	Nicola Hayes/Geoff Hudson		
Attendees:			**Apologies:**
Geoff Hudson (GH) Nicola Hayes (NH) Aaron Atkinson (AA) Nikki Hansell (Nikki H) Ricardo Peta Macpherson (PM)	Gary Pappin (GP) Jason Pappin (JP) Verna Pappin (VP) John Winch (JW) Patricia Winch (PW) Glen Galaway (GG)		

Agenda items

Agenda item	Notes	Decisions / actions
1. Introduction & Project Overview	GH: provided an introduction and summary of some of the main comments from the previous AFG's. GP: Expressed that he supported separation during the initial stages and that he would like the groups to meet at later stages. Suggested the possibility of nominated a few representatives from each AFG and bring them all together as a "subcommittee". GH: Discussed the possibility of adding a statement of commitment. Explained the status of the EIS and the amendment process of the EIS. Explained comments from Wagga about Aboriginal Engagement. GH: displayed map of the project overview. Explained the greenfield works will be completed as a second stage, won't occur until later.	**ACTION –** Resend the RAP protocols. **ACTION –** Send out copy of the slides to the RAPs and send a map with the overlayed countries.
2. SEARs/ methodology	NH: Explained the SEARs methodology and explained that requirements for the ACHAR. Explained how they developed the predictive model and how they conducted field surveys. NH: Explained that we are currently in the consultation phase of the report. We are required to address all the comments made in the ACHAR. GH: Acknowledge that the ACHAR is a long document which is challenging to get through. Offered that an	

Agenda item	Notes	Decisions / actions
	online call can be organised with NOHC to address and any questions or comments. NH: Explained the gaps in the survey and the areas that were not examined. VP: Asked to confirm that the areas that have not yet been surveyed will be surveyed. NH: Explained that landowners won't allow us on their properties - reason why we have not been able to survey the entire land at this point. Explained that at a later stage Transgrid will gain access to the property and a survey will be completed.	
3. Overview of results & Assessment of impacts	NH: Provided an explanation of the main findings and explained the limitation of the surveys and studies which can be done due to the codes. Explained that a management plan can be developed in consultation with the RAPs to excavate the PADs (if necessary). GP: Suggested that if the PAD is within the corridor will develop a plan with the relevant RAPs to come up with an agreed method. If it is outside the property than he does not think it is necessary to do any further studies. NH: Explained that NOHC has been overly conservative with identifying PADs to ensure that no significant sites/ artefacts that are missed. NH: Explained that the corridor assessed (200m) is greater than the actual transmission line corridor (~70m). This allows the designs the opportunity to avoid PADs and significant sites. GH: Explained the limitations of the movement of the towers, but there is the possibility for micromovements. Explained that Transgrid will try to limit total clearing. Explained that Transgrid must do biodiversity offsets e.g. Concord Property.	
4. Cultural Values Assessment	NH: Explained that EMM conducted a CVA with the nominated knowledge holders. Is currently being consulted with the knowledge holders for approval. GH: Clarified that the CVA is redacted from the EIS for the public as it is significant information. GG: Requested clarification of the process that occurs when artefacts are found during walk overs/surveys etc. What happens to the artefacts – requested that artefacts are kept ~~them~~ on country. NH: explained that we will liase with the RAPs to come up with a management plan to discuss what will happen if we find any artefacts.	
5. Mitigation Measures	NH: Explained recommendations:	

Agenda item	Notes	Decisions / actions
	1. All sites will be assessed. Including if any changes are made which affects which areas will be affected. 2. Avoidance is always the first preference. 3. Exclusion zones around PADs and sites. 4. Cultural Heritage training will be completed for all construction workers 5. Unexpected finds protocols RAPs will be consulted on the management plans. Need to be developed with the Contractors. GG: Shared that in Victoria it is a requirement that Contractors have to undergo cultural training. GH: Raised the possibility of bringing out contractors out on country for cultural training.	
6. Next steps and RAP/KO review	NH: Shared that comments on the ACHAR are due on June 16th. Shared that she can put together summaries or sit with them online to discuss the main findings from the documents, to help the RAPs put together their comments. All comments are put into the report appendix and must include a response. NOHC plans to go back out and conduct further surveys. GP: Shared that he has read the ACHAR and will submit his comments before June 16th.	
7. Other	GP: Raised that he was concerned about vegetation covering significant sides. Raised concerns that intellectual property has not been discussed. GP: Shared that if he finds any significant artefacts he will relocate it himself. Requested changes to the RAP protocol about what happens to artefacts that are found. GP: Expressed concerns with previous ~~heritage officer~~archaeologist. Was notified that they Archaeologist is no longer with NOHC. GP: Expressed that he would like RAPs to be notified of any future excavations of PADs. GP: Expressed that no Murri Murri people were included on the list of RAPs in the protocol. That the transmission line crosses Murri Murri country. GH: Agreed that if we find any artefacts. The RAPs will be consulted and they can choose what happens to the artefacts. VP: raised a question if there were any Wamba Wamba or Murri Murri knowledge holders.	**ACTION –** Review the RAP protocol and how it addresses artefact finds.

Official

APPENDIX 2

EXTENSIVE AHIMS SEARCH RESULTS

Client Service ID: 991410, search date: 2/4/2025

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : VNI West ACHAR

Client Service ID : 991410

SiteID	SiteName	Datum	[redacted]	Context	Site Status **	SiteFeatures	SiteTypes	Reports
55-1-0055	PEC-E-45	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Mrs.Elisa Scorsini		Permits		
55-1-0111	Yanco Delta AS 05	GDA		Open site	Valid	Artefact : -		105539
	Contact	Recorders		- North Sydney,Miss.pauline ramsey		Permits		
55-1-0162	DEHW-2023-HAS13	GDA		Open site	Valid	Artefact : -, Hearth : -		
	Contact	Recorders		rs,Miss.Phillipa O'Brien-Pounde		Permits		
56-1-0729	HL-01	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Miss.Ellaine Dickens		Permits		
55-1-0053	PEC-E-43	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Mrs.Elisa Scorsini		Permits		
55-1-0057	PEC-E-47	GDA		Open site	Valid	Hearth : -		
	Contact	Recorders		ts Pty Ltd,Mrs.Elisa Scorsini		Permits		
55-1-0060	PEC-E-50	GDA		Open site	Valid	Hearth : -		
	Contact	Recorders		ts Pty Ltd,Mrs.Elisa Scorsini		Permits		
55-1-0052	PEC-E-G2	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Mr.Adrian Cressey		Permits		
55-1-0185	DEHW-2024A-ST7	GDA		Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders		rs,Mr.Angus Lynch		Permits		
55-1-0059	PEC-E-49	GDA		Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders		ts Pty Ltd,Mrs.Elisa Scorsini		Permits		
55-1-0179	DEHW-2024A-AS3	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		rs,Mr.Angus Lynch		Permits		
56-1-0730	HL-02	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Miss.Ellaine Dickens		Permits		
55-1-0131	PEC-E-95	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Miss.Ellaine Dickens		Permits		
56-1-0742	WAS02-01	GDA		Open site	Valid	Artefact : -		
	Contact	Recorders		ts Pty Ltd,Miss.Ellaine Dickens		Permits		
55-1-0058	PEC-E-48	GDA		Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Elisa Scorsini			Permits		

Report generated by AHIMS Web Service on 02/04/2025 for Darren (Navin Officer) Curnoe for the following area at Search using shape-file T20241220_VNI_W_ProjectFootprint_Rev1_7_MGA55_GDA2020 with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 16

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : VNI West ACHAR
Client Service ID : 991410

SiteID	SiteName	Datum	[redacted]	Context	Site Status **	SiteFeatures	SiteTypes	Reports
56-1-0770	HL-PAD-01	GDA		Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes			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 02/04/2025 for Darren (Navin Officer) Curnoe for the following area at Search using shape-file T20241220_VNI_W_ProjectFootprint_Rev1_7_MGA55_GDA2020 with a buffer of 0 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 16

APPENDIX 3

NEW SITES RECORDED

The following section provides a description of each individual site recorded during survey. Distances to the nearest creek/river are measured to the nearest named watercourse.

VNIW-A-03	Artefact Scatter
LGA: Murrumbidgee	**LALC:** Griffith
Visibility: 80%	Exposure: 70%
Landform: Undulating plain	**Vegetation:** Open field/grassland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 1,814 m	**Size:** 10 m x 10 m

An artefact scatter comprising two flake artefacts of diverse raw materials located on an open scald clay pan. There is low potential for other archaeological features/objects to be present in subsurface context indicating the site is likely to sample background scatter. The landscape here has been badly affected by aeolian and water surface erosion with extensive topsoil loss due to livestock (principally sheep) grazing.

Quartz scrapper 21 mm x 12 mm x 6 mm

Silcrete flake 21 mm x 18 mm x 3 mm with 50% cortex



Landscape context



Artefacts

LGA: Edward River **LALC:** Deniliquin

Visibility: 90% Exposure: 20%

Landform: Undulating plain Vegetation: Scrub

Soil: Yellowish red sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1,814 m **Size:** 10 m x 5 m

An artefact scatter with seven artefacts made from diverse raw material types on an open scald clay pan. There is some potential for other archaeological features/objects to be present in subsurface context.

There are seven grey and white artefacts one quartz thumbnail scrapper and six silcrete proximal flakes, 4 with no cortex one with 10% cortex one with 40% cortex and one with 50% cortex.

Artefact 1	Silcrete - 10 x 8 x 2 mm
Artefact 2	Silcrete - 25 x 10 x 4 mm
Artefact 3	Silcrete - 18 x 15 x 3 mm
Artefact 4	Silcrete - 10 x 5 x 4 mm
Artefact 5	Silcrete – 15 x 8 x 3 mm
Artefact 6	Silcrete – 8 x 5 x 2 mm
Artefact 7	Quartz – 18 x 13 x 2 mm



Landscape context



Artefacts

Official

LGA: Edward River

LALC: Cummeragunja

Visibility: 30%

Exposure: 40%

Landform: Undulating plain

Vegetation: Scrub

Soil: Yellow-red clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 1,000 m

Size: 120 m x 50 m

The site comprises a series of dry circular pools within a dry swamp containing extensive ground coverage of the Nardoo plant. This site was identified by RAPs as a place of cultural significance to the local community. There is low potential for other archaeological features/objects to be present in subsurface context.



View of site looking west



View of site looking north

Official

LGA: Murray River	**LALC:** Wamba Wamba
Visibility: 100%	Exposure: 100%
Landform: Undulating plain	Vegetation: Scrub
Soil: Yellow-red sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 2,070 m	**Size:** 4 m x 3 m

A small and highly weathered in situ hearth with clay nodules/heat retainers designated a "likely" hearth. No ash, artefacts or bones are present among the exposed hearth materials. The hearth measures 2 m x 1.5 m. The landscape here has been badly affected by aeolian and water surface erosion with extensive topsoil loss due to livestock (principally sheep) grazing.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Lansdcape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 90%

Landform: Flood plain **Vegetation:** Open woodland

Soil: Pale grey-brown clay silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 90 m **Size:** 0.5 m x 0.5 m

A small and highly weathered in situ hearth designated a "likely" hearth. The site has been heavily eroded with small clay nodules visible on the surface. The surface of the hearth has white calcrete soil and is circular in shape. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “buried” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed herath

Official

LGA: Murrumbidgee **LALC:** Griffith

Visibility: 80% Exposure: 10%

Landform: Undulating plain Vegetation: Scrub

Soil: Pale yellow clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 2,496 m **Size:** 10 m x 10 m

The site comprises widely scattered clay nodule heat retainers with a central concentration measuring 10 cm x 10 cm. It is designated a "possible" hearth. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murrumbidgee **LALC:** Cummeragunja

Visibility: 70% Exposure: 80%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Red-yellow silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 20 m **Size:** 1.2 m x 1.1 m

In situ and surface scattered burnt clay nodules, exposed within in a track, main concentration 50 cm x 30 cm. It is designated a "likely" hearth. The site is highly weathered and shows evidence of vehicle and stock damage. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “disturbed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Edward River **LALC:** Griffith

Visibility: 60% Exposure: 50%

Landform: Undulating plain Vegetation: Scrub

Soil: Red-yellow clay **Land use:** Agriculture/Grazing

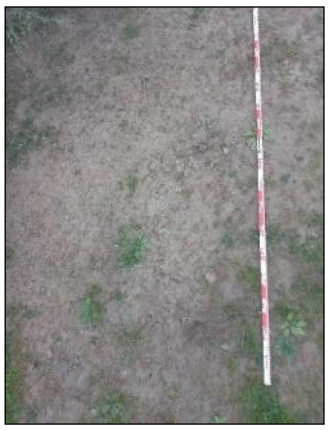
Distance to nearest creek/river: 2,585 m **Size:** 1.4 m x 60 m

The site comprises two hearths both of which are designated a "likely" hearth. The first is made up of in situ burnt clay heat retainers with the main concentration measuring 45 cm by 30 cm. The second is situated 8 m to the southeast of the first and is a small cluster of four clay nodules with the main concentration measuring 35 cm by 15 cm. No ash, artefacts or bones are present among the exposed hearth materials. There is potential for other archaeological features/objects to be present in subsurface context.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). The first hearth is categorised as a “scattered” hearth and the second as a “partially” exposed hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 10%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 154 m **Size:** 1 m x 1 m

The site comprises an isolated small burnt clay chunk on open ground with smaller fragments of in situ clay heat retainers designated a "likely" hearth. This likely hearth fragment is 35 x 25 x 20 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 70% Exposure: 10%

Landform: Flod plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 390 m **Size:** 1 m x 1 m

The site comprises an isolated burnt clay chunk on open ground designated a "possible" hearth. The possible hearth/heat retainer is 115 x 95 x 90 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 20%

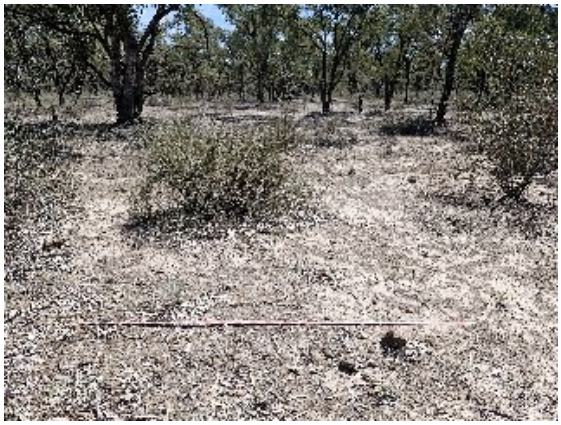
Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 670 m **Size:** 1.8 m x 0.5 m

A small and highly weathered likely hearth located on open ground comprising surface clay nodules and in situ fragments of heat retainer and designated a "likely" hearth. The site has been eroded with small clay nodules visible on the surface. The surface of the hearth is 1.8 m long and 0.5 m wide with one exposed clay heat retainer measuring 120 x 100 x 80 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 20%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 722 m **Size:** 1 m x 0.8 m

In situ hearth material/heat retainer fragments and designated a "likely" hearth. The site is on an open forested area with some surface disturbance. There is moderate potential for other archaeological features/objects to be present in subsurface context. No ash, artefacts or bones are present among the exposed hearth materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposd hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 30% Exposure: 80%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 710 m **Size:** 0.8 m x 0.7 m

In situ hearth material designated a "likely" hearth. The site is on an open forested area with some surface disturbance. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 50%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 691 m **Size:** 2.2 m x 1.2 m

In situ hearth materials/heat retainers designated a "likely" hearth. The site is on an open forested area with some surface disturbance. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 10%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 684 m **Size:** 1 m x 0.6 m

In situ hearth material/fragment heat retainers designated a "likely" hearth. The site is on an open forested area with some surface disturbance. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 90%

Exposure: 10%

Landform: Flood plain

Vegetation: Regrowth woodland

Soil: Grey silt

Land use: Agriculture/Grazing

Distance to nearest creek/river: 635 m

Size: 13 cm x 8 cm

Large burnt clay fragment with possible in situ small fragments a "possible" hearth. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape image not available

Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 20%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 580 m **Size:** 0.5 m x 0.3 m

A weathered in situ hearth located on open ground designated a "likely" hearth. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 100%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 150 m **Size:** 4.5 m x 3 m

A weathered in situ hearth located on open ground designated a "likely" hearth. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 50%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 123 m **Size:** 2.7 m x 1.5 m

A large weathered in situ “likely” hearth located on open ground. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 20%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 105 m **Size:** 10 m x 8 m

A large weathered in situ “likely” in situ hearth located on open ground. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and is weathered. However, the object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 10%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 289 m **Size:** 8 m x 2.5 m

A large weathered in situ “likely” hearth located on open ground. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 100%

Landform: Undulating plain Vegetation: Scrub

Soil: Grey clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1326 m **Size:** 2.5 m x 1 m

A weathered in situ “likely” hearth located surrounded by scrub. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 70%

Exposure: 80%

Landform: Flood plain

Vegetation: Open Forest

Soil: Grey brown silty clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 433 m

Size: 2.5 m x 1 m

The site comprises three nodules of burnt clay/heat retainer on open ground designated a “possible” hearth. The possible heat retainer is 90 x 90 x 70 millimetres. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 90%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey brown silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 645 m **Size:** 70 cm x 60 cm

The site comprises isolated nodules of clay on open ground designated a “possible” hearth. The main possible heat retainer is 40 x 40 x 35 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 90%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey brown silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 577 m **Size:** 3 m x 2 m

The site comprises one large burnt clay heat retainer and isolated nodules of clay on open ground designated a “possible” hearth. The possible main heat retainer is 230 x 190 x 55 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 80%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey brown silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 531 m **Size:** 1 m x 1 m

The site comprises three isolated nodules of clay on open ground designated a “possible” hearth. The possible heat retainers are 60 x 40 x 30 mm, 50 x 40 x 20 mm, 45 x 30 x 10 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 90%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 242 m **Size:** 2 m x 1 m

The site comprises isolated nodules of clay on open ground designated a “possible” hearth. The possible main heat retainer is 40 x 40 x 15 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landsape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 173 m **Size:** 2 m x 2 m

A small weathered in situ “likely” hearth located on open ground. The site has been heavily eroded with small clay nodules visible on the surface. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 70% Exposure: 60%

Landform: Flood plain Vegetation: Grassland

Soil: Grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 2 m **Size:** 3 m x 1 m

A small and highly weathered “possible” hearth. The site has been heavily eroded with small clay nodules visible on the surface. The surface of the hearth exhibits a white calcrete soil. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 100% Exposure: 90%

Landform: Undulating plain Vegetation: Open Scrub

Soil: Reddish yellow clay **Land use:** Agriculture/Grazing/Dirt Track

Distance to nearest creek/river: 7,838 m **Size:** 1 m x 1 m

In situ clay nodules, within in dirt track, no loose nodules, main concentration is 50 cm x 30 cm and designated a “likely” hearth. No ash, artefacts or bones are present among the exposed hearth materials. There is moderate potential for other archaeological features/objects to be present in subsurface context.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River | **LALC:** Wamba Wamba

Visibility: 80% | Exposure: 80%

Landform: Undulating plain | Vegetation: Grassland

Soil: Reddish yellow clay | **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 2,185 m | **Size:** 3 m x 1 m

Two scattered hearths with surface heat retainers designated a “possible” hearth. The site comprises an isolated hearths of clay on open ground nodules from two hearths. The possible main heat retainer is 45 x 40 x 35 mm. No ash, artefacts or bones are present among the exposed hearth materials. There is low potential for other archaeological features/objects to be present in subsurface context.

These hearths have been disturbed by erosion, have been weathered, and the heat retainer materials have been scattered on the ground surface. These objects are considered a “possible” hearth on account of the size and density of heat retainer materials, landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. These hearths are categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landsape context



Clay heat retainer

Official

VNIW-A-0126	Isolated Find
LGA: Edward River	**LALC:** Deniliquin
Visibility: 100%	Exposure: 100%
Landform: Undulating plain	**Vegetation:** Open scrub
Soil: Reddish yellow sandy clay	**Land use:** Agricultural/Grazing
Distance to nearest creek/river: 1,015 m	**Size:** 8 m x 3 m

The site contains a single grey silcrete flake measuring 15 x 13 x 2 mm found on the surface of a scald (clay) pan on an open field. There is low potential for other archaeological features/objects to be present in subsurface context.

Landscape image not available	
	Artefact

Official

LGA: Edward River **LALC:** Deniliquin

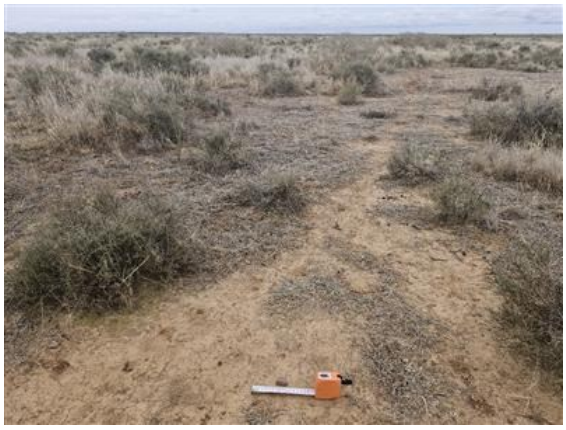
Visibility: 100% Exposure: 100%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1,438 m **Size:** 10 m x 5 m

The site contains a potential manuport or artefact measuring 35 x 25 x 12 mm. The potential artefact was a river pebble well away from any potential water source. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0132 Isolated Find

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Grassland

Soil: Brown silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 228 m **Size:** 1 m x 1 m

The site contains a single isolated sandstone manuport with grind marks, measuring 150 x 60 x70 mm. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0135 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 70% Exposure: 20%

Landform: Undulating plain Vegetation: Grassland

Soil: Grey-yellow silty sand **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 333 m **Size:** 1 m x 1 m

The site contains a single pink grey silcrete flaked artefact, measuring 40 x 25 x 8 mm with a broken termination. There is low potential for other archaeological features/objects to be present in subsurface context.



Landsape context



Artefact

Official

VNIW-A-0140 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 50% Exposure: 50%

Landform: Plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 794 m **Size:** 60 m x 30 m

The site contains a single isolated quartz flake artefact measuring 15 x 5 x 2 mm. The artefact was found on an open red clay erosion scald pan. The site is located on the western edge of PAD 19 There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0142 Isolated Find

LGA: Edward River **LALC:** Deniliquin

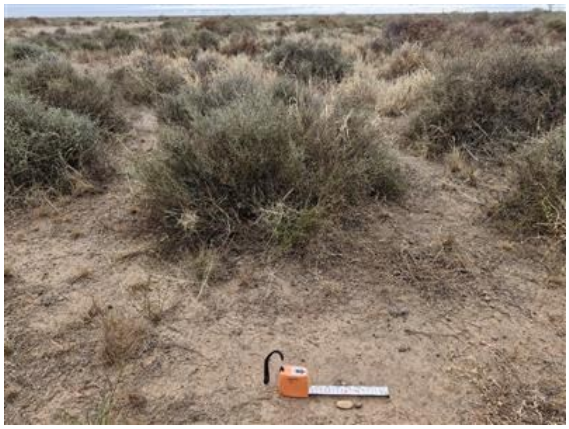
Visibility: 100% Exposure: 100%

Landform: Undulating plain Vegetation: Open scrub

Soil: Yellowish brown silty sand **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 914 m **Size:** 1 m x 1 m

This site contains a single isolated quartzite manuport measuring 40 x 17 x 11 mm. A river pebble found well away from the closest water source. The manuport was found in scrub land with sparse ground cover. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

VNIW-A-0143 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 70% Exposure: 70%

Landform: Undulating plain Vegetation: Grassland

Soil: Grey silty sand **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 870 m **Size:** 0.5 m x 0.3 m

The site contains a single grey silcrete flaked artefact, measuring 22 x 22 x 4 mm with a feather termination. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0144 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 100% Exposure: 100%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1,131 m **Size:** 10 m x 3 m

The site contains a single grey silcrete flake measuring13 x 11 x 2 mm. The landscape here is highly disturbed. There is low potential for other archaeological features/objects to be present in subsurface context



Landscape image not available Artefact

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 80%

Landform: Undulating plain

Vegetation: Grassland

Soil: Red-yellow clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 1,990 m

Size: 4 m x 20 m

VNIW-A-0145 is comprised of an isolated grey silcrete flake on an open scald pan. The flake measures 19 mm by 12 mm by eight mm with a feather termination. The artefact was located on open ground with sparse vegetation surrounding the site. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0146	Isolated Find
LGA: Edward River	**LALC:** Cummerangunja
Visibility: 70%	Exposure: 70%
Landform: Undulating plain	Vegetation: Grassland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 1,966 m	**Size:** 5 m x 5 m

VNIW-A-0146 contains a single isolated silcrete flake measuring 40 x 28 x 4 mm found on a farm track. The area on which it was found was highly disturbed and the fields to the south were ploughed and irrigated. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape contex



Artefact

VNIW-A-0148	Isolated Find

LGA: Edward River	**LALC:** Deniliquin
Visibility: 80%	Exposure: 70%
Landform: Undulating plain	Vegetation: Open scrub
Soil: Reddish yellow clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 6,234 m	**Size:** 20 m x 15 m

VNIW-A-0148 contains two artefacts, one quartzite artefact measuring 12 x 10 x 4 mm and one silcrete artefact measuring 15 x 15 x 5 mm. The site is on a red clay scald pan adjacent to a farm track. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefacts

Official

VNIW-A-0149	Isolated Find

LGA: Edward River	**LALC:** Deniliquin
Visibility: 80%	Exposure: 80%
Landform: Undulating plain	Vegetation: Open scrub
Soil: Reddish yellow silty sand	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 1,450 m	**Size:** 1 m x 6 m

VNIW-A-0149 contains a single isolated silcrete flake on an open scald pan. The flake measures 13 mm by 13 mm by three mm with 50 per cent cortex and hinge termination. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape image not available

Artefact

Official

VNIW-A-0152 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 100% Exposure: 100%

Landform: Undulating plain **Vegetation:** Open scrub

Soil: Grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 704 m **Size:** 10 m x 10 m

VNIW-A-0152 contains a single quartz artefact with feather termination measuring 12 x 11 x 3 mm. The site is located on a deflated swamp. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 60%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 934 m

Size: 20 m x 20 m

VNIW-A-0157 contains two artefacts on a crescent shaped scald pan. One silcrete artefact measuring 18 x 10 x 6 mm and one quartz artifact measuring 8 x 7 x 2 mm. The site is associated with PAD 019. There is low potential for other archaeological features/objects to be present in subsurface context.

Landscape image not available



Artefacts

Official

VNIW-A-0158	Isolated Find
LGA: Murray River	**LALC:** Wamba Wamba
Visibility: 80%	Exposure: 80%
Landform: Undulating plain	Vegetation: Open scrub
Soil: Yellowish brown silt	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 389 m	**Size:**1 m x 1 m

VNIW-A-0158 comprises a single isolated broken volcanic brown hammerstone 80 x 35 x 40mm with 50% cortex. The site is part of PAD 012. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 80%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Red-yellow silty sand

Land use: Agriculture/Grazing

Distance to nearest creek/river: 566 m

Size: 3 m x 10 m

VNIW-A-0163 contains a single isolated quartz flake, measuring 40 x 10 x 8 mm. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0168	Isolated Find

LGA: Edward River	**LALC:** Griffith
Visibility: 80%	Exposure: 20%
Landform: Undulating plain	Vegetation: Scrub
Soil: Yellow-grey silty clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 2,489 m	**Size:** 1 m x 1 m

VNI-A-0168 is flaked fragment of hammerstone. The artefact is a flaked piece of broken hammerstone. The artefact is made from a red volcanic stone. The artefact measures 30 mm by 25 mm by 8 mm and has no cortex. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 70%

Exposure: 80%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Red-yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 1,100 m

Size: 4 m x 4 m

The flake is pink silcrete measuring 18 mm by 16 mm by four mm with 50 per cent cortex and a feathered termination. The artefact was found on a scald pan in an open field. The site is part of PAD 06. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 70%

Landform: Undulating plain Vegetation: Open scrub

Soil: Brown grey silty clay Land use: Grazing

Distance to nearest creek/river: 167 m **Size:**1 m x 1 m

VNI-A-0173 comprises isolated heat retainer fragments designated a “possible” hearth. The site is one meter in length and averages one metres in width. The clay nodule measures 55 mm in length and 35 mm in width. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Artefact

LGA: Edward River

LALC: Cummeragunja

Visibility: 70%

Exposure: 20%

Landform: Undulating plain

Vegetation: Grassland

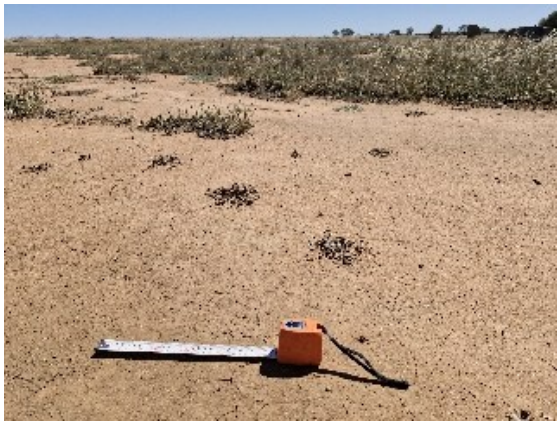
Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

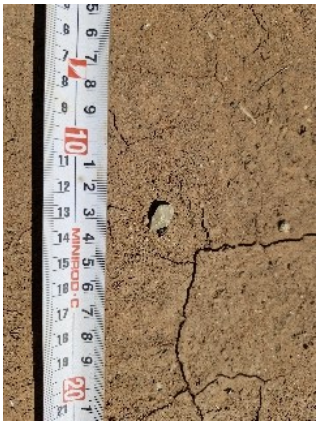
Distance to nearest creek/river: 1,923 m

Size: 30 m x 10 m

Single grey silcrete artefact proximal split flake with feather termination measuring 14 x 9 x 3 mm. The artefact is located on the edge of a ploughed and irrigated field. The site is not disturbed itself but the surrounds are disturbed. The site is adjacent to PAD 09. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0176	Isolated Find

LGA: Murray River	**LALC:** Wamba Wamba
Visibility: 60%	Exposure: 50%
Landform: Undulating plain	Vegetation: Grassland
Soil: Grey brown silt	**Land use:** Agriculature/Grazing/Dirt Road
Distance to nearest creek/river: 830 m	**Size**: 1 m x 1 m

Single potential river cobble hammer or grinding stone measuring 120 x 100 45 mm with 80% cortex. Found on the surface on a road shoulder. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 100%

Exposure: 70%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 688 m

Size: 1.5 m x 0.7 m

Single isolated proximal flake with feather termination 10 x 8 x 2 mm. Found on an open red clay scald. The site is part of PAD 019. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0179 Isolated Find

LGA: Edward River **LALC:** Griffith

Visibility: 70% Exposure: 50%

Landform: Undulating plain **Vegetation:** Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1,197 m **Size:** 1 x 1 m

Single potential flaked ceramic from telecom insulator 32 x 10 x 6 mm. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0185 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river:75 m

Description

VNI-A-0185 is a possible aboriginal modified tree. Located on a stream bank bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with a scar potential cultural origin. The tree circumference is approximately 2.15 m, and its height is roughly nine metres, and the tree is in medium condition. The scar is located on the south side of the tree. There are axe/adze marks at the base of the scar. The scar length excluding regrowth is 78 cm and including regrowth the scar is 118 cm in length. Scar width excluding regrowth is 25 cm and including regrowth the scar is 66 cm. The scar's regrowth depth is 13 cm. The scar edges are regular and symmetrical.

There is photographic evidence that the tree is at least 64 years old as the 1960 aerial image of the project footprint demonstrates a number of trees on the alignment. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are visible adze or axe marks on the scar.

Tree is estimated to be 100+ years old

Tree is endemic to area.

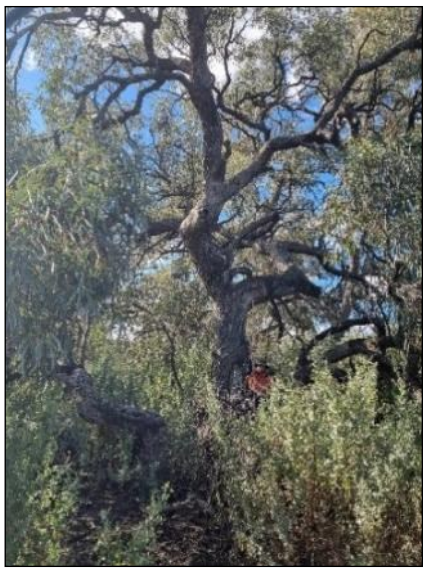
Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0186 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 106 m

Description

VNI-A-0186 is a possible aboriginal modified tree. Located on a flat plain bordering an open forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with a scar of potential cultural origin. The tree circumference is approximately 3.6 m, and its height is roughly 10 m, and the tree is in medium condition. The scar is located on the western side of the tree. Scar length excluding the regrowth is 48 cm and including regrowth the scar is 84 cm in length. The width of the scar excluding regrowth is 22 cm and including regrowth the scar is 63 cm in width. The scar edges are regular and symmetrical.

There is photographic evidence that the tree is at least 64 years old as the 1960 aerial image of the project footprint demonstrates a number of trees on the alignment. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are rounded

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

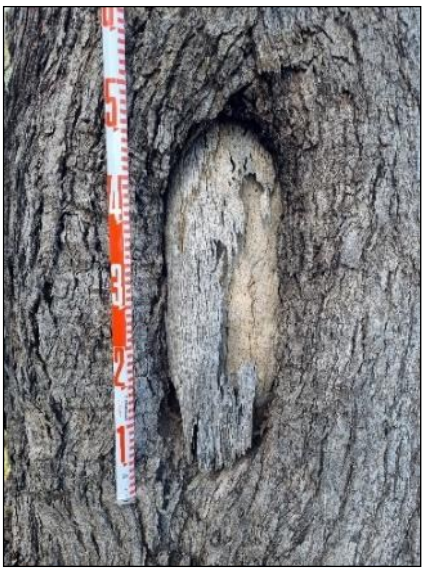
Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0187 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 183 m

Description

VNI-A-0187 is a possible aboriginal modified tree and an isolated clay nodule. Located on a flat plain bordering a closed forest. The soil type is grey, brown sandy clay.

The nodule is 7 cm in length and 6 cm in width. The isolated clay nodule is loose on the ground and is situated six metres to the west of the tree

The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 2.5 m, and its height is roughly seven metres, it is in fair condition. The scar is located on the western side of the tree. Scar length excluding regrowth is 73 cm and including regrowth the scar is 103 cm m in length. Scar width excluding regrowth is 29 cm and including regrowth the scar is 59 cm in width. The regrowth depth is 10 cm. The scar edges are regular and symmetrical with axe or adze marks situated at the top of the scar.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are visible adze or axe marks at the top of the scar.

Tree is estimated to be 100+ years old

Tree is endemic to area.

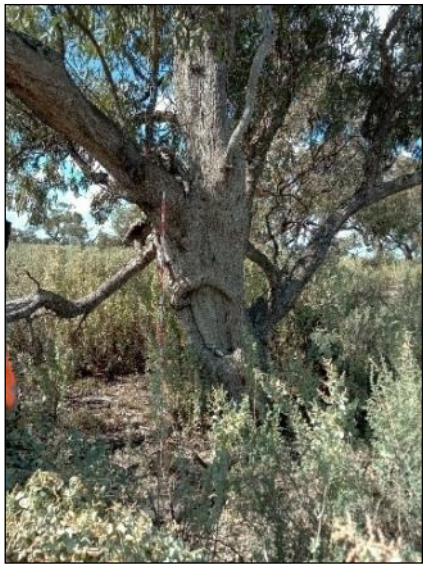
Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0188 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 187 m

Description

VNI-A-0188 is a possible aboriginal modified tree. Located on a flat plain bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 2.4 m, and its height is roughly six metres, it is in fair condition with associated with natural scars from natural stressors. The scar is located on the western side of the tree and is in poor condition. Scar length including regrowth is 65 cm. Scar width including regrowth is 15 cm. The scar edges are irregular and asymmetrical.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.

Official



Modified tree in landscape context



Scarring

VNIW-A-0189 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 166 m

Description

VNI-A-0189 is a possible aboriginal modified tree. Located on a flat plain bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 3.9 m, and its height is roughly 7 m, it is in fair condition with associated with natural scars from natural stressors. The scar has white staining on the surface and a potential secondary scar above the main scar on the tree. The scar is in fair condition. Scar length is 160 cm and including regrowth is 191 cm. Scar width is 22 cm and including regrowth is 66 centimetres. The scar depth is 13 cm. The scar edges are regular and symmetrical.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0190 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 5,000 m

Description

38 l, 8 w, 3 d, tree 14m, 110cm cir dead tree no bark

VNI-A-0190 is a possible aboriginal modified tree. Located on a flat plain bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 1.1 metres, and its height is roughly 14 m, it is in poor condition and the tree is dead. Scar length including regrowth is 38 cm. Scar width including regrowth is 8 centimetres. The scar depth is 3 cm. The scar edges are regular and symmetrical, with flattened edges at the top and base.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are regular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0191 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 5,000 m

Description

VNI-A-0191 is a possible aboriginal modified tree. Located on a flat plain bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 1.2 m, and its height is roughly 14 m, it is in good condition. The scar is located on the western side of the tree and is in good condition. Scar length including regrowth is 36 cm. Scar width including regrowth is 14 cm. The scar depth is 3 cm. The scar edges are irregular and asymmetrical.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

Official

VNIW-A-0192 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 5,100 m

Description

VNI-A-0192 is a possible aboriginal modified tree. Located on a flat plain bordering a closed forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree circumference is approximately 1.9 m, and its height is roughly 16 m, it is in fair condition with associated with natural scars from natural stressors. The scar is located on the western side of the tree and is in fair condition. Scar length including regrowth is 80 cm. Scar width including regrowth is 62 cm. Scar depth including regrowth is 5 cm The scar edges are regular and symmetrical. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are regular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

VNIW-A-0193 Modified Tree

LGA: Murray River **LALC:** Wamba Wamba

Landform: Flood plain **Vegetation:** Closed woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 291 m

Description

VNI-A-0193 is a possible aboriginal modified tree. Located on a flat plain east of the Niemur river. The tree is an old growth of *Eucalyptus largiflorens* (black box) with one scar of potential cultural origin. The tree width is approximately 0.8 m, and its height is roughly 10 m, it is in good condition. The scar is located on the western side of the tree and is in fair condition. Scar length including regrowth is 120 cm and an internal length of 40 cm. Scar width including regrowth is 96 centimetres with an internal width of 15 cm. The scar edges are regular and symmetrical.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.

Official



Modified tree in landscape context



Scarring

VNIW-A-0198 Isolated Find

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% **Exposure:** 70%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Yellow-grey silty clay **Land use:** Agriculture

Distance to nearest creek/river: 1900 m **Size:** 10 m x 5 m

VN-A- 0198 Silcrete flake. The site is 10 meter long with and average width of 5 meter. The visibility and exposure are 90%. The land form is a plain on the edge of a plowed field and the land use is pastural and grazing. The artefact is a flake, it is white silcrete. The artefact is 13mm x 9mm x2mm with 5% cortex. The vegetation is cleared. The soil type is orange brown clay silt



Landscape context not available **Isolated Fing**

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 70%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Yellow-grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 2,800 m **Size:** 1.9 m x 2.1 m

VNI-A-0210 is a small and highly weathered in situ “likely” hearth. The surface is white calcrete soil and is circular in shape. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Suface exposed hearth

Official

VNIW-A-0211 Modified Tree

LGA: Edward River **LALC:** Deniliquin

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 267 m

Description

VNI-A-0211 is a modified tree sitting within a grove of trees and wooded area on the northern bank of the Edward River/Kolety, between the Edward River/Kolety and Balranald Road. The site is located 280 m north of the Edward River/Kolety and is approximately 390 m south of Balranald Road. The scar is 140 cm long by 50 cm wide and 15 cm deep in a grey box tree approximately 8 m high and 2.5 m wide. The scar is on the western side of the tree.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are no visible adze or axe marks.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Possible.

Scar has an aboriginal origin:

Possible.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

LGA: Murrumbidgee	**LALC:** Griffith
Visibility: 90%	Exposure: 70%
Landform: Undulating plain	Vegetation: Woodland
Soil: Yellow-grey silty clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 2,800 m	**Size:** 45 m x 18 m

Three hearths and one isolated find combined into a single site. There is low potential for other archaeological features/objects to be present in subsurface context.

Hearth 1 is a clay heat retainer identified as part of the test pit for PAD 20 and designated a “likely” hearth. The heat retainer was identified close to pit 2 and was left in situ and undisturbed.

Hearth 2 is a “likely” hearth located on the eastern extent of the site. The hearth is 100 x 80 cm. There is some surface disturbance.

Hearth 3 is a “likely” hearth located 6 metres to the south of hearth 2. The hearth is 50 x 50 cm. with small heat retainers in situ.

Single broken hammerstone was identified on an open scald pan. The artefact measured 55 x 45 30 mm and is yellow silcrete. The site was excavated as part of the PAD 20 testing with no subsurface artefacts identified.

All hearths have been exposed by erosion and have been weathered to some extent. These objects are considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, association with other archaeological materials, and the fact the land is “undisturbed” in accordance with DECCW (2010a). They are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Edward River	**LALC:** Cummeragunja
Visibility: 60%	Exposure: 60%
Landform: Undulating plain	Vegetation: Grassland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 1,883 m	**Size:** 58 m x 106 m

This site comprises three hearths, two artefact scatters and two isolated finds located at this site. PAD09 was tested outside the site boundary to test the extent or the site. There is low potential for other archaeological features/objects to be present in subsurface context.

Hearth 1 ("likely" hearth) measures 150 x 120 x 4 cm with in situ clay heat retainers and a dark smear.

Hearth 2 ("likely" hearth) measures 100 x 60 cm with in situ clay heat retainers.

Hearth 3("likely" hearth) measures 300 x 100 mm with in situ clay heat retainers and a single artefact and a dark smear.

No ash, artefacts or bones are present among the exposed hearth materials. These hearths have been exposed by erosion and weathered to some extent. These objects are considered a "likely" hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is "undisturbed" in accordance with DECCW (2010a). These hearths are categorised as a "partially exposed" hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Artefact Scatter 1 measuring 10 x 3 m with 3 artefacts, 2 silcrete 15 x10 x 3 mm and 10 x 8 x 5 mm and 1 hammerstone 20 x 17 x 12 mm

Artefact Scatter 2 measuring 15 x 10 metres with 2 silcrete artefacts 20 x 12 x 10 mm and 12 x 10 x 4 mm

Quartz flake measuring 10 x 10 x 6 mm

Silcrete proximal flake measuring 20 x 15 x 2 mm with 25% cortex with a hinged termination



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – artefact scatter 1



Artefact scatter 1

Official



Landscape image not available

Artefact scatter 2





Landscape context – isolated find 1

Isolated find 1

LGA: Edward River | **LALC:** Deniliquin

Visibility: 100% | Exposure: 100%

Landform: Undulating plain | Vegetation: Open scrub

Soil: Reddish yellow sandy clay | **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 56 m | **Size:** 94 m x 19 m

Artefact scatter with five artefacts contained in a scald (clay) pan. There is low potential for other archaeological features/objects to be present in subsurface context.

Grey silcrete flake measuring 18 x 11 x 9 mm with 50% cortex and a broken termination

Yellowish brown silcrete approximal flake 17 x 13 x 4 mm

Grey silcrete manuport 33 x 28 x 11 mm

Red silcrete manuport with a thin quartz vein 32 x 24 x 17 mm

Quartz flake 19 x 9 x 2 mm



Landscape context – artefact 1



Artefact 1



Landscape context – artefact 2



Artefact 2

Official



Landscape context – artefact 4



Artefact 4



Landscape context – artefact 5



Artefact 5

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 100%

Exposure: 100%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing/Irrigation Channel

Distance to nearest creek/river: 669 m

Size: 243 m x 7 m

Artefact Scatter with eight artefacts exposed on the disturbed sediments associated with a large irrigation channel. This site is heavily disturbed through earth works. It is associated with PAD 019. There is low potential for other archaeological features/objects to be present in subsurface context.

Grey silcrete flake 20 x 8 x 4 mm

Grey silcrete flake 15 x 13 x 2 mm with 50% cortex

Grey silcrete flake 20 x 16 x 3 mm with 50% cortex

Grey silcrete flake 12 x 8 x 3 mm with 50% cortex

Milky quartz flake 7 x 6 x 5 mm

Silcrete flake 17 x 18 x 4 mm

Silcrete flake 15 x 10 x 3 mm

Red silcrete flake 25 x 15 x 5 mm



Landscape context – artefact 1



Artefact 1

Official



Landscape context – artefact 2



Artefact 2



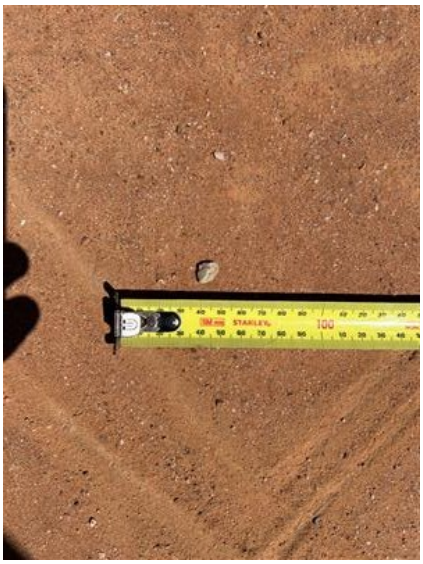
Landscape context – artefact 3



Artefact 3



Landscape context – artefact 4



Artefact 4



Landscape context – artefact 5



Artefact 6



Landscape context – artefacts 6 & 7



Artefacts 6 & 7



Landscape context – artefact 8



Artefact 8

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 70%

Landform: Undulating plain **Vegetation:** Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 172 m **Size:** 31 m x 12 m

Clay heat retainers scattered over an area 30 x 10 metres. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – hearth 1



Clay heat retainers – hearth 1

Official



Landscape context – hearth 2



Clay heat retainers – hearth 2

LGA: Edward River **LALC:** Deniliquin

Visibility: 50% Exposure: 30%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 5,574 m **Size:** 77 m x 73 m

Five surface exposed hearths within vegetated small clay pans. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All of them are categorized as “partially” exposed hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 50 x40 cm and contains in situ heat retainers.

Hearth 2 (“likely” hearth) measures 120 x120 cm and contains in situ heat retainers.

Hearth 3 (“likely” hearth) measures 50 x50 cm and contains in situ heat retainers.

Hearth 4 (“likely” hearth) measures 60 x50 cm and contains in situ heat retainers.

Hearth 5 (“likely” hearth) measures 70 x50 cm and contains in situ heat retainers.



Landscape context – hearth 1



Surface exposed hearth – hearth 1





Official

Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4



Surface exposed hearth – hearth 4



Landscape context – hearth 5

Surface exposed hearth – hearth 5

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 40%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 6,050 m **Size:** 164 m x 29 m

Three earth mounds in an undisturbed landscape associated with an isolated find and several other earth mounds (VNIW-A-0223 and VIW-A-224), hearths and PAD017. Each earth (oven) mound is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Several large black wattle trees are growing from the earth mounds suggesting a considerable age for these objects. The site has high potential for the presence of other subsurface archaeological materials.

Earth mound 1 measures 6 x 5 m, covered in burned clay and blackened soil

Earth mound 2 measures 14 x 14 m. circular grass mound entire surface covered with burn clay and blackened soil and ash

Earth mound 3 measures 6 x 6 m, entire surface covered in burned clay fragments many blackened

Hearth 1 (“likely” hearth) measures 100 x 50 cm contains in situ clay heat retainers

Flaked grey silcrete 19 x 14 x 4 mm complete single platform no cortex

Surface exposed hearth materials. No ash, artefacts or bones are present among the exposed hearth materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – earth mound 1

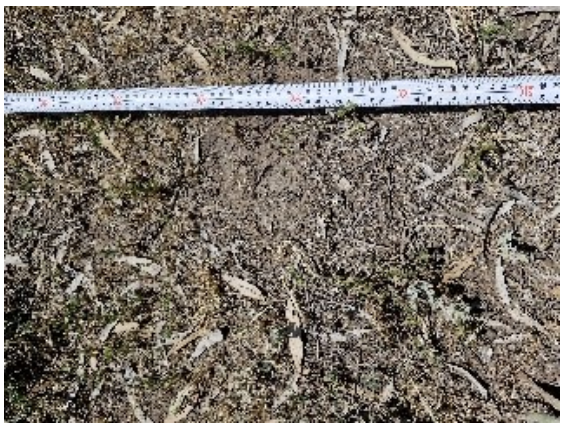


Earth mound 1

Official



Landscape context – earth mound 2



Earth mound 2



Landscape context – earth mound 3



Earth mound 3



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context



Artefact

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 30%

Landform: Undulating plain

Vegetation: Open woodland

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 5,857 m

Size: 18 m x 7.8 m

Two earth mounds in an undisturbed landscape associated with several other earth mounds (VNIW-A-0222 and VNIW-A-0224), hearths and PAD017. Each earth (oven) mound is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Several large black wattle trees are growing from the earth mounds suggesting a considerable age for these objects. The site has high potential for the presence of other subsurface archaeological materials.

Earth mound 1 measures 10 x 8 m covered with blackened earth and burnt clay.

Earth mound 2 measures 7 x 8 m covered with blackened earth and burnt clay



Landscape context – earth mound 1



Earth mound 1



Landscape context – earth mound 2



Earth mound 2

Official

LGA: Edward River | **LALC:** Deniliquin

Visibility: 70% | Exposure: 20%

Landform: Undulating plain | **Vegetation:** Open woodland

Soil: Reddish yellow sandy clay | **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 5,911 m | **Size:** 382 m x 87 m

Two earth mounds in an undisturbed landscape associated with four hearths, an isolated find, several other earth mounds (VNIW-A-0222 and VNIW-A0223), other hearth sites and PAD017. Each earth (oven) mound is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Large black wattle trees are growing from the earth mounds suggesting a considerable age for these objects. The site has high potential for the presence of other subsurface archaeological materials.

Earth mound 1 measures 14 x 10 m and is covered in burnt clay and blackened soil, has 9 wattle trees growing within its sediments

Earth mound 2 measures 12 x 8 m and is covered in burnt clay and blackened soil

Four surface exposed hearths with in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially” exposed hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 7 x 2 m, 2 hearth concentrations 20 x 20 cm (with a charcoal smear) and 30 x 20 cm

Hearth 2 (“likely” hearth) measures 2 x 1 m

Hearth 3 (“likely” hearth) measures 50 x 50 cm with in situ heat retainers

Hearth 4 (“likely” hearth) measures 130 x 60 cm with in situ heat retainers

Grey silcrete complete flake measuring 24 x 17 x 10 mm with feather termination



Landscape context – earth mound 1



Earth mound 1

Official



Landscape context – earth mound 2



Earth mound 2



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2

Image not available

Official



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4



Surface exposed hearth – hearth 4



Landscape context – hearth 5



Surface exposed hearth – hearth 5

Official



Landscape context – hearth 6



Surface exposed hearth – hearth 6

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 6,400 m **Size:** 23 m x 8.4 m

Two surface exposed hearths with in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially” exposed hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 3 x 3 m with in situ heat retainers

Hearth 2 (“likely” hearth) measures 3 x 2 m with in situ heat retainers



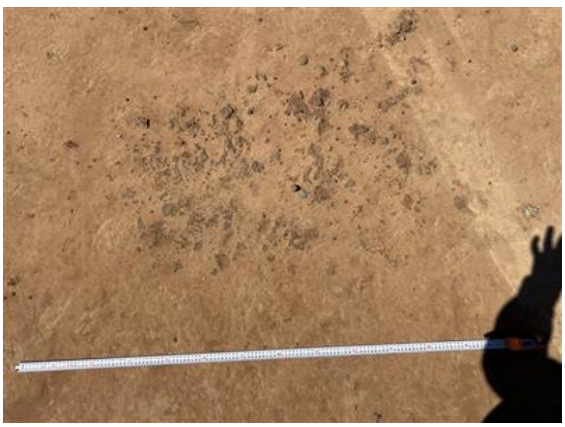
Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 100% Exposure: 10%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 6,684 m **Size:** 9.7 m x 7 m

Three surface exposed hearths with in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially” exposed hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 120 x 40 cm and has in situ heat retainers.

Hearth 2 (“likely” hearth) measures 40 x 20 cm and has in situ heat retainers

Hearth 3 (“likely” hearth) measures 5 x 5 cm and has in situ heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3

Official

LGA: Edward River **LALC:** Deniliquin

Visibility: 100% Exposure: 10%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 7,002 m **Size:** 9.2 m x 3.5 m

Two surface exposed hearths containing in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially” exposed hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 10 x 2 cm and has in situ heat retainers

Hearth 2 (“likely” hearth) measures 10 x 5 cm and has in situ heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 10%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 132 m **Size:** 15.4 m x 5.9 m

Two surface exposed hearths comprising scattered heat retainer materials. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have low potential for the presence of other subsurface archaeological materials.

These hearths have been disturbed by erosion, have been weathered, and the heat retainer materials have been scattered on the ground surface. These objects are considered a “possible” hearth on account of the size and density of heat retainer materials, their landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. These hearths are categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“possible” hearth) consists of a clay heat retainer measuring 9 x 6 x 5 cm

Hearth 2 (“possible” hearth) consists of clay heat retainers in situ and measures 55 x 10 cm.



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Clay heat retainers – hearth 2

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 10%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 340 m **Size:** 8.8 m x 3.7 m

One small “likely” hearth measuring 80 x 20 cm with a clay heat retainer in situ. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This herth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 50%

Landform: Flood plain **Vegetation:** Scrub/Open woodland

Soil: Yellow grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 3 m **Size:** 89 m x 17.2 m

This site comprises an extensive in situ shell midden on top of a river bank and two in situ hearths embedded within an exposed vertical surface of the outside bank (south side) of the Edward River/Kolety.

The shell Midden is exposed on the surface of the river bank and is partially covered in scrub vegetation. It measures 5 x 3 m with erosion exposing extensive small shell fragments on the erosional surface. No apparent ash or charcoal fragments are present.

These in situ hearths have been exposed by river erosion (lateral incision) and have been weathered to some extent. Hearth 1 is considered to be a “likely” hearth on account of the presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). Hearth 2 is a “possible” hearth which has lost most of its structure through weathering. Both are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) is exposed on the river bank at a depth below the surface of 1.5 m is measures 30 x 20 cm and has exposed burnt clay structures and heat retainers.

Hearth 2 (“possible” hearth) is exposed on the river bank at a depth below the surface of 3.5 m is measures 2 x 1.5 m and has exposed burnt clay structures and heat retainers.



Landscape context – shell midden



Surface exposed shell midden

Official



Landscape context – hearths 1 & 2



Surface exposed hearth- hearth 1



Landscape context – hearths 1 & 2



Surface exposed hearth- hearth 2

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 60% Exposure: 60%

Landform: Flood plain Vegetation: Open scrub

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 115 m **Size:** 256 m x 109 m

Four surface exposed hearths with in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially exposed” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 15 x 20 cm with scattered in situ heat retainers

Hearth 2 (“likely” hearth) measures 100 x100 cm with clay nodules eroding out of the sediment

Hearth 3 (“likely” hearth) measures 3 x 3 m with centre concentration is 190 cm X 210 cm and in situ clay heat retainers

Hearth 4 (“likely” hearth) measures 100 cm x 100 cm with centre concentration 75 cm by 65 cm and in situ clay heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1





Official

Landscape context – hearth 2



Clay heat retainers – hearth 2



Landscape context – hearth 3

Clay heat retainers – hearth 3

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 90% Exposure: 80%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 122 m Size: 209 m x 55 m

Five surface exposed hearths with extensive in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). Four hearths are as “partially exposed” or “scattered” hearths and one (Hearth 5) is a “remnant” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 130 x 110 cm with in situ clay heat retainers

Hearth 2 (“likely” hearth) measures 10 x 10 metres (centre concentration is 6m by 6m with in situ clay heat retainers). A large hearth with satellite hearths surrounding

Hearth 3 (“likely” hearth) measures 15 x 7.5 m. Large, dispersed hearth with in situ clay heat retainers and shell

Hearth 4 (“likely” hearth) measures 90 x 60 cm with in situ clay heat retainers

Hearth 5 (“likely” hearth) measures 180 x 150 cm clay pan with exposed in situ clay heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4

Image not available

Official



Landscape context – hearth 5



Surface exposed hearth – hearth 5

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 60% Exposure: 20%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 109 m **Size:** 107 m x 34.8 m

Mounded soil in vegetated area beside creek interpreted as an earth (oven). Burnt gravel and clay scattered over a wide area. The site measures 4 m in diameter and is up to 20 cm above the surrounding plain. The soil is dark grey clay with possible charcoal associated with the mounded area. There is significant clay heat retainer refuse across the mound. The site is in an open field with some stock damage. There are several other hearths north and south and in the immediate area, four hearths which are included in this site.

Five surface exposed hearths with extensive in situ clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially exposed” or “disturbed” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 40 x 30 cm with in situ clay heat retainers

Hearth 2 (“likely” hearth) measures 15 x 10 cm with in situ clay heat retainers

Hearth 3 (“likely” hearth) measures 10 x 5 cm with in situ clay heat retainers

Hearth 4 (“likely” hearth) measures 100 x 100 cm with in situ clay heat retainers, next to a farm vehicle access track



Landscape context – earth mound



Earth mound surface

Official



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4



Surface exposed hearth – hearth 4

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 60%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 104 m **Size:** 111 m x 53 m

This site consists of seven hearths associated with varying amounts of in situ hearths clay heat retainer materials. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially exposed” or “scattered” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 10 x 10 cm with in situ clay heat retainers.

Hearth 2 (“likely” hearth) measures 15 x 10 cm with in situ clay heat retainers.

Hearth 3 (“likely” hearth) measures 26 x 10 cm with in situ clay heat retainers.

Hearth 4 (“likely” hearth) measures 12 x 2 cm with in situ clay heat retainers.

Hearth 5 (“likely” hearth) measures 350 cm x 200 cm with in situ clay heat retainers.

Hearth 6 (“likely” hearth) measures 5 x 4 cm with in situ clay heat retainers.

Hearth 7 (“likely” hearth) measures 2 x 1 cm with in situ clay heat retainers.



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4



Surface exposed hearth – hearth 4

Official



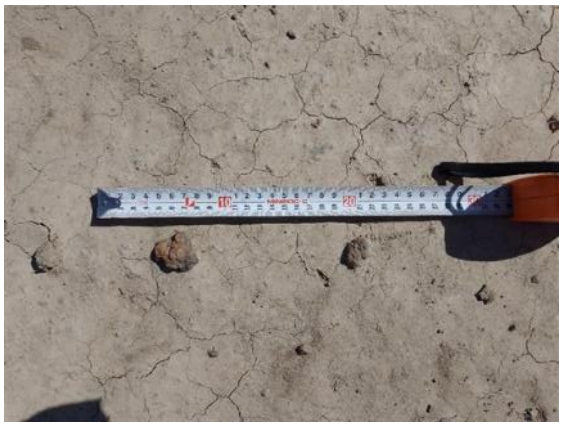
Landscape context – hearth 5



Surface exposed hearth – hearth 5



Landscape context – hearth 6



Surface exposed hearth – hearth 6

No image available



Surface exposed hearth – hearth 7

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 20%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 429 m **Size:** 12.5 m x 10.5 m

Two hearths on in situ hearth with clay heat retainers measuring. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “disturbed” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 12 x 10 cm with in situ clay heat retainers

Hearth 2 (“likely” hearth) measures 30 x 25 cm with in situ clay heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 10%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 178 m **Size:** 8.9 m x 6.8 m

Site with four “possible” hearths comprising large fragments of heat retainer. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

These hearths have been disturbed by erosion, have been weathered, and the heat retainer materials have been scattered on the ground surface. These objects are considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. These hearths are categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“possible” hearth) measures 800 x 600 cm

Hearth 2 (“possible” hearth) measures 140 x 40 cm

Hearth 3 (“possible” hearth) measures 8.5 x 8 cm

Hearth 4 (“possible” hearth) measures 7 x 50 cm



Landscape context – hearth 1



Surface exposed hearth – hearth 1





Official

Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Clay heat retainer – hearth 3



Landscape context – hearth 4

Clay heat retainer – hearth 4

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 20%

Landform: Flood plain **Vegetation:** Regrowth woodland

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 3 m **Size:** 145 m x 65 m

Large site containing 10 hearths or concentrated surface scattered hearth materials covering an area of 130 x 60 metres. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have low-moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “scattered” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 35 x 30 cm and contains in situ heat retainers

Hearth 2 (“likely” hearth) measures 60 x 40 cm and contains in situ heat retainers

Hearth 3 (“likely” hearth) measures 40 x 15 cm and contains in situ heat retainers

Hearth 4 (“likely” hearth) measures 35 x 55 cm and contains in situ heat retainers

Hearth 5 (“likely” hearth) measures 85 x 80 cm and contains in situ heat retainers

Hearth 6 (“likely” hearth) measures 90 x 60 cm and contains in situ heat retainers

Hearth 7 (“likely” hearth) measures 40 x 25 cm and contains in situ heat retainers

Hearth 8 (“likely” hearth) measures 80 x 40 cm and contains in situ heat retainers

Hearth 9 (“likely” hearth) measures 50 x 30 cm and contains in situ heat retainers

Hearth 10 (“likely” hearth) measures 60 x 40 cm and contains in situ heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2



Landscape context – hearth 3



Surface exposed hearth – hearth 3



Landscape context – hearth 4



Surface exposed hearth – hearth 4

Official



Landscape context – hearth 5



Surface exposed hearth – hearth 5



Landscape context – hearth 6



Surface exposed hearth – hearth 6



Landscape context – hearth 7



Surface exposed hearth – hearth 7

Official



Landscape context – hearth 8



Surface exposed hearth – hearth 8



Landscape context – hearth 9



Surface exposed hearth – hearth 9



Landscape context – hearth 10



Surface exposed hearth – hearth 10

LGA: Murray River

LALC: Wamba Wamba

Visibility: 80%

Exposure: 70%

Landform: Flood plain

Vegetation: Regrowth Woodland/Grassland transition

Soil: Yellowish grey silty clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 222 m

Size: 13.2 m x 8.5 m

Two hearths located on the southern side of the Wakool River. No ash, artefacts or bones are present among the exposed hearth materials. These hearths have moderate potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). All hearths are as “partially exposed” hearths in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 200 x 100 cm and has in situ clay heat retainers

Hearth 2 (“likely” hearth) measures 60 x 40 cm and contains in situ heat retainers



Landscape context – hearth 1



Surface exposed hearth – hearth 1

Official



Landscape context – hearth 2



Surface exposed hearth – hearth 2

VNIW-A-0239 Modified Tree

LGA: Murrumbidgee **LALC:** Cummeragunja

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Yellow-grey silt **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 90 m

Description

Scarred tree 29Oct24 VNI 520 x 160 x 200 (d) mm south 3.5 m (h) 2.3 m (g)

VNI-A-0239 is a possible aboriginal modified tree. Located on a grazing paddock. The tree is an old growth of *Eucalyptus largiflorens* (black box) with a scar potential cultural origin. The tree width is approximately 2.3 m, and its height is roughly 3.5 m, and the tree is in good condition. The scar is located on the north side of the tree. The scar length excluding regrowth is 52 cm. Scar width excluding regrowth is 16 cm. The scar's regrowth depth is 20 cm. The scar edges are regular and symmetrical. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are regular

There are visible adze or axe marks on the scar.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Landscape context



Tree scarring

LGA: Edward River

LALC: Wamba Wamba

Landform: Flood plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 3770 m

Size: 60 m x 10 m

Three large undisturbed in situ “likely” hearths in a line running north-south in landscape east of the Niemur River. The hearths contain small clay heat retainers and each are approximately 2 to 3 m in extent. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

Official



Landscape context – hearth 3



Surface exposed hearth – hearth 3

LGA: Murray River

LALC: Wamba Wamba

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 2950 m

Size: 10 m x 10 m

The site consists of two grey silcrete artefacts. The artefacts measure 15 x 12 x 2 mm and 10 x 8 x 1 mm. Located on an open scald pan in an open field. There has been stock damage to the area with significant erosion. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefacts

Official

LGA: Edward River

LALC: Griffith

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 247 m

Size: 20 m x 3 m

Artefact scatter with two artefacts. One quartz artefact measuring 18 x 9 x 4 mm with 50% cortex and a mudstone flake measuring 55 x 30 x 12 mm. These artefacts were located on the surface in a road side conservation area (crown land) beside to Carathool road. The site is adjacent to a woodland nature reserve and north of delta creek. The vegetation in the area is scrub with a Cyprus pine wood close by. The site is close to PAD 029 and has moderate for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefacts

Official

VNIW-A-0243 Earth Mound

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood plain Vegetation: Grassland

Soil: Yellowish grey clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1205 m **Size:** 15 m x15 m

Large undisturbed earth (oven) mound in an undisturbed landscape associated with earth mound VNIW-A-0244, four nearby hearths, and an isolated find. It is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Large black wattle trees are growing its soil suggesting a considerable age. The site measures 15 m in diameter. The soil is dark grey clay with possible charcoal associated with the mounded area. There is significant clay heat retainer refuse in scattered across the adjacent landscape. The site is in an open field with some stock damage. The site is part of PAD 022 and has high potential for the presence of other subsurface archaeological materials.



Landscape context



Clay heat retainers

Official

VNIW-A-0244 Earth Mound

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood pain Vegetation: Grassland

Soil: Yellowish grey clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1205 m **Size:** 5 m x 5 m

Small undisturbed earth (oven) mound in an undisturbed landscape associated with earth mound VNIW-A-0243, four nearby hearths, and an isolated find. It is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Large black wattle trees are growing its soil suggesting a considerable age. The site measures 5 m in diameter. The soil is dark grey clay with possible charcoal associated with the mounded area. There is significant clay heat retainer refuse in scattered across the adjacent landscape. The site is in an open field with some stock damage. There are several other hearths north and south in the immediate area. The site is part of PAD 022 The site is part of PAD 022 and has high potential for the presence of other subsurface archaeological materials..



Landscape context



Earth mound surface

Official

VNIW-A-0245 Earth Mound

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% **Exposure:** 80%

Landform: Flood plain **Vegetation:** Grassland

Soil: Yellowish grey clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1220 m **Size:** 15 m x15 m

Large undisturbed earth (oven) mound in an undisturbed landscape associated with earth mound VNIW-A-0245, four nearby hearths, and an isolated find. It is an elevated structure (20-40 cm) above the ground surface and is covered in extensive burned clay nodules and blackened earth. Large black wattle trees are growing its soil suggesting a considerable age. The site measures 15 m in diameter. The soil is dark grey clay with possible charcoal associated with the mounded area. There is significant clay heat retainer refuse in scattered across the adjacent landscape. The site is in an open field with some stock damage. The site is part of PAD 022 and has high potential for the presence of other subsurface archaeological materials.



Landscape context



Clay heat retainers

Official

LGA: Murray River	**LALC:** Wamba Wamba
Visibility: 80%	Exposure: 80%
Landform: Flood plain	Vegetation: Grassland
Soil: Yellowish grey clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 1030 m	**Size:** 4 m x 4 m

A large weathered “likely” hearth with in situ clay heat retainers. There are several other hearths in the landscape north and south of the site. The site is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – hearth 1



Surface exposed hearth- hearth 1

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1250 m **Size:** 30 m x 20 m

Four clay heat retainers ("possible") hearths on an open scald pan, the heat retainers are not in situ and are scattered within an area of 2 m x 1 m. Several other hearths are present in the landscape north and south and the site is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a "possible" hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is "undisturbed" in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a "scattered" hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood plain Vegetation: Grassland

Soil: Yellowish grey clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 900 m **Size:** 1 m x 1 m

Single small “likely” hearth with clay heat retainers in situ. There are several other hearths north and south in the immediate area. The site is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 60% Exposure: 50%

Landform: Flood plain **Vegetation:** Open woodland

Soil: Yellow grey sandy clay **Land use:** Agriculture/Conservation

Distance to nearest creek/river: 70 m **Size:** 15 m x 10 m

Single isolated hearth with clay heat retainers in situ and surface scattered (up to 15 m). No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 60% Exposure: 100%

Landform: Flood plain Vegetation: Open scrub

Soil: Yellowish grey silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 184 m **Size:** 8 m x 5 m

Large hearth with in situ clay heat retainers and surface scattered clay retainers. The hearth is eroding out of a vehicle access track close to the northern bank of the Edward River/Kolety. There are several earth mounds and shell middens in the immediate area. The site is associated with PAD 024. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape contex



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 50% Exposure: 90%

Landform: Flood plain Vegetation: Open scrub

Soil: Grey silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 190 m **Size:** 12 m x 3 m

Large “likely” hearth with in situ clay heat retainers eroding out of a vehicle access track. The site is close to the northern bank of the Edward River/Kolety. There are several earth mounds and shell middens in the immediate area. The site is associated with PAD 024. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 20% Exposure: 20%

Landform: Flood plain Vegetation: Open scrub

Soil: Grey brown silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 75 m **Size:** 40 m x 6 m

Large “possible” (disturbed) hearth with scattered clay heat retainers embedded in a surface graded vehicle access track. The site is close to the northern bank of the Edward River/Kolety. There are several earth mounds and shell middens in the immediate area. The site is associated with PAD 024. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by road construction and the heat retainer materials have been scattered on the ground surface or buried in clay. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, association with other hearths sites in the landscape, and the fact the broader landscape is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth1

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 20% Exposure: 20%

Landform: Flood plain Vegetation: Open forest

Soil: Grey brown silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 140 m **Size:** 3 m x 3 m

Large mounded “likely” hearth structure with clay heat retainers in situ. The site was heavily overgrown making the true size of the hearth difficult to determine. The hearth is partially eroding out of a vehicle access track and is located close to the northern bank of the Edward River/Kolety. There are several earth mounds and shell middens in the immediate area and the site is associated with PAD 024.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This is categorised as a “buried” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainer

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 10%

Exposure: 70%

Landform: Flood plain

Vegetation: Open woodland

Soil: Yellow grey silty clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 43 m

Size: 5 m x 3 m

A single “likely” hearth in open regrowth forest area. The hearth concentration measurements are 50 x 30 cm with clay heat retainers in situ. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 70%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Yellow grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 860 m **Size:** 1 m x 1 m

Small “likely” hearth in a regrowth open forest. The hearth contains concentrated clay heat retainers in situ measuring 30 cm x 30 cm. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 40%

Exposure: 100%

Landform: Undulating plain

Vegetation: Open woodland

Soil: Yellow grey silty clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 850 m

Size: 2 m x 1 m

Small “likely” hearth in a regrowth open forest. The hearth contains concentrated clay heat retainers in situ measuring 50 cm x 50 cm. No ash, artefacts or bones are present among the exposed hearth materials. The site has mdoerate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 10%

Exposure: 100%

Landform: Undulating plain

Vegetation: Open woodland

Soil: Yellow grey silty clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 3050 m

Size: 30 cm x 30 cm

Large disturbed “likely” hearth with in situ clay heat retainers. It is associated PAD 028, west of Carrathool Road. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 90%

Landform: Flood plain Vegetation: Grassland

Soil: Yellow grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 414 m **Size:** 4 m x 4 m

Large disturbed “likely” hearth with in situ and surface scattered clay heat retainers. It is associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 50% Exposure: 100%

Landform: Flood plain Vegetation: Grassland

Soil: Yellow grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 2200 m **Size:** 0.2 m x 0.2 m

Single “likely” hearth with in situ burnt clay retainers. Hearths are located on an open plain in a scald pan area. It is associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 20% Exposure: 100%

Landform: Flood plain Vegetation: Grassland

Soil: Yellow grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1448 m **Size:** 0.5 m x 0.3 m

A “likely” hearth with in situ burnt clay. Located on an open plain in a scald pan area and are associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 20% Exposure: 100%

Landform: Flood plain Vegetation: Grassland

Soil: Reddish yellow silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1421 m **Size:** 0.3 m x 0.2 m

A “likely” hearth with in situ burnt clay. Located on an open plain in a scald pan area and are associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 100%

Landform: Flood plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1290 m **Size:** 12 m x 5 m

A “likely” hearth with in situ burnt clay and heat retainers scattered over an area of up to 12 m. Located on an open plain in a scald pan area and are associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 100%

Landform: Flood plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1250 m **Size:** 3 m x 5 m

A “likely” hearths with in situ burnt clay and heat retainers scattered over an area of up to 5 m. Located on an open plain in a scald pan area and are associated with other hearths in the landscape in the north and south and is associated with PAD 022. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

VNIW-A-0275 Isolated Find

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 100%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1840 m **Size:** 12 m x 5 m

Single white quartz artefact measuring 22 x 8 x 2 mm with no cortex. The site is in an open clay pan with scrub vegetation in the surrounding field. The site has low potential for the presence of other subsurface archaeological materials.



Landscape context



Artefact

Official

VNIW-A-0276 Isolated Find

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Reddish yellow silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1080 m **Size:** 5 m x 2 m

Volcanic rock core measuring 180 x150 x 60 mm with clear signs of flaking and obvious platforms. The artefact was located in an open regrowth forest close to the Wakool River. There had been some flood and livestock damage to the area. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0277	Isolated Find

LGA: Edward River	**LALC:** Deniliquin
Visibility: 80%	Exposure: 80%
Landform: Undulating plain	Vegetation: Scrub
Soil: Yellowish grey clay	**Land use:** Agriculture/Grazing/Dirt Road
Distance to nearest creek/river: 680 m	**Size:** 10 m x 3 m

Grey silcrete artefact found on access (dirt) track, north of PAD 027. It and measures 8 x 7 x 5 mm, with 50% cortex. The landscape here is travelling stock route on the western side of the Cobb Highway. There is low for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0278 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Scrub

Soil: Reddish yellow clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 911 m **Size:** 10 m x 2 m

Single glassy quartz artefact found on an access (dirt) track, north of PAD 027, and measuring 20 x 15 x 5 mm, with 50% cortex. The landscape here is travelling stock route on the western side of the Cobb Highway. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0279 Isolated Find

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 80%

Landform: Undulating plain **Vegetation:** Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 3110 m **Size:** 15 m x 4 m

Single grey silcrete artefact found on an access (dirt) track. It measures 13 x 6 x 1 mm, with 50% cortex. The landscape context if disturbed due to road construction. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

VNIW-A-0280 Modified Tree

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Cleared

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Cropping

Distance to nearest creek/river: 760 m

Description

VNI-A-0280 is a possible aboriginal modified tree. Located on a ploughed field. The tree is an old growth of *Eucalyptus largiflorens* (black box) with a scar potential cultural origin. The tree width is approximately 3.5 m, and its height is roughly 15 m, and the tree is in good condition. The scar is located on the north side of the tree. There are axe/adze marks at the base of the scar. The scar length excluding regrowth is 43 cm. Scar width excluding regrowth is 18 centimetres. The scar's regrowth depth is 8 cm. The scar edges are regular and symmetrical. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are irregular

There are visible adze or axe marks on the scar.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.



Modified tree in landscape context



Scarring

Official

VNIW-A-0283 Modified Tree

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 10% Exposure: 10%

Landform: Flood plain Vegetation: Open forest

Soil: Yellowish grey clay **Land use:** Crown Land/Recreation

Distance to nearest creek/river: 100 m

Description

VNI-A-0283 is a possible aboriginal modified tree. Located on the northern bank of the drward river bordering an open forest. The tree is an old growth of *Eucalyptus largiflorens* (black box) with a scar potential cultural origin. The tree circumference is approximately 4.1 m, and its height is roughly 12 m, and the tree is in good condition. The scar is located on the south side of the tree. The scar length excluding regrowth is 220 cm. Scar width excluding regrowth is 80 cm. The scar's regrowth depth is 20 cm. The scar edges are regular and symmetrical. The modified tree is estimated to be 100+ years old.

Archaeological Interpretation

Scar does not extend to ground

Scars sides are roughly parallel

The scar is semi regular.

The scar ends are regular

There are visible adze or axe marks on the scar.

Tree is estimated to be 100+ years old

Tree is endemic to area.

Scar has a deliberate human origin:

Likely.

Scar has an aboriginal origin:

Likely.

This is a scar that conforms to some of the criteria for a human origin. A natural origin cannot be ruled out. An Aboriginal origin is considered to be possible, based on morphology of the scar and the age of the tree.

Official



Modified tree in landscape context



Scarring

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 100% Exposure: 50%

Landform: Flood plain **Vegetation**: Regrowth woodland

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 40 m **Size:** 4.2 m x 2.3 m

Two small “likely” hearths in an open regrowth forest. Both hearths contain in situ and surface scattered clay heat retainers. Each hearth covers an area of approximately 150 cm x 150 cm. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. They are considered to be “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). Both hearths are categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

Official

VNIW-A-0285	Hearth/Heat Retainers
LGA: Murray River	**LALC:** Wamba Wamba
Visibility: 80%	Exposure: 50%
Landform: Flood plain	**Vegetation:** Regrowth woodland
Soil: Yellowish grey clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 20 m	**Size:** 40 m x 25 m

Three small “likely” hearths in a regrowth open forest. All hearths contain both in situ and surface scattered clay heat retainers. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

These hearths have been exposed by erosion and have been weathered to some extent. These objects are considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, their landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) measures 50 x 50cm

Hearth 2 (“likely” hearth) measures 300 x 200 cm

Hearth 3 (“likely” hearth) measures 150 x 80 cm



Landscape context – hearth 1-3



Surface exposed hearth – hearth 1



Surface exposed hearth – hearth 2



Surface exposed hearth – hearth 3

VNIW-A-0286	Artefact Scatter

Official

LGA: Edward River	**LALC:** Deniliquin
Visibility: 80%	Exposure: 80%
Landform: Undulating plain	Vegetation: Grassland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing/Dirt Road
Distance to nearest creek/river: 1250 m	**Size:** 170 m x 25 m

Artefact scatter along a dirt road surrounded in the north, west and south by undisturbed travelling stock route, and beside the Cobb Highway on the east. The site is associated with PAD 027 and has moderate potential for the presence of other subsurface archaeological materials.

Brown mudstone flake 25 x 10 x 5 mm, 30% cortex

Black IMT core 19 x 12 x 8 mm, 66% cortex

2 grey silcrete flakes 13 x 12 x 4 mm and 16 x 15 x 8 mm

Grey silcrete flake 30 x 12 x 8 mm, 50% cortex

Grey silcrete flake 10 x 10 x 4 mm

Pink-grey silcrete flake 20 x 16 x 9 mm, 50% cortex, hinge termination

River pebble possibly grinder or manuport 30 x 20 x 15 mm

2 grey silcrete flakes 20 x 10 x 5 mm, 10 x 5 x 3 mm





Landscape context – artefact 1



Artefact 1



Official

Landscape context – artefact 2



Artefact 2



Landscape context – artefact 3



Artefact 3



Landscape context – artefact 4 &5



Artefact 4 & 5



Landscape context – artefact 6

Artefact 6

Official



Landscape context – artefact 7



Artefact 7



Landscape context – artefact 8



Artefact 8



Landscape context – artefact 9-11



Artefact 9-11

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 3030 m **Size:** 35 m x 31 m

Two “likely” hearths with in situ clay heat retainers and an artefact exposed in situ on the surface of a dirt access track. No ash, artefacts or bones are present among the exposed hearth materials. The site is associated with PAD 028 and has moderate potential for the presence of other subsurface archaeological materials.

Both hearths have been exposed by erosion and have been weathered to some extent. These objects are considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) – surface exposed heat retainers with materials scattered across 5 x 2 m

Hearth 2 (“likely” hearth) – surface exposed heat retainers with materials scattered across 70 x 50 cm



Landscape context – hearth 1



Surface exposed hearth – hearth 1



Landscape context – hearth 2



Surface exposed hearth – hearth 2

VNIW-A-0288 Hearth/Heat Retainers, Artefact

Official

LGA: Murray River

LALC: Wamba Wamba

Visibility: 80%

Exposure: 80%

Landform: Flood plain

Vegetation: Open scrub

Soil: Yellowish grey silty clay

Land use: Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 146 m

Size: 30 m x 5 m

Two “likely” hearths with in situ clay heat retainers and an artefact exposed in situ on the surface of a dirt access track. This site is located north of the Edward River/Kolety and is associated with PAD 024. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate-high potential for the presence of other subsurface archaeological materials.

Both hearths have been exposed by erosion and have been weathered to some extent. These objects are considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) large hearth with surface scattered clay across 12 x 5 m

Hearth 2 (“likely” hearth) large hearth with surface scattered clay across scattered 8 x 3 metres

Grinding stone (river cobble) 200 mm x 120 mm x 90 mm



Landscape context – hearths 1

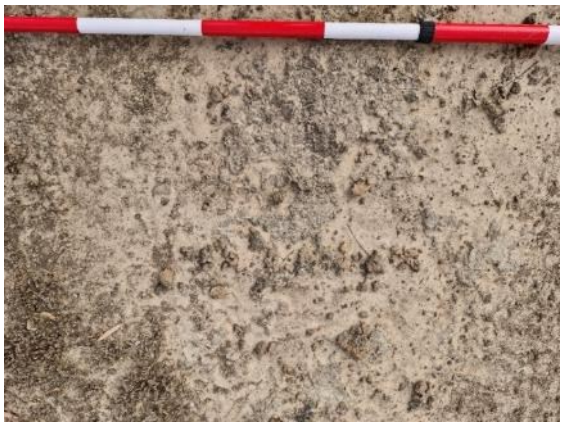


Surface exposed hearh – hearth 1

Official



Landscape conext – hearth 2



Surface exposed hearth – hearth 2



Landscape context - artefact



Artefact

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Flood plain Vegetation: Open scrub

Soil: Yellowish grey silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 20 m **Size:** 110 m x 60 m

Four in situ shell middens located between the northern bank of the Edward River/Kolety and a dirt access track within a recreation area (crown land) and associated with PAD 024. All middens exhibit exposed in situ shell eroding out of the ground surface and disturbed in parts by road construction. The site has moderate-high potential for the presence of other subsurface archaeological materials.

Midden 1 measures 5 x 3 metres, there is some burnt clay associated with this midden

Midden 2 measures 1.5 x 1 metres, the shell is high density with no charcoal or burnt clay exposed

Midden 3 measures 14 x 8 metres, the shell is high density with charcoal or burnt clay exposed

Midden 4 measures 5 x 2 metres, the shell is high density with charcoal or burnt clay exposed and whole mussel shells

Hearth is exposed on the dirt track with in situ small clay heat retainers visible. The site measures 2 m x 1.5 metres. No ash, artefacts or bones are present among the exposed hearth materials. The site has high potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by human activity and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and its association with PAD 024. This object is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context – midden 1



Surface exposed shells – midden 1

Official



Landscape context – midden 2



Surface exposed shells – midden 2



Landscape context – midden 3



Surface exposed shells – midden 3



Landscape conext – hearth 1



Surface exposed hearth – hearth 1

VNIW-A-0290 Artefact scatter

LGA: Edward River **LALC:** Deniliquin

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 290 m **Size:** 40 m x 15 m

Two quartz flakes on the surface in a small scald (clay) pan. Flake 1 measures 12 x 7 x 4 mm and is a proximal flake with feathered termination while flake 2 is a distal flake measuring 7 x 5 x 2 mm. The site is associated with PAD 02. The site has low potential for the presence of other subsurface archaeological materials.



Landscape context - artefact 1



Artefact 1



Landscape context - artefact 2



Artefact 2

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 90%

Exposure: 50%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 7500 m

Size: 3.5 m x 1 m

A surface scatter of heat retainers (~5) spread across the ground surface measuring 3.5 m in length. This object is designated a “possible” hearth. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

VNIW-A-0294	Hearth/Heat Retainers, Shell, Artefact

LGA: Edward River	**LALC:** Deniliquin
Visibility: 90%	Exposure: 80%
Landform: Undulating plain	Vegetation: Grassland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 184 m	**Size:** 108 m x 37.3 m

This large site contains a single “likely” hearth, an isolated find and shell recovered in situ during test excavations of PAD 016 (refer to Section 8.4.1). No ash, artefacts or bones are present among the exposed hearth materials. The site has high potential for the presence of other subsurface archaeological materials.

This hearth has been exposed by erosion and has been weathered to some extent. The object is considered a “likely” hearth on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth (“likely” hearth) 60 cm x 20 cm comprising surfaced exposed and scattered heat retainers

Single grey silcrete flake measuring 18 mm x 10 mm x 3 mm



Landscape context



Surface exposed hearth

Official



As above

Artefact



As above

Shell recovered during test excavations

VNIW-A-0299	Hearth/Heat Retainers, Artefact

LGA: Edward River	**LALC:** Deniliquin
Visibility: 80%	Exposure: 60%
Landform: Undulating plain	**Vegetation:** Open woodland
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing
Distance to nearest creek/river: 7611 m	**Size:** 345 m x 98 m

Eight hearths and one artefact (isolated find) associated with PAD 017. No ash, artefacts or bones are present among the exposed hearth materials with the exception of hearth 8. The site has high potential for the presence of other subsurface archaeological materials.

Hearths 1-6 and hearth 8 are “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5). Hearth 8 is considered a “possible” hearth on account of the size and density of heat retainer materials, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). However, minimal/absent in situ heat retainer and other materials preclude a more definitive assessment. This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Hearth 1 (“likely” hearth) – heat retainer concentration 50 x 30 cm with surface exposed in situ materials; heat retainers scattered on surface over 20 x 22 m

Hearth 2 (“likely” hearth) – heat retainer concentration 60 x 50 cm with surface exposed in situ materials

Hearth 3 (“likely” hearth) – 40 x 30 cm heat retainer concentration with surface exposed in situ materials and surface scattered materials

Hearth 4 (“likely” hearth) – heat retainer concentration 30 x 20 cm with surface exposed in situ materials; heat retainers scattered on surface over 3 x 2 m

Hearth 5 (“likely” hearth) – heat retainer concentration 100 cm x 100 cm with surface exposed in situ materials; heat retainers scattered on surface over 6 x 5 m

Hearth 6 (“likely” hearth) – heat retainer concentration 50 x 30 cm with surface exposed in situ materials; heat retainers scattered on surface over 6 x 2 m

Hearth 7 (“possible” hearth) – heat retainers scattered on surface over 7 x 5 m

Hearth 8 (“likely” hearth) – heat retainer concentration 30 x 30 cm with surface exposed in situ materials and charcoal stained earth; heat retainers scattered on surface over 7 x 5 m

Silcrete unflaked stone heat retainer with signs of heat treating, likely to be coarse grained silcrete

Official



Landscape context – hearth 1



Heat retainers – hearth 1



Landscape context – hearth 2



Heat retainers – hearth 2



Landscape context – hearth 3



Heat retainers – hearth 3

Official



Landscape context – hearth 4



Heat retainers – hearth 4



Landscape context – hearth 5



Heat retainers – hearth 5



Landscape context – hearth 6



Heat retainers – hearth 6



Landscape context – hearth 7



Heat retainers – hearth 7



Landscape context – hearth 8



Heat retainers – hearth 8



As above

Isolated find

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 60%

Landform: Undulating plain

Vegetation: Open woodland

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 7611 m

Size: 345 m x 98 m

Hearth VNI-A-0301 (“likely” hearth) – heat retainer concentration 50 x 30 cm with surface exposed in situ materials; heat retainers scattered on surface over 20 x 22 m and one artefact (isolated find) associated with PAD 017. No ash, artefacts or bones are present among the exposed hearth materials with the exception of hearth 8. The site has high potential for the presence of other subsurface archaeological materials.

Hearths 1-6 and hearth 8 are “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “partially exposed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Heat retainers

Official

LGA: Edward River | **LALC:** Deniliquin

Visibility: 80% | Exposure: 80%

Landform: Undulating plain | Vegetation: Open scrub

Soil: Reddish yellow sandy clay | **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 75 m | **Size:** 1 m x 1 m

Four isolated heat retainers concentrated in an area of 1 m x 1 m. Designated a “possible” hearth. No ash, artefacts or bones are present among the exposed hearth materials. The site has low potential for the presence of other subsurface archaeological materials.

This object has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. The object is considered a “possible” hearth on account of the size and density of heat retainer materials on the surface, its landscape context, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Clay heat retainers

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 75 m **Size:** 1 m x 1 m

A single clay heat retainer found on the surface, not in situ. Designated a “possible” hearth. The heat retainer measures 60 x 40 x 30 mm. This site was considered to be part of a broader hearth landscape as there are four other isolated heat retainers recovered in the immediate vicinity. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. However, the object is considered a “possible” hearth on account of the size and density of heat retainer materials on the surface, its landscape context including other hearths in the adjacent landscape, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).

Image not available



Clay heat retainer

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% **Exposure:** 80%

Landform: Undulating plain **Vegetation:** Open scrub

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 75 m **Size:** 1 m x 1 m

A single clay heat retainer found on the surface, not in situ. Designated a “possible” hearth. The heat retainer measures 65 x 40 x 25 mm. This site was considered to be part of a broader hearth landscape as there are two other isolated heat retainers recovered in the immediate vicinity. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

This hearth has been disturbed by erosion, has been weathered, and the heat retainer materials have been scattered on the ground surface. However, the object is considered a “possible” hearth on account of the size and density of heat retainer materials on the surface, its landscape context including other hearths in the adjacent landscape, the absence of evidence in the landscape for recent (natural and anthropogenic) burning, and the fact the land is “undisturbed” in accordance with DECCW (2010a). This hearth is categorised as a “scattered” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape Context



Clay heat retainer

Official

VNIW-A-0306 Isolated Find

LGA: Murrumbidgee **LALC:** Griffith

Visibility: 80% Exposure: 80%

Landform: Undulating plain **Vegetation:** Open woodland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 1552 m **Size:** 2 m x 1 m

Single grey silcrete flake measuring 8 x 6 x 4 mm. The artefact was located on the edge of an access track (dirt road) and is located on disturbed land. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Murrumbidgee **LALC:** Griffith

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 3196 m **Size**: 1 m x 1 m

Single basalt (river cobble) grinding stone measuring 160 x 120 x 40 mm on the surface of an area of ploughed field. Thus, it is located on disturbed land. There is low potential for other archaeological features/objects to be present in subsurface context



Landscape context



Artefact

Official

VNIW-A-0308	Isolated Find

LGA: Murrumbidgee	**LALC:** Griffith
Visibility: 80%	Exposure: 80%
Landform: Undulating plain	Vegetation: Open scrub
Soil: Reddish yellow sandy clay	**Land use:** Agriculture/Grazing/Dirt Road
Distance to nearest creek/river: 72 m	**Size:** 5 m x3 m

Single grey silcrete flake measuring 20 x 13 x 7 mm. The artefact was located on the edge of an access track (dirt road) and is located on disturbed land. There is low potential for other archaeological features/objects to be present in subsurface context



Landscape context



Artefact

Official

LGA: Edward River

LALC: Cummeragunja

Visibility: 80%

Exposure: 80%

Landform: Undulating plain

Vegetation: Grassland

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 2184 m

Size: 5 m x 2 m

Single grey IMT flake measuring 15 x 11 x 6 mm. The artefact was located on the edge of an access track (dirt road) beside a ploughed field and is located on disturbed land. There is low potential for other archaeological features/objects to be present in subsurface context



Landscape context



Artefact

Official

VNIW-A-0310 Isolated Find

LGA: Edward River **LALC:** Cummeragunja

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Unvegetated

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 2360 m **Size:** 5 m x 5 m

Single grey silcrete flake measuring 25 x 15 x 7 mm with a crushed platform and a broken termination The artefact was located on the edge of an access track (dirt road) next to a ploughed field. This it is located on disturbed land There is low potential for other archaeological features/objects to be present in subsurface context



Landscape context



Artefact

Official

VNIW-A-0311 Isolated Find

LGA: Edward River **LALC:** Cummeragunja

Visibility: 80% Exposure: 80%

Landform: Undulating plain Vegetation: Grassland

Soil: Reddish yellow sandy clay **Land use:** Agriculture/Grazing/Dirt Road

Distance to nearest creek/river: 2434 m **Size:** 3 m x 3m

Single grey silcrete flake measuring 10 x 8 x 4 mm. The artefact was located on the edge of an access track (dirt road) beside a ploughed field and is located on disturbed land. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Edward River

LALC: Deniliquin

Visibility: 80%

Exposure: 80%

Landform: Undulating plain

Vegetation: Open scrub

Soil: Reddish yellow sandy clay

Land use: Agriculture/Grazing

Distance to nearest creek/river: 1043 m

Size: 10 m x 5 m

Single milky quartz flake measuring 10 x 8 x 2 mm located on the edge of a large irrigation channel. The site is heavily disturbed. It is associated with PAD 019. There is low potential for other archaeological features/objects to be present in subsurface context.



Landscape context



Artefact

Official

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 80% Exposure: 90%

Landform: Undulating plain Vegetation: Open scrub

Soil: Yellowish grey silty clay **Land use:** Agriculture/Grazing

Distance to nearest creek/river: 1802 m **Size:** 20 m x 5 m

Site with two heat retainers on the surface and evidence for surface exposed in situ heat retainer materials. The site is located in the landscape adjacent to PAD 07. No ash, artefacts or bones are present among the exposed hearth materials. The site has moderate potential for the presence of other subsurface archaeological materials.

Both are “likely” hearths on account of the size and density of heat retainer materials on the surface, presence of in situ heat retainer fragments, its landscape context, and the fact the land is “undisturbed” in accordance with DECCW (2010a). These hearths are categorised as a “disturbed” hearth in accordance with the criteria of Fanning et al. (2009) (refer to Appendix 5).



Landscape context



Surface exposed hearth – hearth 1

Official



Landscape context



Surface exposed hearth – hearth 2

Official

VNIW-A-0314 Earth Mound

LGA: Murray River **LALC:** Wamba Wamba

Visibility: 50% Exposure: 50%

Landform: Flood plain **Vegetation:** Open forest/Scrub transition

Soil: Brown silty clay **Land use:** Crown Land/Recreation/Dirt Road

Distance to nearest creek/river: 132 m **Size:** 30 m x 20 m

A large shell midden and earth oven mound beside the Edward River/Kolety on the edge of the flood plain. The site is dissected by a vehicle access track. Fragments of shell and burned clay are eroding from the side of the track and are scattered across the surface of the earth mound. The site has signs of disturbance from both vehicles and animals.



Landscape context



Surface exposed shell

Official

APPENDIX 4

PAD SEDIMENT DECRIPTIONS AND SECTION PROFILES

Table A4-1 VNIW-A-PAD01 – summary of excavation results

PAD 1		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive grass cover. Stratigraphic Unit (SU) 1: moist consolidated dark reddish brown clay loam with few grass roots; and SU2 moist and heavily compacted dusky red medium clay lacking grass roots. Soil in both units lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Surface covered by grass. SU1 dry consolidated reddish brown clay loam with few grass roots; and SU2 dry heavily compacted reddish brown medium clay with no roots. All soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Barren surface. SU1 dry consolidated reddish brown clay; and SU2 dry heavily consolidated reddish brown medium clay. Both SUs lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Located on edge of small scald, surface vegetation on west side. SU 1	Description: Extensive grass cover. SU1 dry consolidated reddish brown light sandy clay	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with

dry consolidated red sandy clay loam; and SU2 dry heavily consolidated dark reddish brown medium clay. Both SUs lacked inclusions, charcoal and tree roots. Undisturbed profile.	loam with few grass roots; and SU2 dry and heavily compacted reddish brown medium clay with no grass roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	minimal grass roots; and SU2 heavily compacted dry reddish brown medium clay with no grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 1		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Moderate grass cover east side. SU 1 dry consolidated red clay with few grass roots; and SU2 dry heavily compacted dark reddish brown medium clay with no grass roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive surface grass cover. SU1 dry consolidated reddish brown clay loam with some grass roots; and SU2 dry heavily compacted weak red medium clay with no grass roots. Both soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive surface grass cover. Soil dry consolidated reddish brown clay loam with some grass root penetration; and SU2 dry heavily compacted dark reddish brown medium clay lacking grass roots. No inclusions, charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	Pit 12
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive grass cover. SU1 dry consolidated dark grey clay with some grass root penetration; and	Description: Extensive surface grass cover. SU1 dry consolidated weak reddish clay with some grass roots;	Description: Ground surface with considerable grass cover. SU1 dry consolidated reddish brown clay with some grass

SU2 dry heavily compacted reddish grey medium clay lacking grass roots. Both soils absent of inclusions, charcoal and tree roots. Undisturbed profile.	and SU2 dry heavily compacted reddish brown medium clay with no grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	roots; and SU2 dry heavily compacted red medium clay lacking roots. Soils absent of inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 1
Pit 13

Pit Size: 500mm x 500mm
Spit Depth: 50mm
Spits Excavated: 4
Pit End Depth: 200mm
Description: Extensive surface grass cover. SU1 dry consolidated reddish brown clay with some grass root penetration; and SU2 dry heavily compacted weak reddish brown medium clay with no roots. Both soils lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None

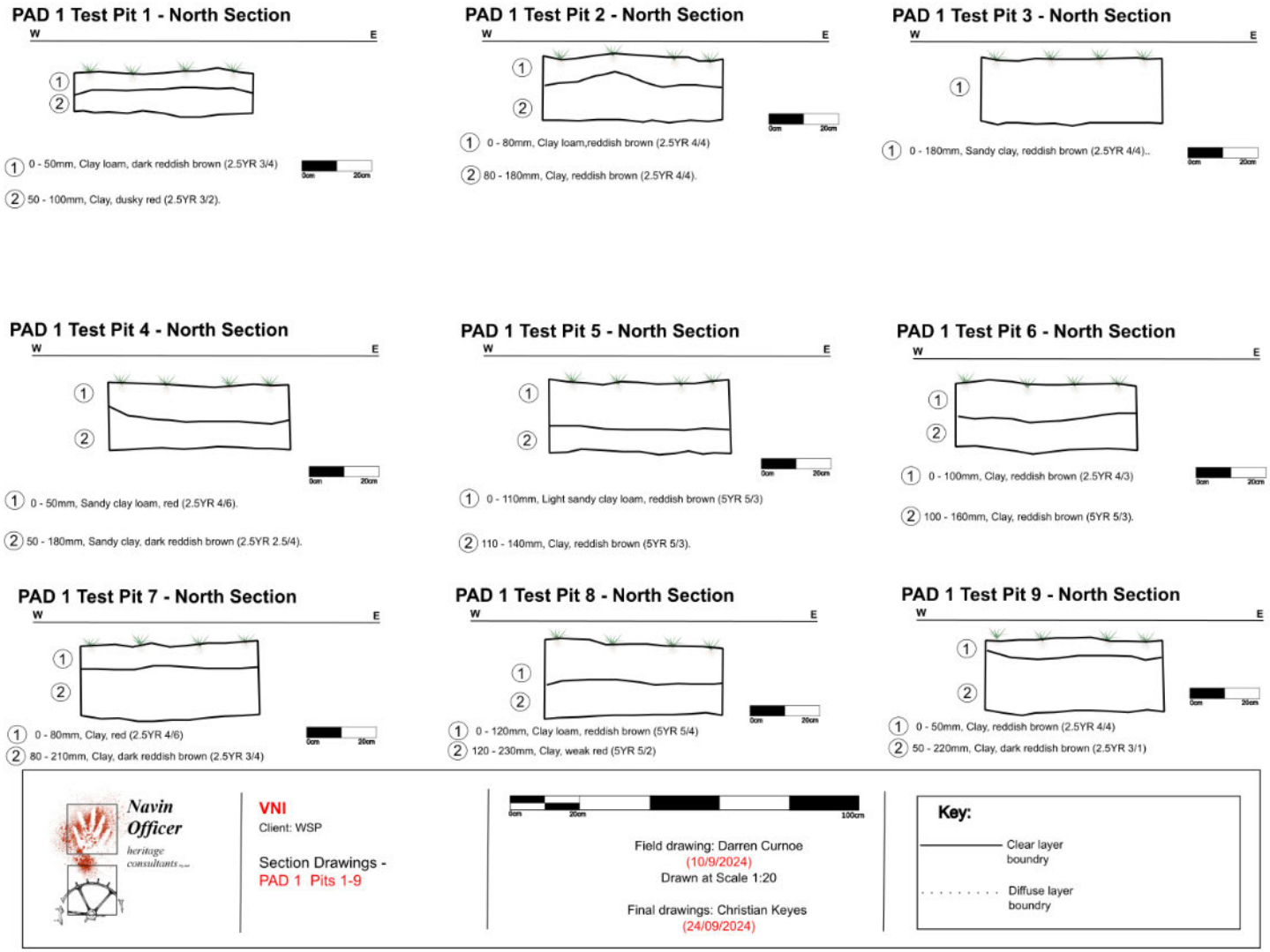


Figure A4-1 VNIW-A-PAD01 Test Pits 1–9: section drawings indicating soil textures and Munsell chart colours

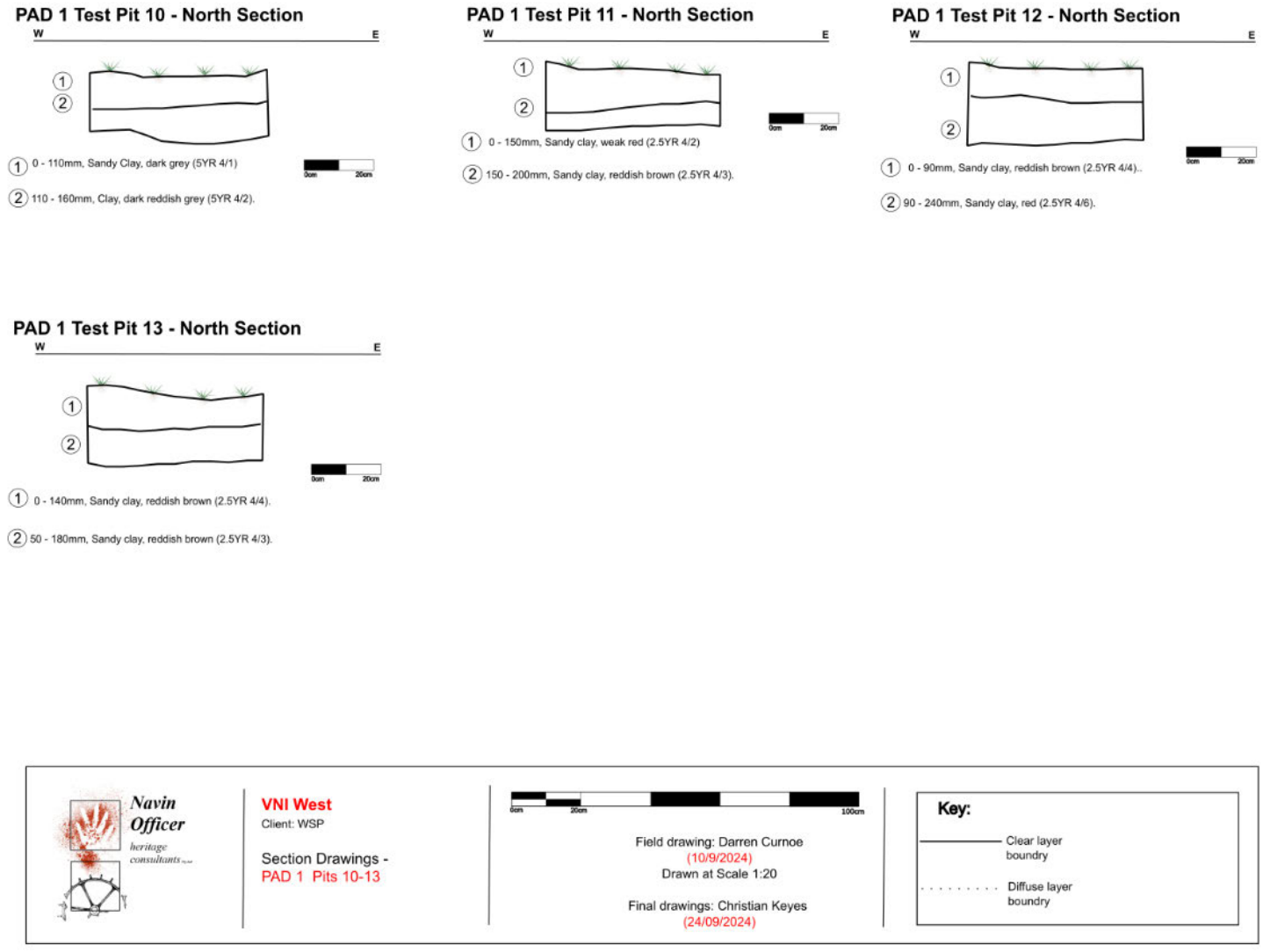


Figure A4-2 VNIW-A-PAD01 Test Pits 10–13: section drawings indicating soil textures and Munsell chart colours

Table A4-2 VNIW-A-PAD02 – summary of excavation results

PAD 2		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive surface grass cover. SU1 dry consolidated reddish brown sandy clay with some grass roots; and SU2 dry heavily compacted dark reddish brown medium clay with no roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Surface with extensive grass cover. SU1 dry consolidated dark reddish brown sandy clay with minimal grass root penetration; and SU2 dry heavily compacted weak red medium clay, no roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some grass roots; and SU2 dry heavily compacted reddish brown medium clay with no roots. Both soils lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive surface grass cover. SU1 dry consolidated reddish brown sandy clay with limited grass	Description: Surface with extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some grass roots; and SU2

roots; and SU2 dry heavily compacted reddish brown medium clay with no roots. All soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	grass root penetration; and SU2 dry heavily compacted reddish brown medium clay with no roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	dry heavily compacted reddish brown medium clay with no roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 2		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: –
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: –
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: –
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: –
Description: Moderate grass cover. SU1 dry loosely compacted dark red sandy loam with little grass root penetration; SU2 dry compacted reddish brown sandy clay, some grass roots; and SU3 dry compacted reddish brown medium clay. Soils had few inclusions, and no charcoal or tree roots. Undisturbed profile.	Description: Sparse surface grass cover. SU1 dry consolidated reddish brown clay loam with limited grass root penetration; and SU2 dry heavily compacted reddish brown medium clay with no grass roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Pit abandoned (not excavated) due to surface exposure of medium-heavy clay.
Aboriginal Objects: Artefact (quartz flake)	Aboriginal Objects: None	Aboriginal Objects: N/A
Pit 10	Pit 11	Pit 12
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm

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Description: Extensive surface vegetation. SU1 dry loosely consolidated dark reddish brown clay with some grass roots; and SU2 dry heavily compacted reddish brown medium clay with no roots. No inclusions, charcoal or tree roots. Undisturbed profile.	Description: Salt bush on surface. SU1 dry consolidated dark reddish brown clay with some root penetration; and SU2 dry heavily compacted yellowish red medium clay with no roots. No inclusions, charcoal or tree roots. Undisturbed profile.	Description: Salt bush on surface SU1 dry consolidated dark reddish brown clay loam with some root penetration; and SU2 dry and heavily compacted reddish brown medium clay with no roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 2		
Pit 13	Pit 14	Pit 15
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Salt bush on surface. SU1 dry consolidated reddish brown sandy clay loam with some root penetration; and SU2 dry heavily compacted dark reddish brown medium clay with no roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Salt bush on surface. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry heavily compacted reddish brown medium clay with some roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry heavily compacted reddish brown medium clay with few roots. No inclusions, charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 16	Pit 17	Pit 18
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Salt bush on surface. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry	Description: Extensive grass cover. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry

heavily compacted reddish brown medium clay with some roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	heavily compacted reddish brown medium clay with few roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	heavily compacted yellowish brown sandy clay with few roots. No inclusions, charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 2		
Pit 19	Pit 20	Pit 21
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive grass cover. SU1 dry consolidated yellowish red sandy clay with some grass roots; and SU2 dry and heavily compacted reddish brown medium clay with few roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive grass cover. SU1 dry consolidated yellowish red sandy clay with some grass roots; and SU2 dry heavily compacted reddish brown medium clay with few roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive surface vegetation cover. SU1 dry consolidated dark reddish brown sandy clay with few grass roots; and SU2 dry heavily compacted dark reddish brown medium clay with few roots. No inclusions, charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

Pit 22

Pit Size: 500mm x 500mm
Spit Depth: 100mm
Spits Excavated: 2
Pit End Depth: 200mm
Description: Salt bush on surface. SU1 dry consolidated reddish brown sandy clay with some roots; and SU2 dry

reddish brown sandy clay with few roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None

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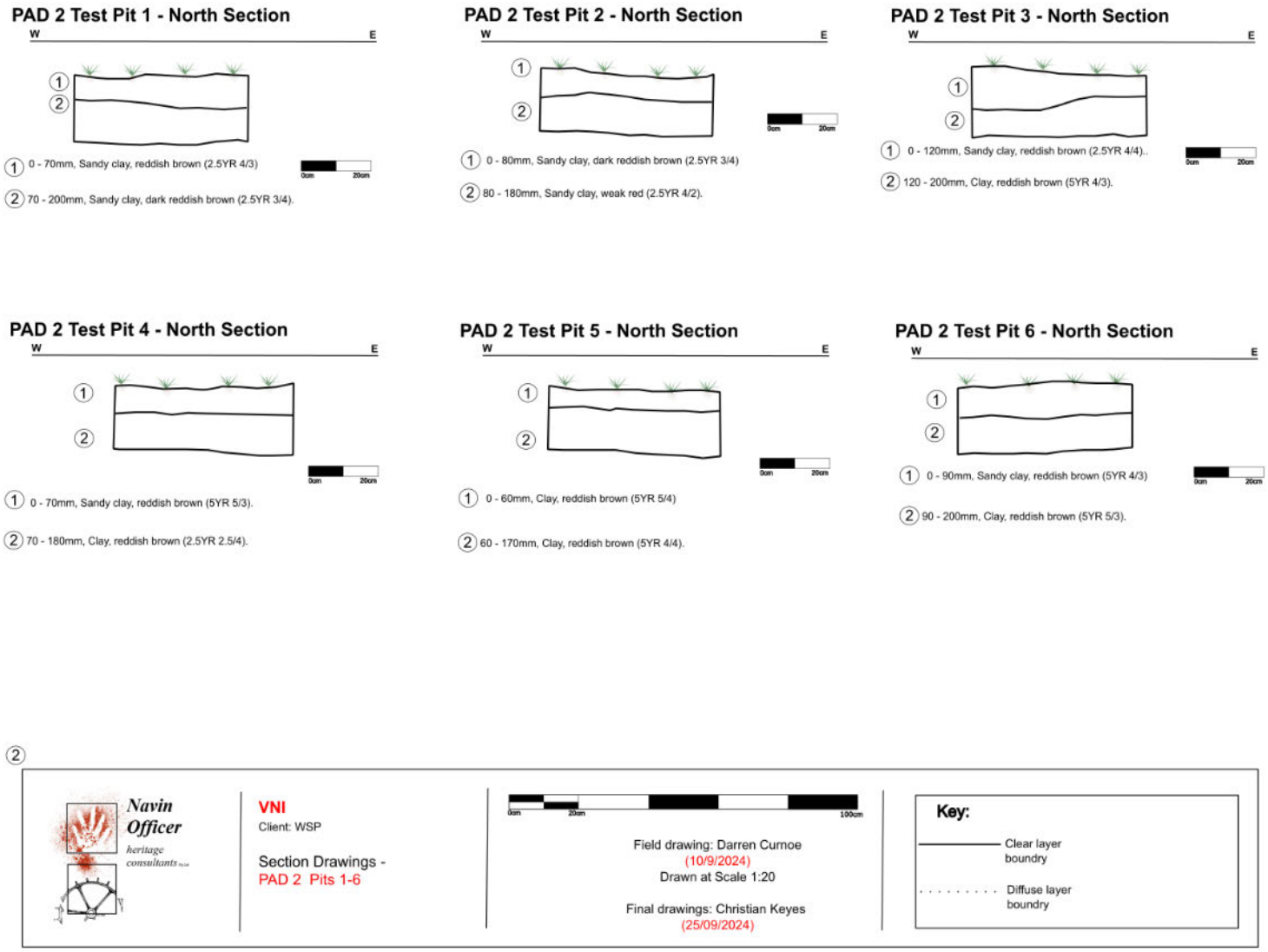


Figure A4-3 VNIW-A-PAD02 Test Pits 1–6: section drawings indicating soil textures and Munsell chart colours

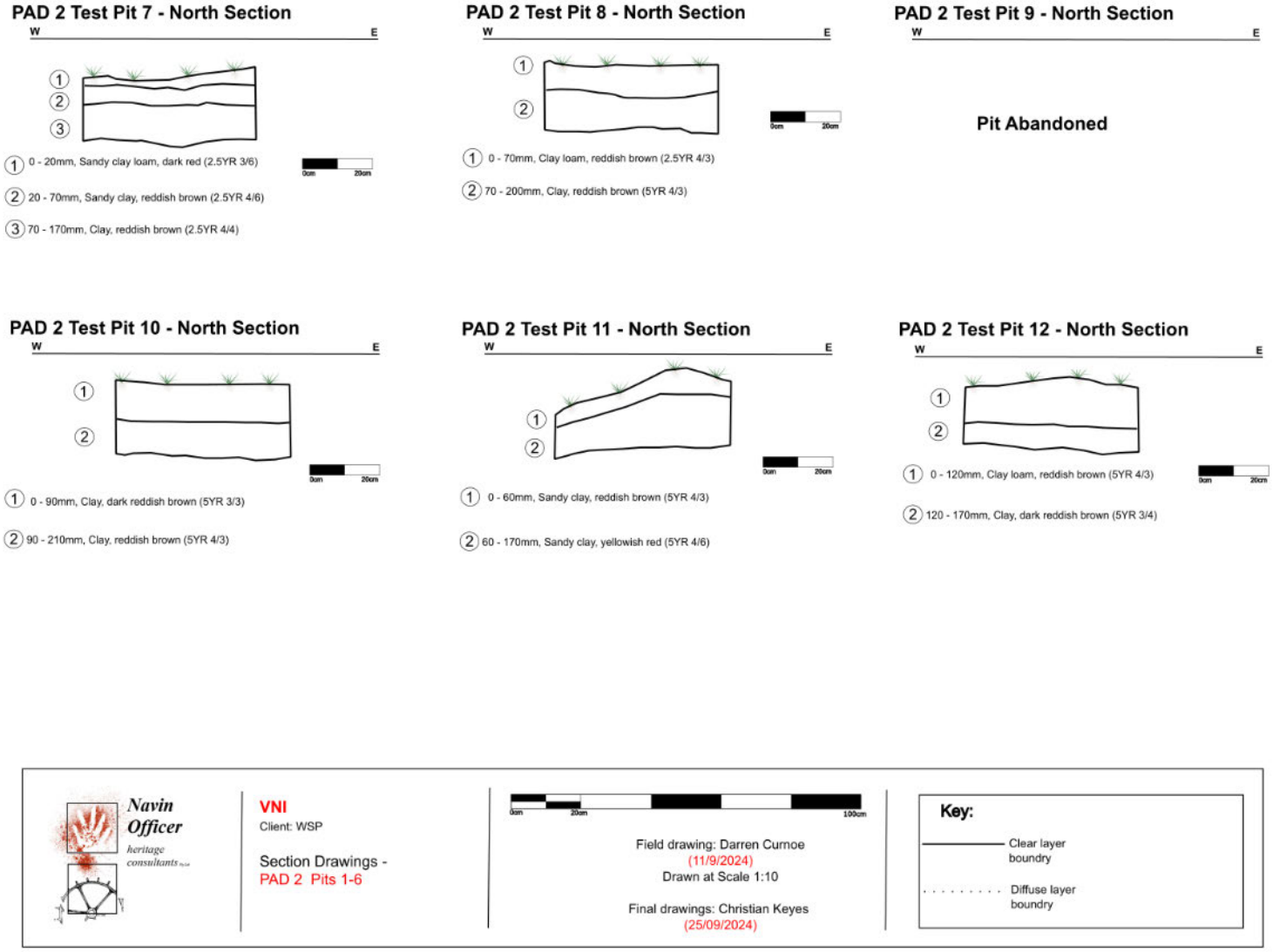


Figure A4-4 VNIW-A-PAD02 Test Pits 7–12: section drawings indicating soil textures and Munsell chart colours

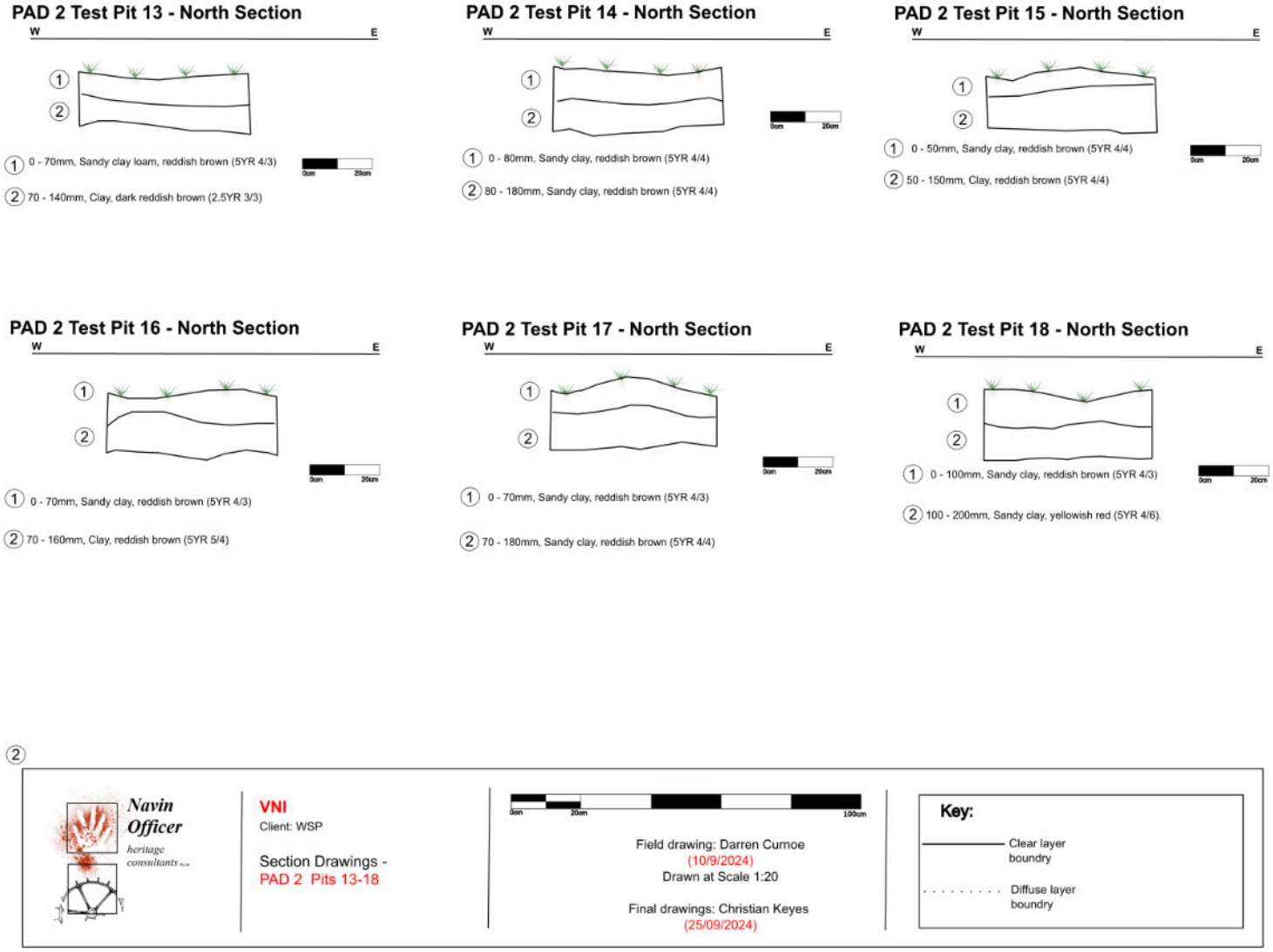


Figure A4-5 VNIW-A-PAD02 Test Pits 13–18: section drawings indicating soil textures and Munsell chart colours

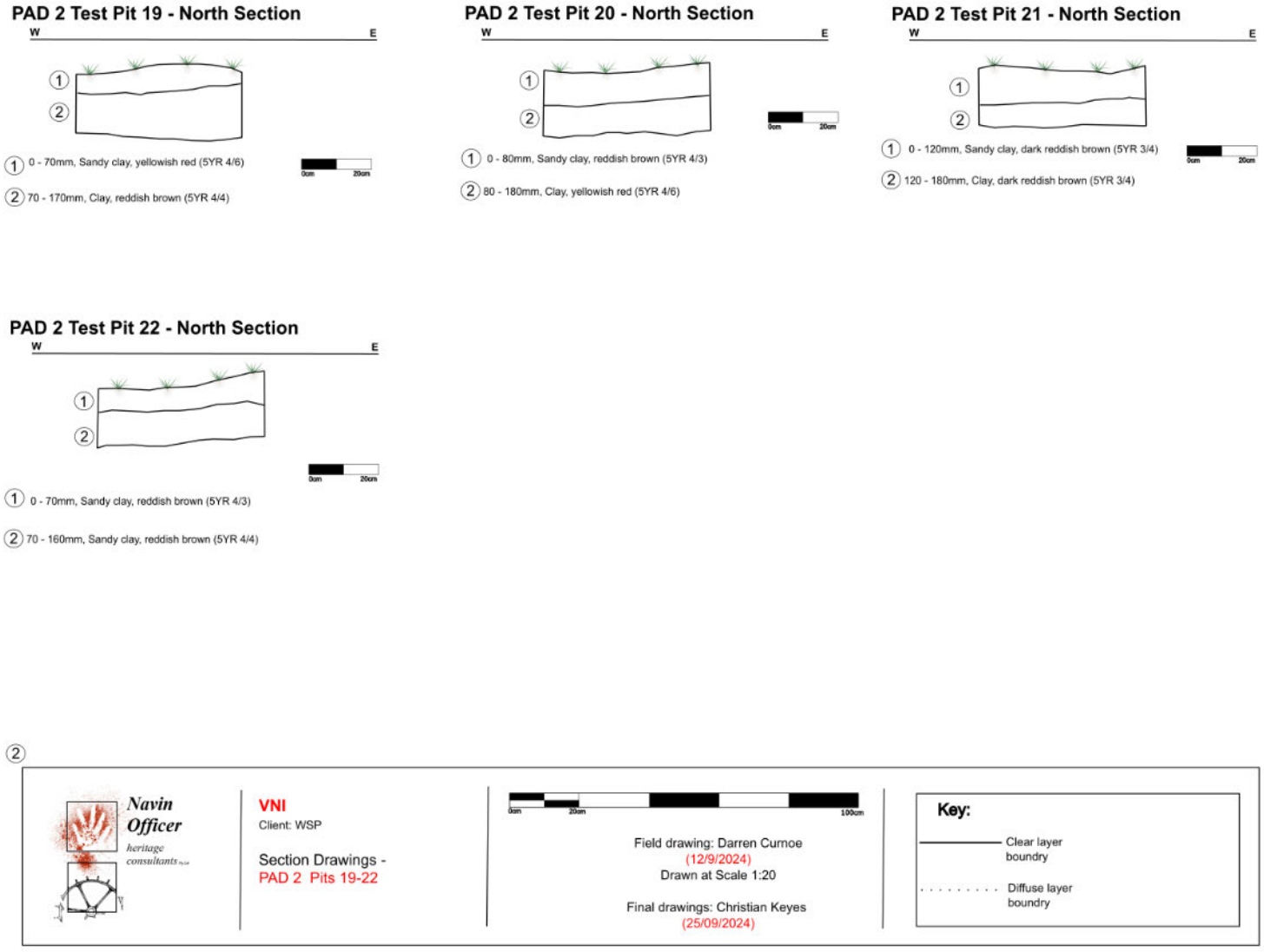


Figure A4-6 VNIW-A-PAD02 Test Pits 19–22: section drawings indicating soil textures and Munsell chart colours

Table A4-3 VNIW-A-PAD03A – summary of excavation results

PAD 3A		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover. SU1 dry consolidated yellowish red sandy medium-heavy clay with minimal grass root penetration; and SU2 dry heavily compacted dark reddish brown heavy clay with no grass roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Surface with sparse grass cover. SU1 dry consolidated dark reddish brown medium-heavy clay with few roots; and SU2 dry heavily compacted reddish brown heavy clay, roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Surface mostly barren. Single soil type, dry consolidated reddish brown medium-heavy clay with no roots. Lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Barren surface. Single soil type, dry consolidated reddish brown medium-heavy clay with no	Description: Barren surface. Single soil type, dry consolidated yellowish red medium-heavy clay with no	Description: Extensive grass cover. Single soil type, dry consolidated reddish brown medium-heavy clay with no

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roots. Lacked inclusions, charcoal and tree roots. Undisturbed profile.	roots. No inclusions, charcoal or tree roots. Undisturbed profile.	roots. No inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 3A		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Surface with moderate grass cover. Single soil type, dry heavily compacted dark reddish brown medium-heavy clay with no roots; No inclusions, and no charcoal or tree roots. Undisturbed profile.	Description: Sparse surface grass cover. Single soil type, dry heavily compacted yellowish red medium-heavy clay with no roots; No inclusions, and no charcoal or tree roots. Undisturbed profile.	Description: Minimal surface vegetation. Single soil unit, dry compacted reddish brown heavy medium-heavy with no roots. Lacking inclusions and no charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	
Spit Depth: 100mm	Spit Depth: 100mm	
Spits Excavated: 1	Spits Excavated: 1	
Pit End Depth: 100mm	Pit End Depth: 100mm	
Description: Moderate vegetation cover. Single soil type, dry compacted reddish brown medium-heavy clay with no roots. Lacking	Description: Moderate grass cover. Single soil type, dry compacted reddish brown medium-heavy clay with no roots. Lacking inclusions and	

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inclusions and no charcoal or tree roots. Undisturbed profile.	no charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None

PAD 3B		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover. Single soil type both spits, dry consolidated dark reddish brown medium-heavy clay with no grass roots. Lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Moderate grass cover. SU1 dry consolidated dark reddish brown medium-heavy clay with few grass roots; SU2 dry heavily compacted reddish brown heavy clay with no roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	Description: Surface with extensive grass cover. Single soil type, dry consolidated reddish brown medium-heavy clay with few-no grass roots. Lacked inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Moderate grass cover. Single soil type dry consolidated reddish brown sandy clay with some grass	Description: Moderate grass cover. Single soil type dry consolidated reddish brown sandy clay with some grass	Description: Moderate grass cover. Single soil type dry consolidated reddish brown sandy clay with few grass

roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 3B		
Pit 7	Pit 8	
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	
Spit Depth: 100mm	Spit Depth: 100mm	
Spits Excavated: 1	Spits Excavated: 1	
Pit End Depth: 100mm	Pit End Depth: 100mm	
Description: Extensive grass cover. Single soil type dry consolidated brown medium-heavy clay with some grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	Description: Barren surface. Single soil type dry heavily consolidated dark reddish brown medium-heavy clay with no grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	
Aboriginal Objects: None	Aboriginal Objects: None	

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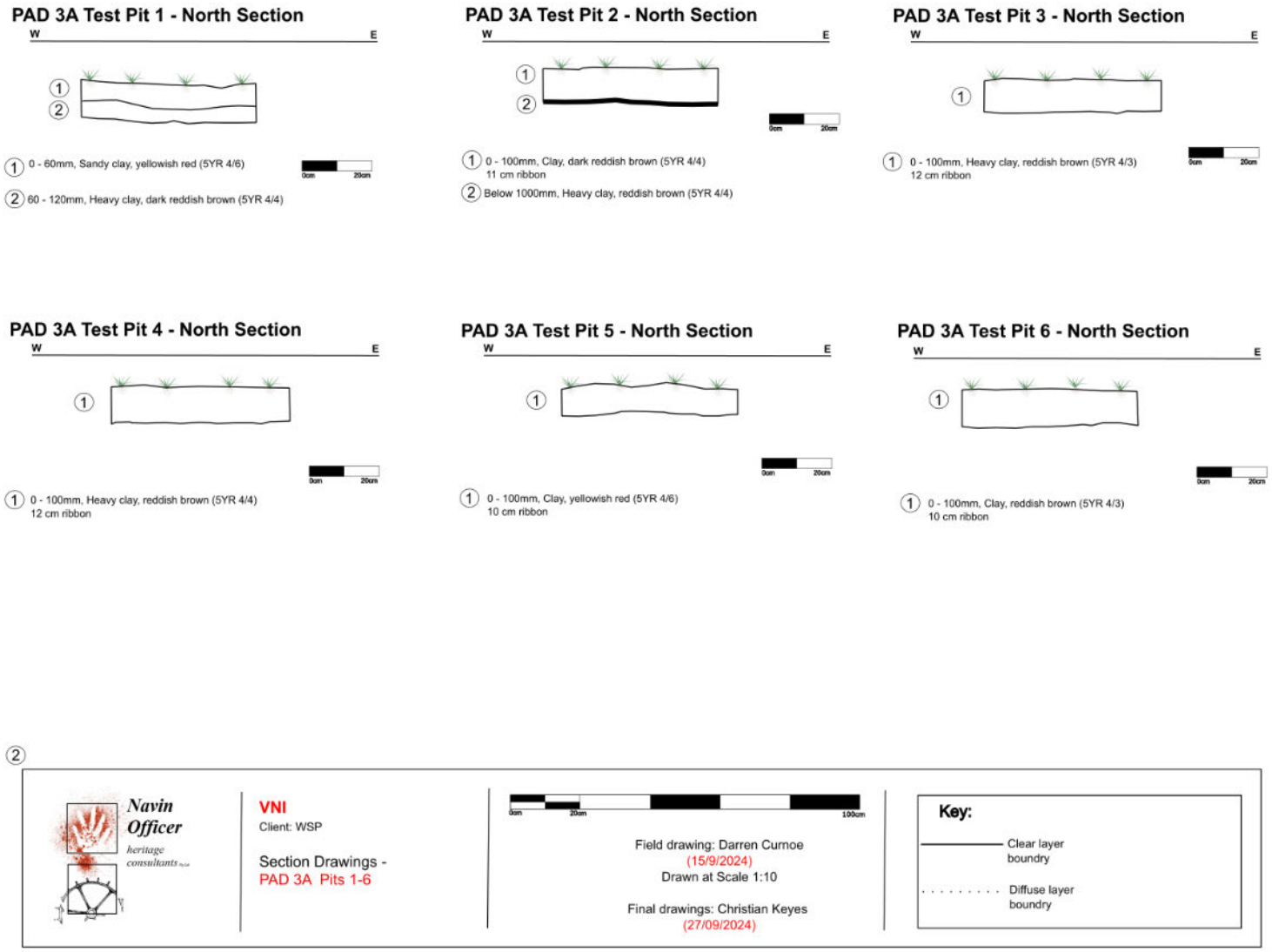


Figure A4-7 VNIW-A-PAD03A Test Pits 1–6: section drawings indicating soil textures and Munsell chart colours

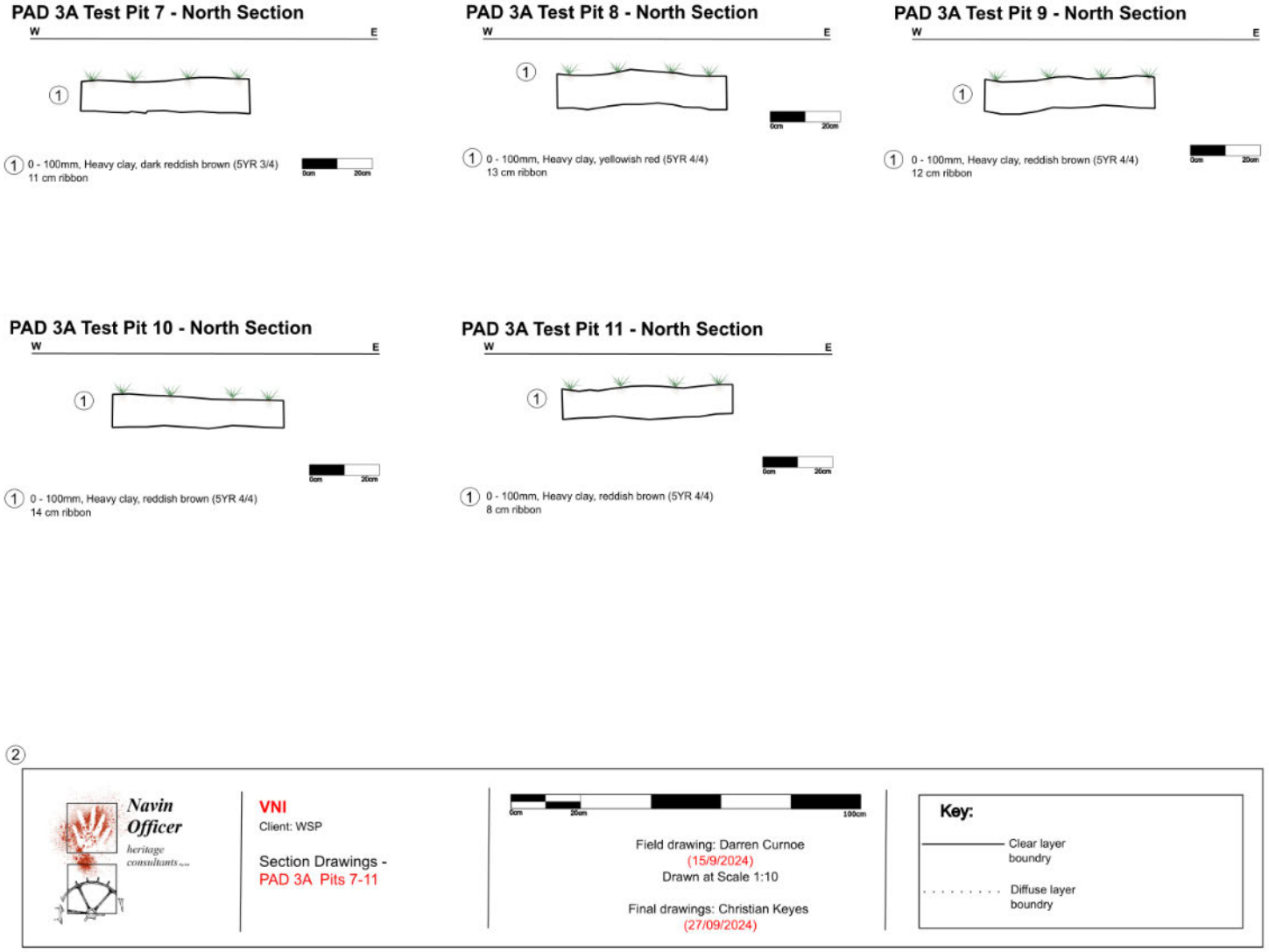


Figure A4-8 VNIW-A-PAD03A Test Pits 7–11: section drawings indicating soil textures and Munsell chart colours

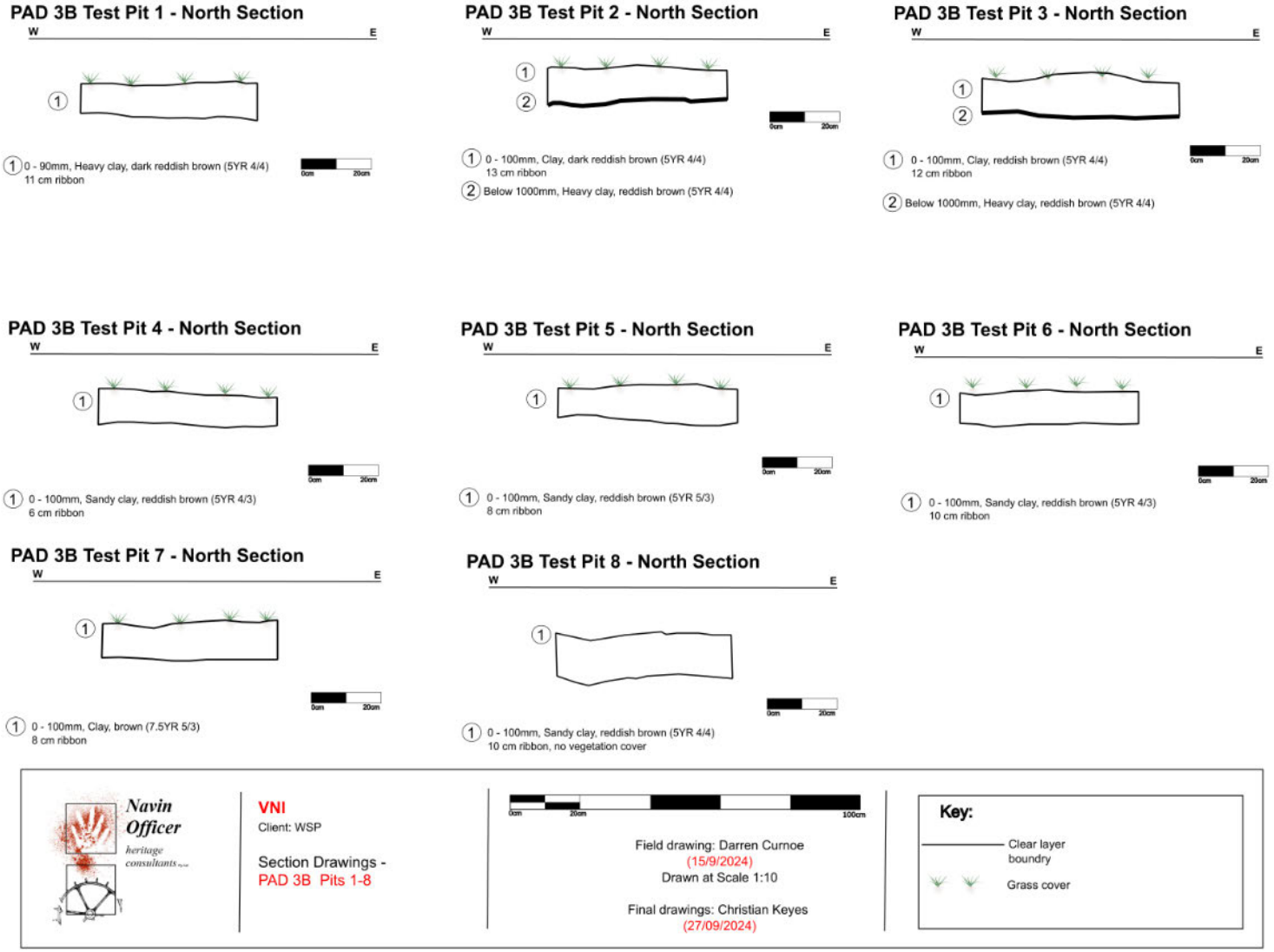


Figure A4-9 VNIW-A-PAD03B Test Pits: section drawings indicating soil textures and Munsell chart colours

Table A4-4 VNIW-A-PAD05 – summary of excavation results

PAD 5		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 150mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Extensive grass cover. Dry heavily consolidated brown medium-heavy clay with few grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Moderate grass cover. Dry heavily consolidated brown medium-heavy clay with few grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Sparse grass cover. Dry heavily consolidated brown medium-heavy clay with few grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: Nil	Aboriginal Objects: Nil	Aboriginal Objects: Nil
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: Ground surface with considerable grass cover. Extensive grass cover. Dry heavily consolidated brown medium-heavy clay with few grass roots. Lacking	Description: Extensive grass cover. Dry heavily consolidated brown medium-heavy clay with grass roots. Lacking inclusions, charcoal	Description: Moderate grass cover. Dry heavily consolidated brown medium-heavy clay with limited grass roots. Lacking inclusions,

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inclusions, charcoal and tree roots. Undisturbed profile.	and tree roots. Undisturbed profile.	charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: Nil	Aboriginal Objects: Nil	Aboriginal Objects: Nil

PAD 5
Pit 7

Pit Size: 500mm x 500mm
Spit Depth: 100mm
Spits Excavated: 2
Pit End Depth: 200mm
Description: Sparse grass cover. Dry heavily consolidated brown medium-heavy clay with limited grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: Nil

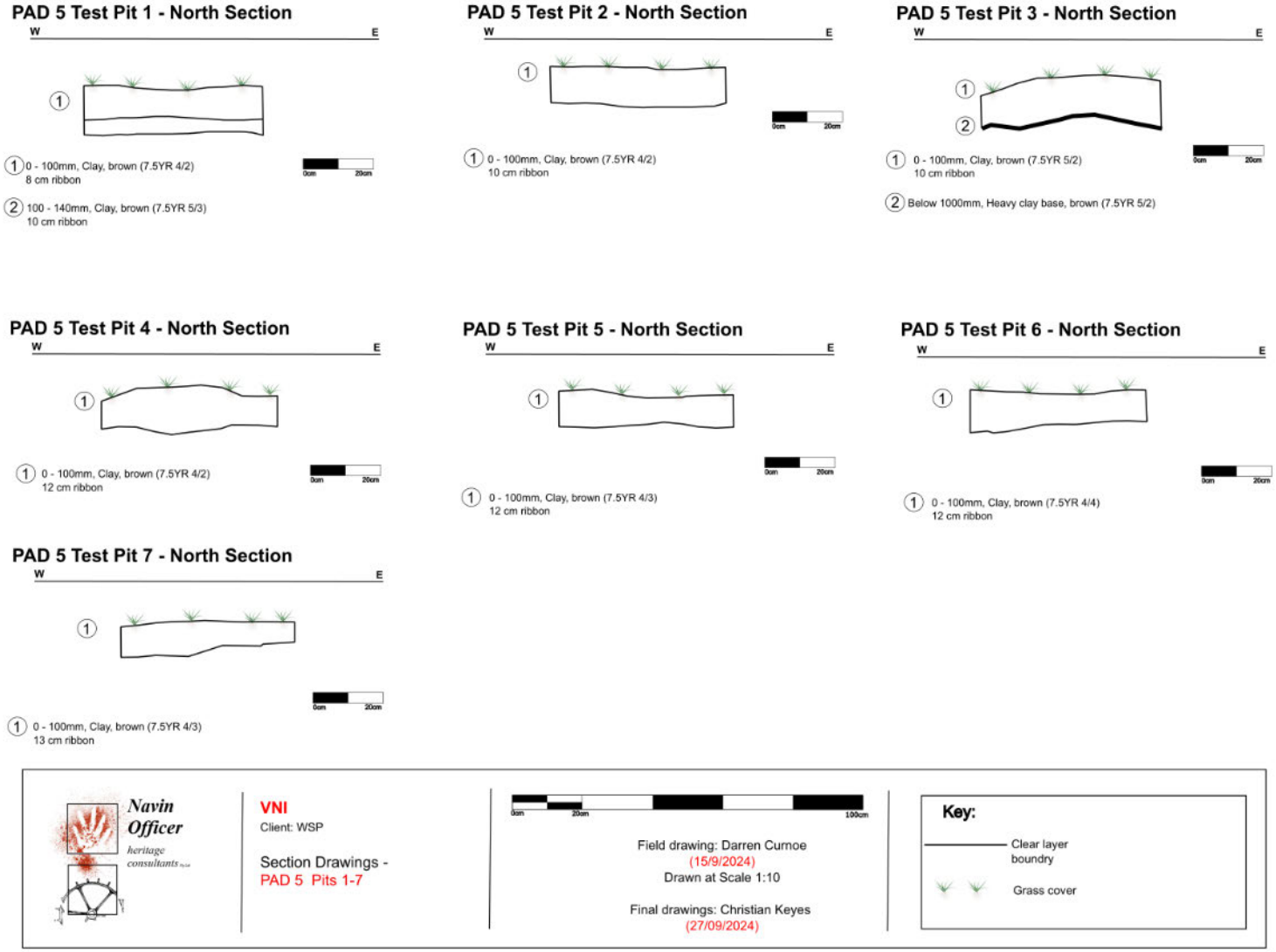


Figure A4-10 VNIW-A-PAD05 Test Pits: section drawings indicating soil textures and Munsell chart colours

Table A4-5 VNIW-A-PAD06 – summary of excavation results

PAD 6		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 200mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Sparse grass cover. Soils: SU1 dry unconsolidated dark brown loamy sand with some grass roots and sparse charcoal fragments; SU2 dry unconsolidated black loamy sand with sparse charcoal fragments; SU3 dry yellowish brown consolidated sandy loam lacking inclusions; and SU4 heavily consolidated dark yellowish brown clay lacking clasts. Undisturbed profile.	Description: Sparse grass cover. Soils: SU1 dry heavily consolidated yellowish red loamy sand with few grass roots. Clay base. Undisturbed profile.	Description: Sparse grass cover. Soils: SU1 dry consolidated reddish brown light sandy clay loam soil with few grass roots. Lacking inclusions. Clay base. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm

Description: Sparse grass cover. Soils: SU1 dry consolidated reddish brown light sandy clay loam soil with few grass roots. Lacking inclusions. Clay base. Two tree roots in north wall.	Description: Sparse grass cover. Soils: SU1 dry consolidated dark brown light clay loam soil with few grass roots. Lacking inclusions. Clay base. Undisturbed profile.	Description: Sparse grass cover. Soils: SU1 dry consolidated dark brown light clay loam soil with few grass roots. Lacking inclusions. Clay base. Tree root in southeast pit corner at base.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 6		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover. Soils: SU1 dry consolidated dark brown light clay loam soil with some grass roots. Lacking inclusions. Clay base. Undisturbed profile.	Description: Sparse grass cover. Soils: SU1 dry consolidated dark brown light clay loam soil with few grass roots. Lacking inclusions. Clay base. Undisturbed profile.	Description: Sparse grass cover. Soils: SU1 dry consolidated dark brown light clay loam soil with few grass roots; and SU2 dry dark brown consolidated sandy clay lacking grass roots. Both units absence of inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

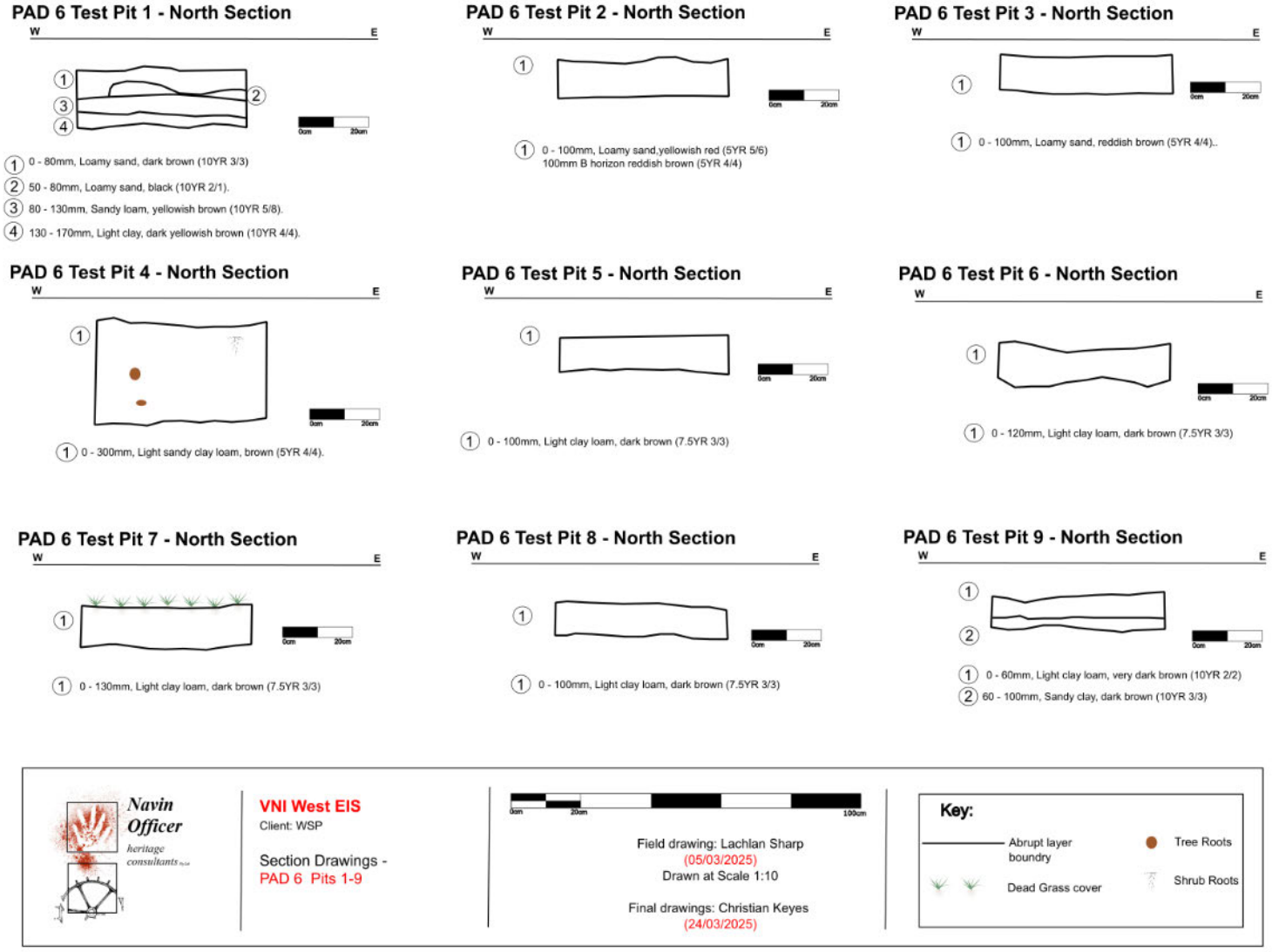


Figure A4-11 VNIW-A-PAD06 Test Pits: section drawings indicating soil textures and Munsell chart colours

Table A4-6 VNIW-A-PAD07 – summary of excavation results

PAD 7		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 2	Spits Excavated: 2
Pit End Depth: 150mm	Pit End Depth: 200mm	Pit End Depth: 200mm
Description: No grass cover. Soils: SU1 dry heavily consolidated dark brown clay loam; and SU2 dry heavily consolidated dark brown clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover. Soils: SU1 dry heavily consolidated dark brown clay loam. Lacking inclusions. Undisturbed profile. Clay base.	Description: No grass cover. Soils: SU1 dry heavily consolidated very dark grayish clay. Lacking inclusions. Some evidence for insect bioturbation.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 1
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 100mm
Description: No grass cover. Soils: SU1 dry heavily consolidated very dark brown clay loam. Lacking inclusions. Undisturbed profile. Clay base.	Description: No grass cover. Soils: SU1 dry heavily consolidated very dark grayish brown light clay; and SU2 heavily consolidated very dark brown medium clay. Lacking	Description: Sparse grass cover. Soils: SU1 dry heavily consolidated very dark grayish brown light clay loam. Lacking inclusions. Some evidence for insect bioturbation. Clay base.

	inclusions. Some evidence for insect bioturbation.	
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

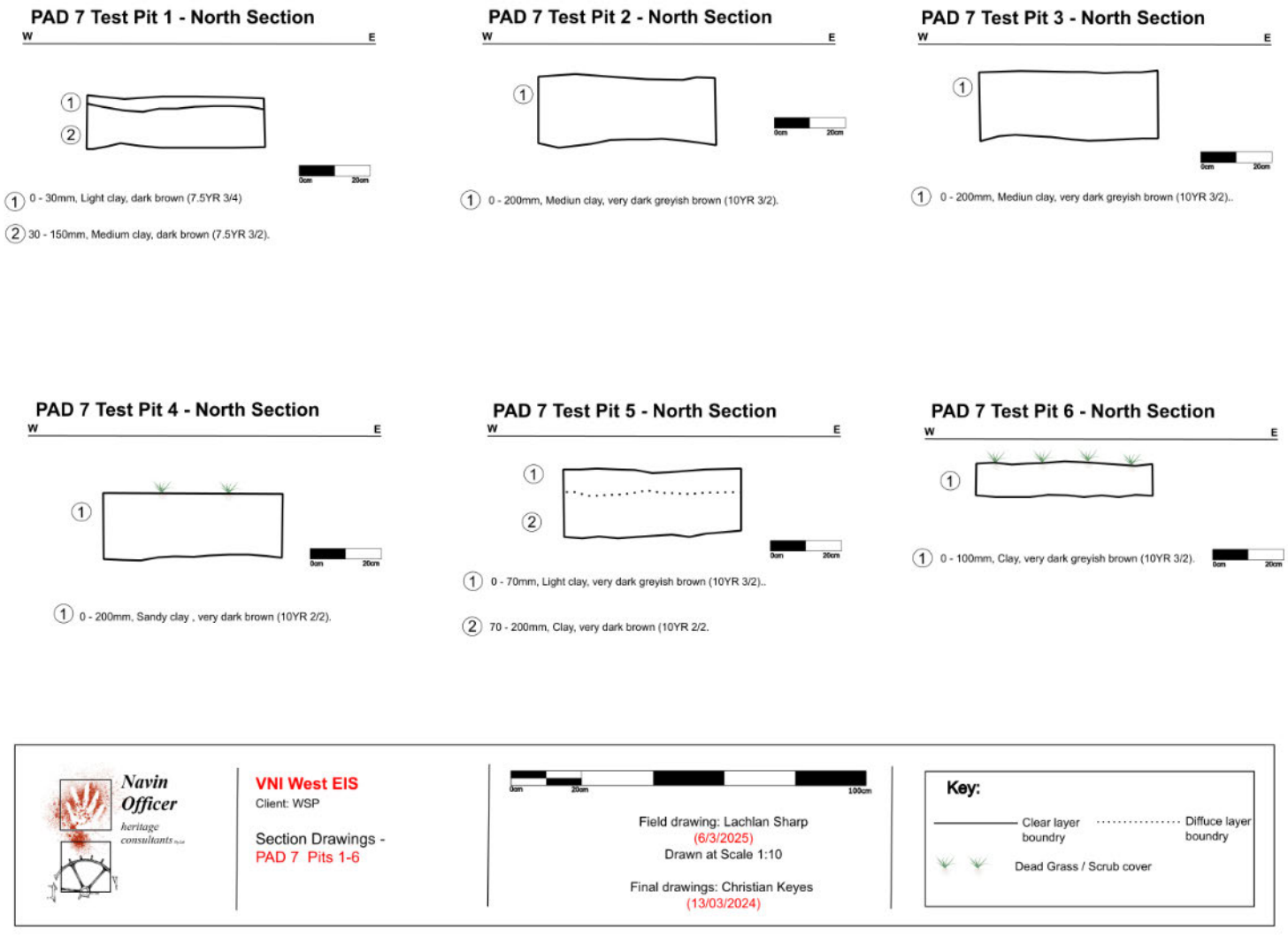


Figure A4-12 VNIW-A-PAD07 Test Pits: section drawings indicating soil textures and Munsell chart colours

Table A4-7 VNIW-A-PAD08 – summary of excavation results

PAD 8		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 8	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 400mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Moderate grass cover. Mounded surface comprising collapsed and well sorted rabbit warren. Five stratigraphic units with sharp boundaries. Soils: SU1 dry consolidated reddish brown sandy clay with some grass roots; SU2-SU3 dry consolidated reddish brown medium-heavy clay with some grass roots; SU4-SU5 dry consolidated dark reddish brown heavy clay with few grass roots. Absence of inclusions, charcoal and tree roots.	Description: Moderate grass cover. Two stratigraphic units: SU1 dry consolidated reddish brown clay sand with some grass roots; and SU2 dry consolidated reddish brown medium clay with some sand few grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Moderate grass cover. Soils dry consolidated reddish brown medium-heavy clay with some sand and sparse grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm

Official

Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Extensive surface grass cover. Soil dry consolidated reddish brown medium clay with some sand and few grass roots. Lacking inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive surface grass cover. Soil dry consolidated brown heavy clay with some sand and few grass roots. No inclusions, charcoal and tree roots. Undisturbed profile.	Description: Extensive grass cover Soil dry consolidated brown heavy clay with some sand and few grass roots. No inclusions, charcoal and tree roots. Some bioturbation (insect burrowing).
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 8		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Extensive grass cover. Soil dry consolidated reddish brown heavy clay with some sand and few grass roots. Absence of inclusions, charcoal and tree roots. Undisturbed profile.	Description: Sparse surface grass cover. Two soils: SU1 dry consolidated dark reddish brown heavy clay with sand and limited grass roots; and SU2 dry heavily compacted reddish brown heavy clay with no grass roots. Soils lacked inclusions, charcoal and tree roots. Undisturbed profile.	Description: Sparse surface grass cover. Soil dry consolidated reddish brown medium clay with sand and limited grass roots. Absence of inclusions and charcoal. Bioturbation present: ant burrows in several section walls and small tree root.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	Pit 12

		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 50mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 8
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 400mm
Description: Medium grass cover. Single soil in all spits, dry consolidated reddish brown medium clay with sand and few grass roots. Absence of inclusions and charcoal. Small tree root in east wall.	Description: Sparse grass cover. Single soil type, dry consolidated reddish brown heavy clay with sand and no grass roots. Absence of inclusions, charcoal and tree roots. Some bioturbation (ant burrows).	Description: Sparse grass cover. Single soil type, dry consolidated reddish brown sandy clay with some grass roots. Absence of inclusions and charcoal. Numerous tree roots in several section walls.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 8		
Pit 13	Pit 14	Pit 15
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Moderate grass cover. Single soil in all spits, dry consolidated reddish brown sandy clay with some grass roots. Absence of inclusions and charcoal. Bioturbation: small tree roots several walls, and ant burrows in one section wall.	Description: Extensive grass cover. Single soil, dry consolidated reddish brown sandy clay with some sparse roots. Absence of inclusions and charcoal. Small tree roots in several walls.	Description: Moderate grass cover. Single soil in all spits, dry consolidated reddish brown sandy clay with sparse grass roots. Absence of inclusions and charcoal. Tree roots in several section walls.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 16	Pit 17	Pit 18
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 50mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 8
Pit End Depth: 200mm	Pit End Depth: 200mm	Pit End Depth: 400mm
Description: Extensive surface vegetation cover. Singe soil throughout, dry consolidated reddish brown sandy clay with some grass roots. No	Description: Moderate grass cover. Single soil in all spits, dry consolidated reddish brown sandy clay with some grass roots. Absence of	Description: Moderate grass cover. Single soil in all spits, dry consolidated reddish brown sandy clay with sparse grass roots. No inclusions or

inclusions. Charcoal in west wall from burnt small tree root. Small tree roots in several section walls.	inclusions, charcoal and tree roots.	charcoal. Small tree roots in several section walls.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 8		
Pit 19	Pit 20	Pit 21
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Surface with sparse grass cover. Singe soil throughout, dry consolidated reddish brown medium clay with sand and sparse grass roots. No inclusions or charcoal. Small tree roots in north section wall.	Description: Surface with moderate grass cover. SU1 dry consolidated dark reddish brown medium-heavy clay with sand and some grass roots; and SU2 dry consolidated reddish brown medium-heavy clay with sand and few grass roots. Single small rabbit bone but no other inclusions or charcoal. Small tree roots in several section walls and pit base.	Description: Surface with moderate grass cover. Singe soil throughout, dry consolidated reddish brown heavy clay with sand and sparse grass roots. No inclusions or charcoal. Small tree roots in several section walls.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 22	Pit 23	Pit 24
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm

Description: Surface with moderate grass cover. Singe soil throughout, dry consolidated reddish brown moderate-heavy clay with sand and sparse grass roots. No inclusions or charcoal. Small tree roots in several section walls.	Description: Moderate grass cover. Singe soil, dry consolidated reddish brown moderate-heavy clay with sand and sparse grass roots. No inclusions or charcoal. Small tree roots in several section walls.	Description: Surface with moderate grass cover. Singe soil throughout, dry consolidated reddish brown moderate-heavy clay with sand and sparse grass roots. No inclusions or charcoal. Small tree roots in several section walls and pit base.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 8		
Pit 25	Pit 26	Pit 27
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 3	Spits Excavated: 3
Pit End Depth: 300mm	Pit End Depth: 300mm	Pit End Depth: 300mm
Description: Moderate grass cover. Singe soil type, dry consolidated reddish brown moderate-heavy clay with sand and few grass roots. No inclusions or charcoal. Small tree roots in several section walls and ant burrow in single wall.	Description: Moderate grass cover. SU1 dry consolidated reddish brown moderate-heavy clay with sand and sparse grass roots; and SU2 dry consolidated dark reddish brown moderate-heavy clay with sand and sparse grass roots No inclusions or charcoal. Ant burrow in north wall and small tree root in pit base.	Description: Moderate grass cover. Singe soil type, dry consolidated reddish brown moderate-heavy clay with sand and sparse grass roots. No inclusions, charcoal or tree roots. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

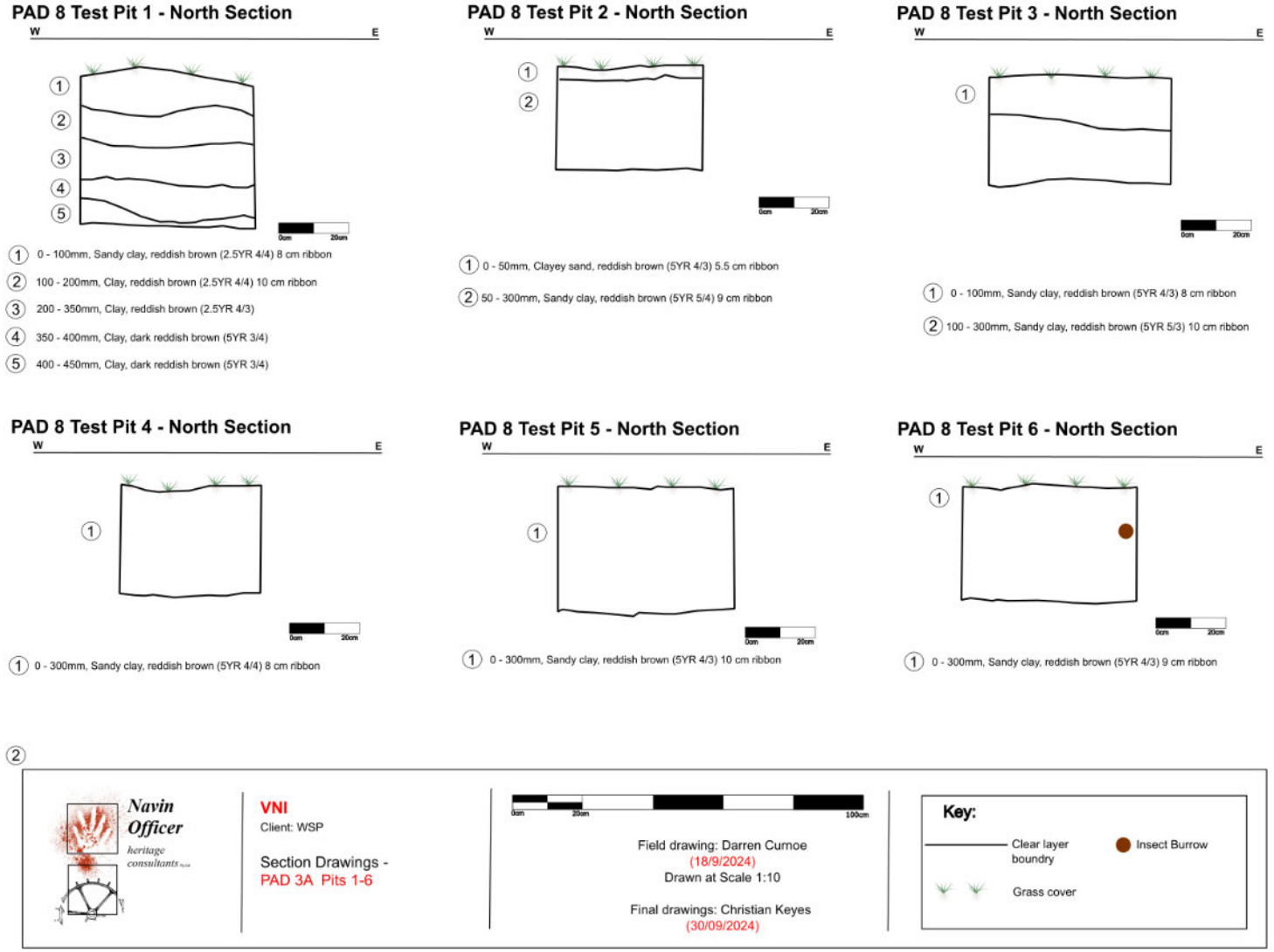


Figure A4-13 VNIW-A-PAD08 Test Pits 1–6: section drawings indicating soil textures and Munsell chart colours

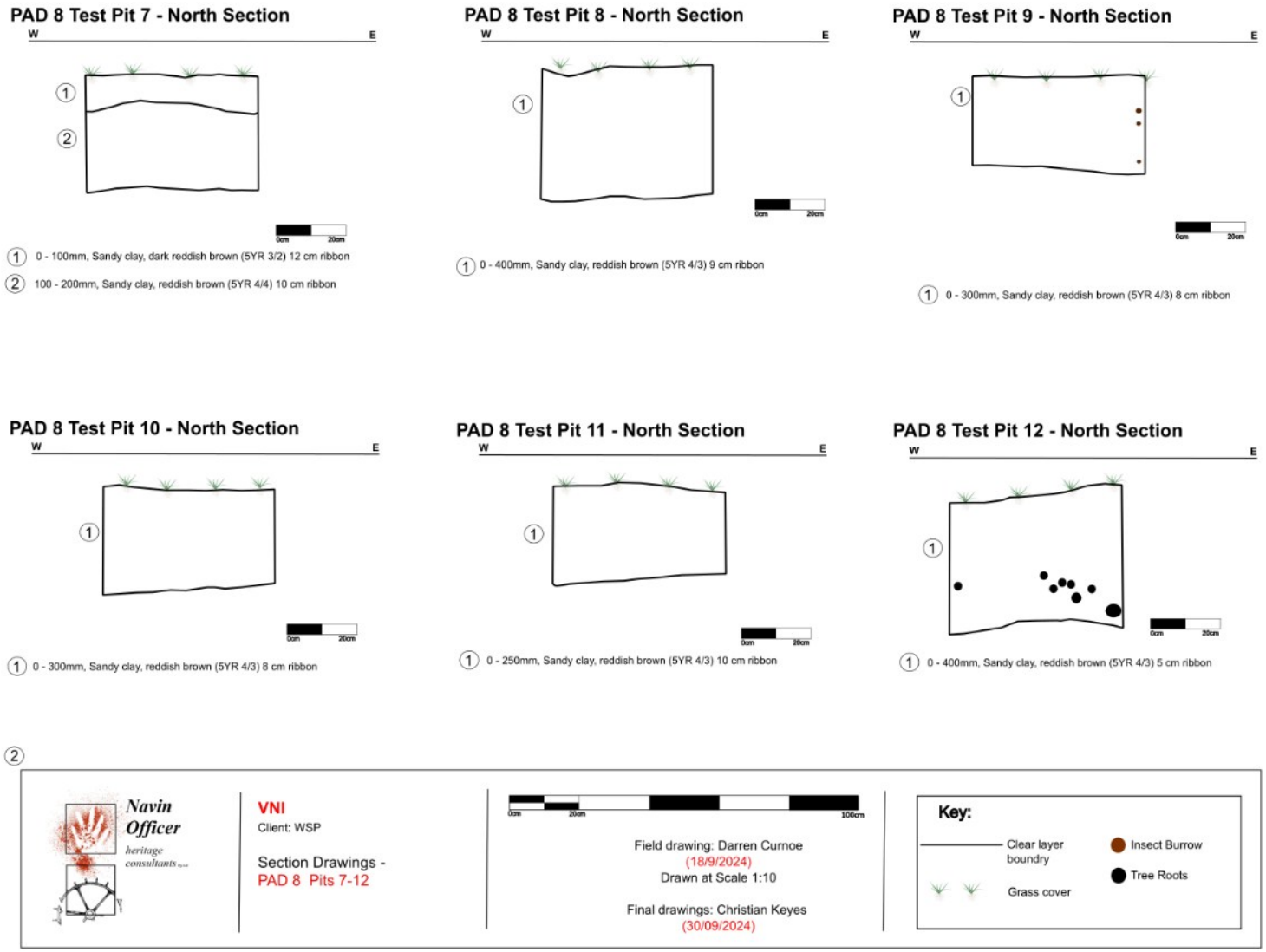


Figure A4-14 VNIW-A-PAD08 Test Pits 7–12: section drawings indicating soil textures and Munsell chart colours

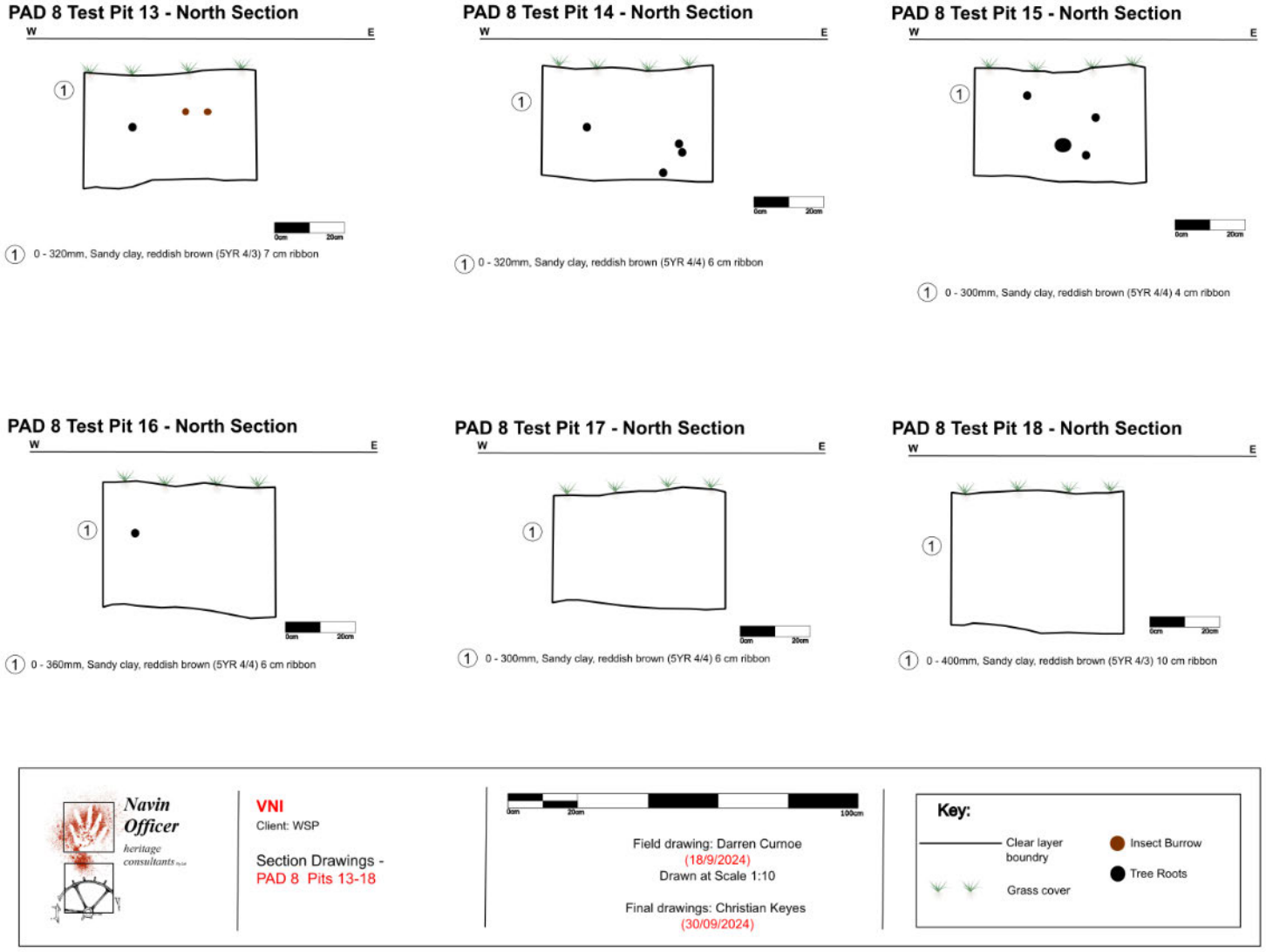


Figure A4-15 VNIW-A-PAD08 Test Pits 13–18: section drawings indicating soil textures and Munsell chart colours

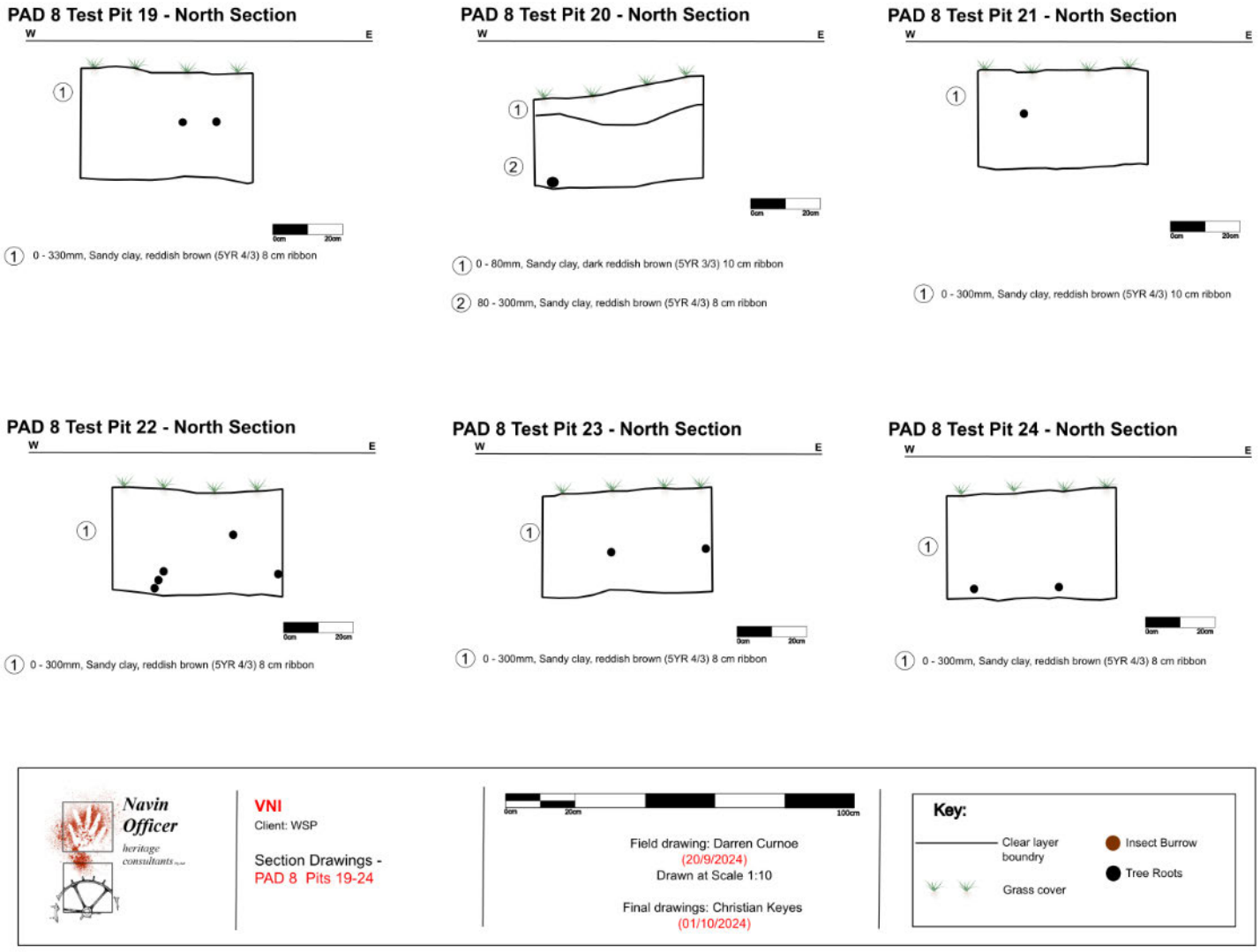


Figure A4-16 VNIW-A-PAD08 Test Pits 19–24: section drawings indicating soil textures and Munsell chart colours

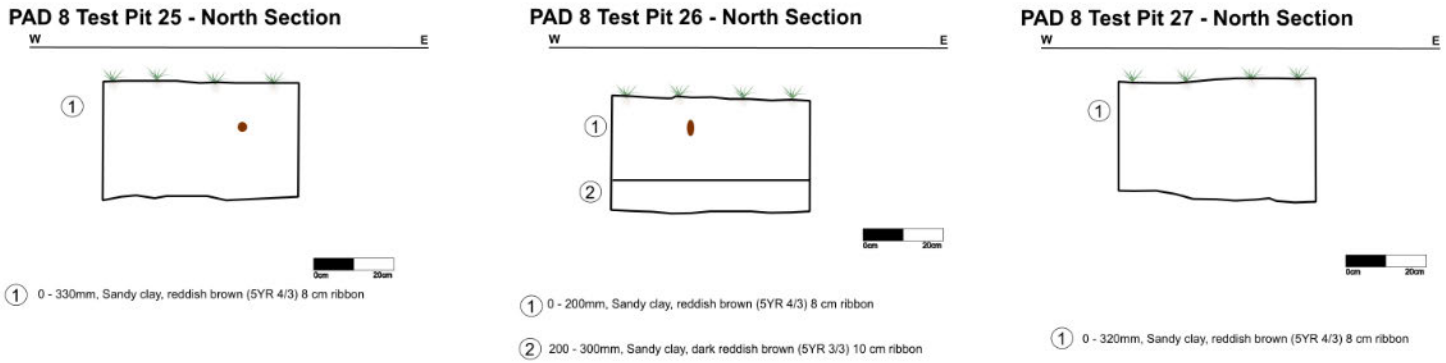


Figure A4-17 VNIW-A-PAD08 Test Pits 25–27: section drawings indicating soil textures and Munsell chart colours

Table A4-8 VNIW-A-PAD09 – summary of excavation results

PAD 9		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 3	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 150mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Sparse grass cover and few grass roots. Soils: SU1 dry consolidated brown sandy clay; and SU2 dry heavily consolidated brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown sandy clay. Lacking inclusions. Undisturbed profile. Medium clay base.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown sandy clay. Lacking inclusions. Undisturbed profile. Medium clay base.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover and few grass roots. Soils: SU1 dry consolidated brown sandy clay; and SU2 dry heavily consolidated brown medium clay. Lacking	Description: Extensive grass cover. Soils: SU1 dry consolidated brown sandy clay. Lacking inclusions.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated dark brown medium clay. Lacking

inclusions. Undisturbed profile.	Undisturbed profile. Medium clay base.	inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 9		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover. Soils: SU1 dry heavily consolidated dark brown medium clay. Lacking inclusions. Small tree root northwest pit corner.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	Pit 12
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1

Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover. Soils: SU1 dry heavily consolidated brown medium clay. Lacking inclusions. Undisturbed profile/ant burrow pit floor.	Description: Sparse grass cover. Soils: SU1 dry unconsolidated very dark brown sandy clay loam; and SU2 dry heavily consolidated brown medium clay. Lacking inclusions. Some evidence for insect bioturbation. Clay base.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

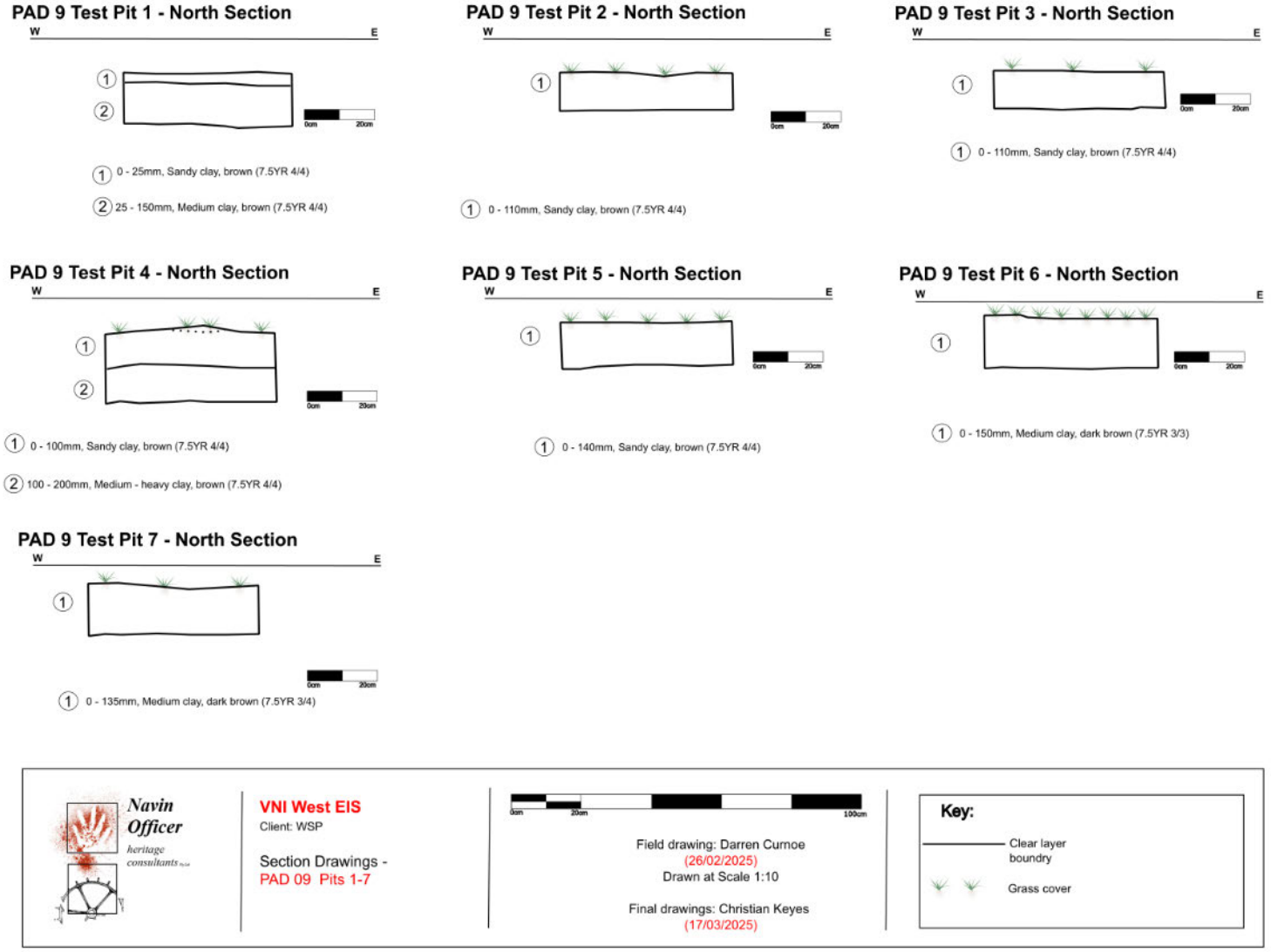


Figure A4-18 VNIW-A-PAD09 Test Pits 1–7: section drawings indicating soil textures and Munsell chart colours

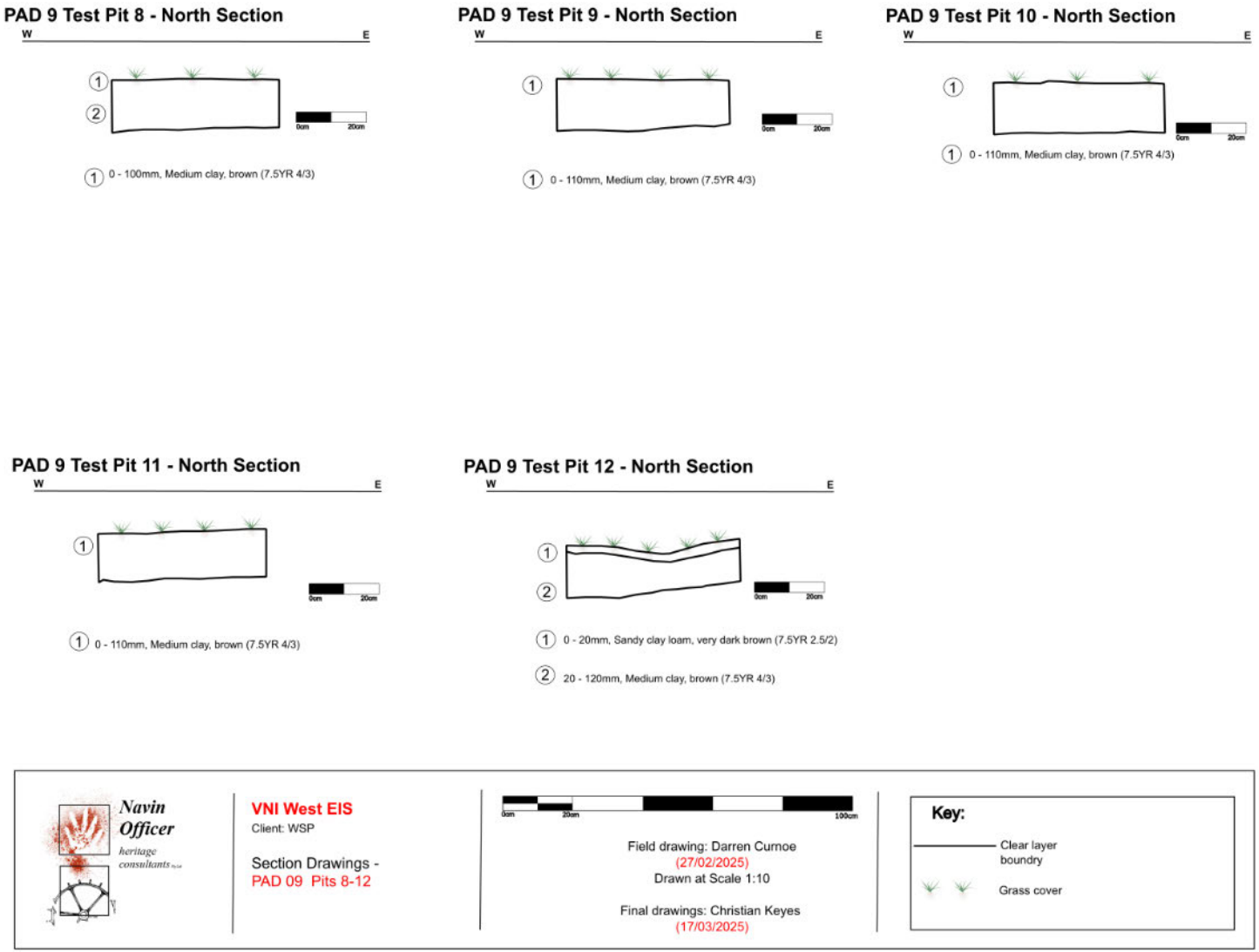


Figure A4-19 VNIW-A-PAD09 Test Pits 8–12: section drawings indicating soil textures and Munsell chart colours

Table A4-9 VNIW-A-PAD012 – summary of excavation results

PAD 12		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 200mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Sparse grass cover and few grass roots. Soils: SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover or grass roots. Soils: SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover or grass roots. Soils: SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover or grass roots. Soils: SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Sparse grass cover and few grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover or roots. Soils: SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.

Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 12		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover and no grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover and no grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover and no grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	Pit 12
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Some grass cover and grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover and no grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description Some grass cover and grass roots. Soils: SU1 dry consolidated very dark grayish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None



Official

PAD 12		
Pit 13	Pit 14	Pit 15
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover or roots. Soils: SU1 dry consolidated very dark grayish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover or roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Some grass cover and grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 16	Pit 17	Pit 18
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover or grass roots. Soils: SU1 dry consolidated very dark brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Some grass cover and grass roots. Soils: SU1 dry consolidated very dark gray medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover or grass roots. Soils: SU1 dry consolidated very dark gray medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None



Official

PAD 12		
Pit 19	Pit 20	Pit 21
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover or roots. Soils: SU1 dry consolidated very dark gray medium clay. Lacking inclusions. Undisturbed profile.	Description: Some grass cover and grass roots. Soils: SU1 dry consolidated very dark grayish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Some grass cover and grass roots. Soils: SU1 dry consolidated dark grayish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

Pit 22

Pit Size: 500mm x 500mm
Spit Depth: 100mm
Spits Excavated: 1
Pit End Depth: 100mm
Description: No grass cover or grass roots. Soils: SU1 dry consolidated very dark grayish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None

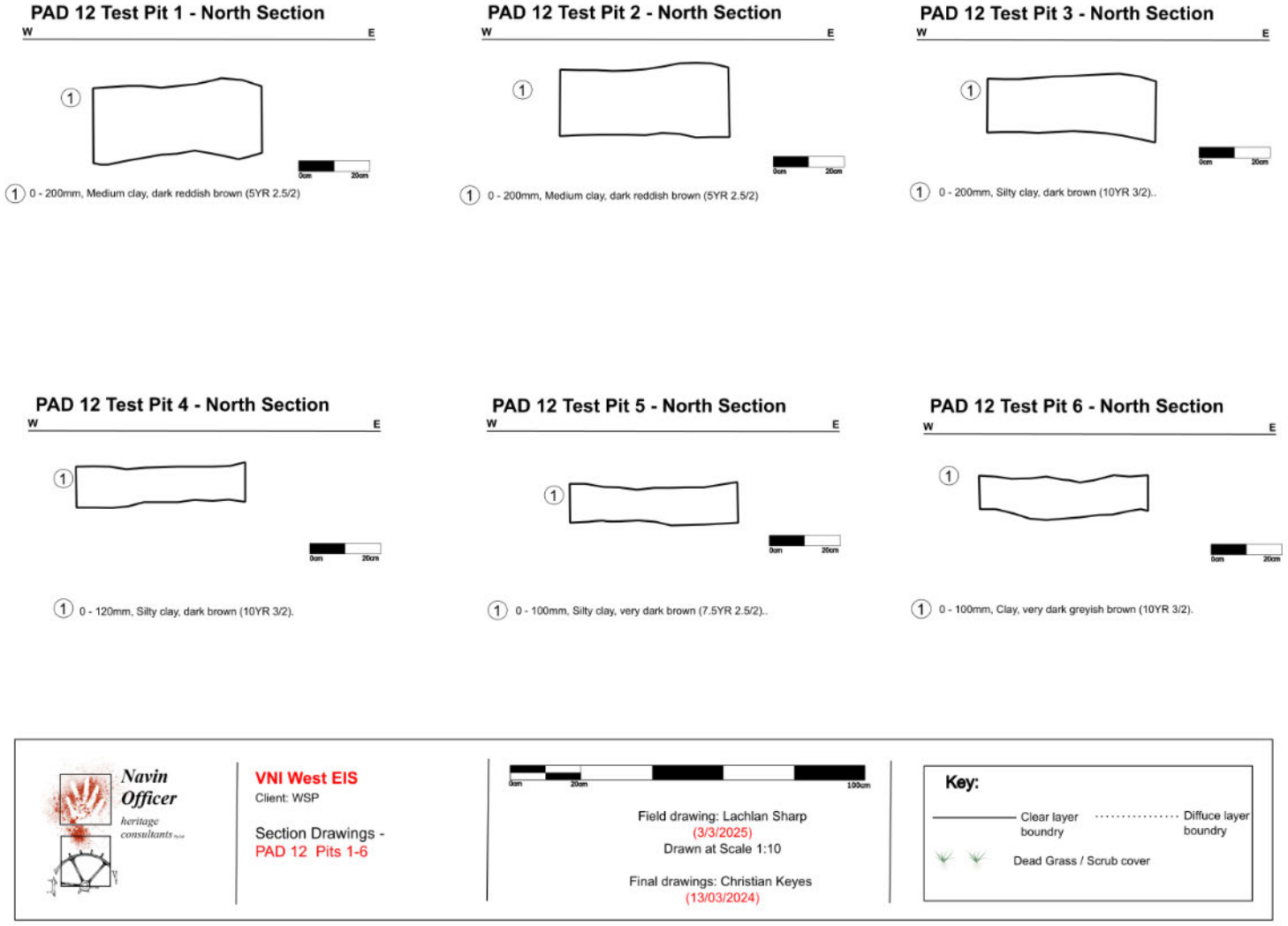


Figure A4-20 VNIW-A-PAD012 Test Pits 1–6: section drawings indicating soil textures and Munsell chart colours

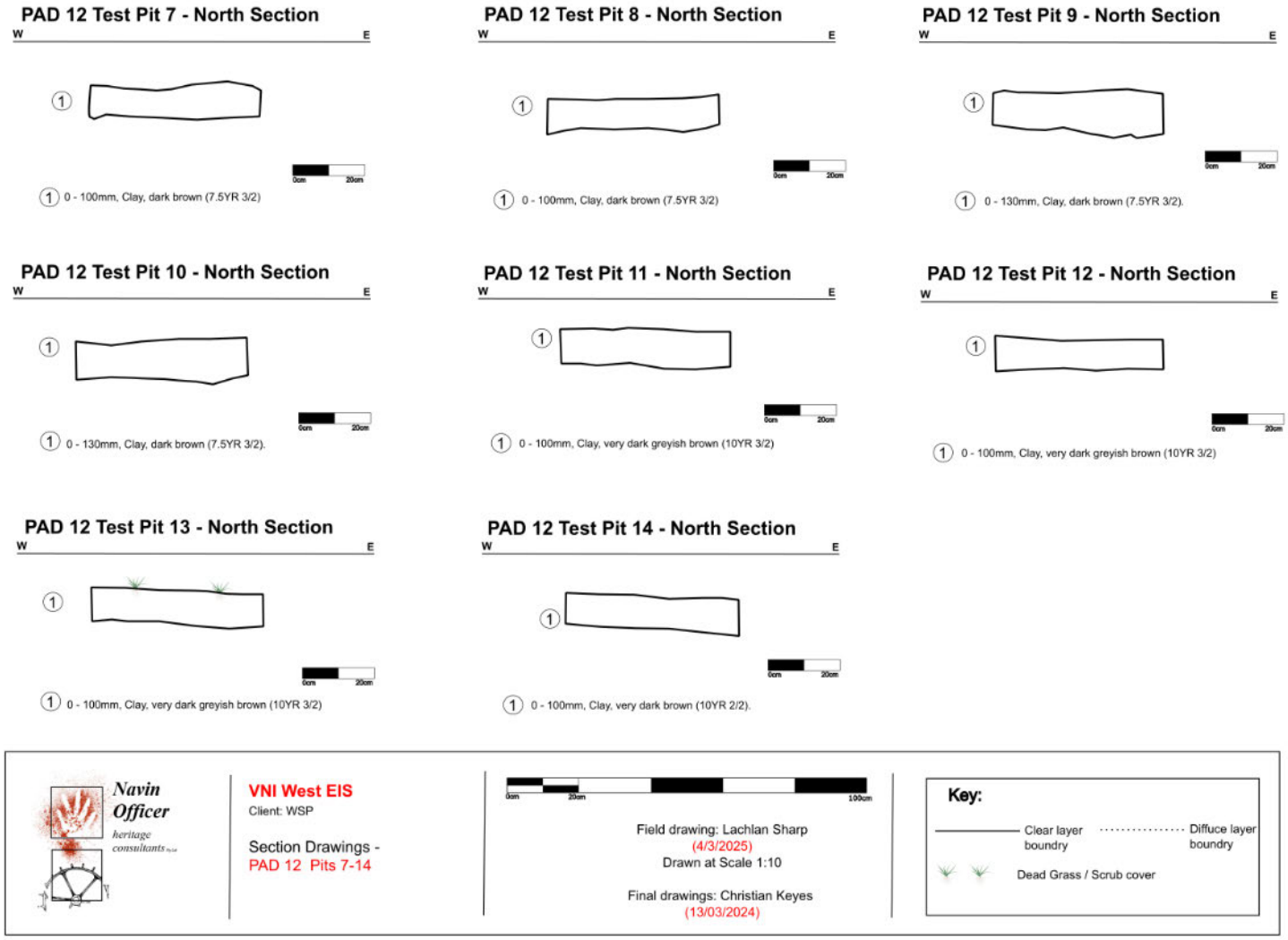


Figure A4-21 VNIW-A-PAD012 Test Pits 7–14: section drawings indicating soil textures and Munsell chart colours

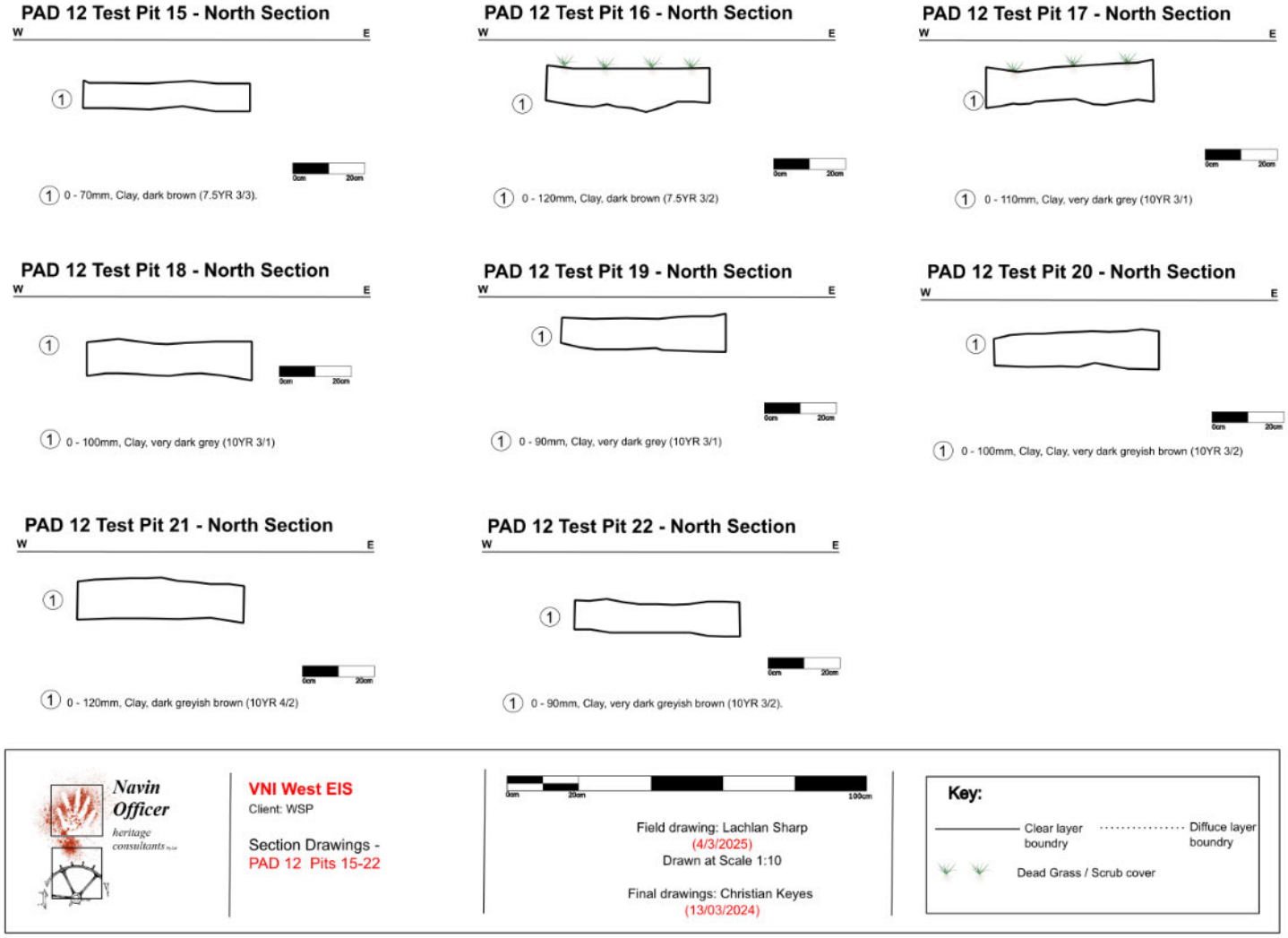


Figure A4-22 VNIW-A-PAD012 Test Pits 15–22: section drawings indicating soil textures and Munsell chart colours

Table A4-10 VNIW-A-PAD016 – summary of excavation results

PAD 16		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 200mm	Spit Depth: 200mm
Spits Excavated: 8	Spits Excavated: 3	Spits Excavated: 4
Pit End Depth: 400mm	Pit End Depth: 300mm	Pit End Depth: 400mm
Description: Sparse grass cover and some grass roots. Soils: SU1 dry unconsolidated yellowish red sand. Lacking inclusions. Undisturbed profile. Clay base.	Description: Extensive grass cover but no grass roots. Soils: SU1 dry unconsolidated strong brown sand; and SU2 dry consolidated dark reddish brown clayey sand. Charcoal pieces and staining. Lacking inclusions. Undisturbed profile. Clay base.	Description: Sparse grass cover and some grass roots. Soils: SU1 dry consolidated strong brown sand. Lacking inclusions. Undisturbed profile. Clay base.
Aboriginal Objects: None	Aboriginal Objects: Probable hearth	Aboriginal Objects: Fresh water mussel shells
Pit 4		
		
Pit Size: 500mm x 500mm		
Spit Depth: 100mm		
Spits Excavated: 4		
Pit End Depth: 400mm		
Description: No grass cover or grass roots. Soils: SU1 dry unconsolidated yellowish red sand; and SU2 SU1 dry consolidated yellowish red		

clayey sand. Lacking inclusions. Undisturbed profile. Clay base.
Aboriginal Objects: None

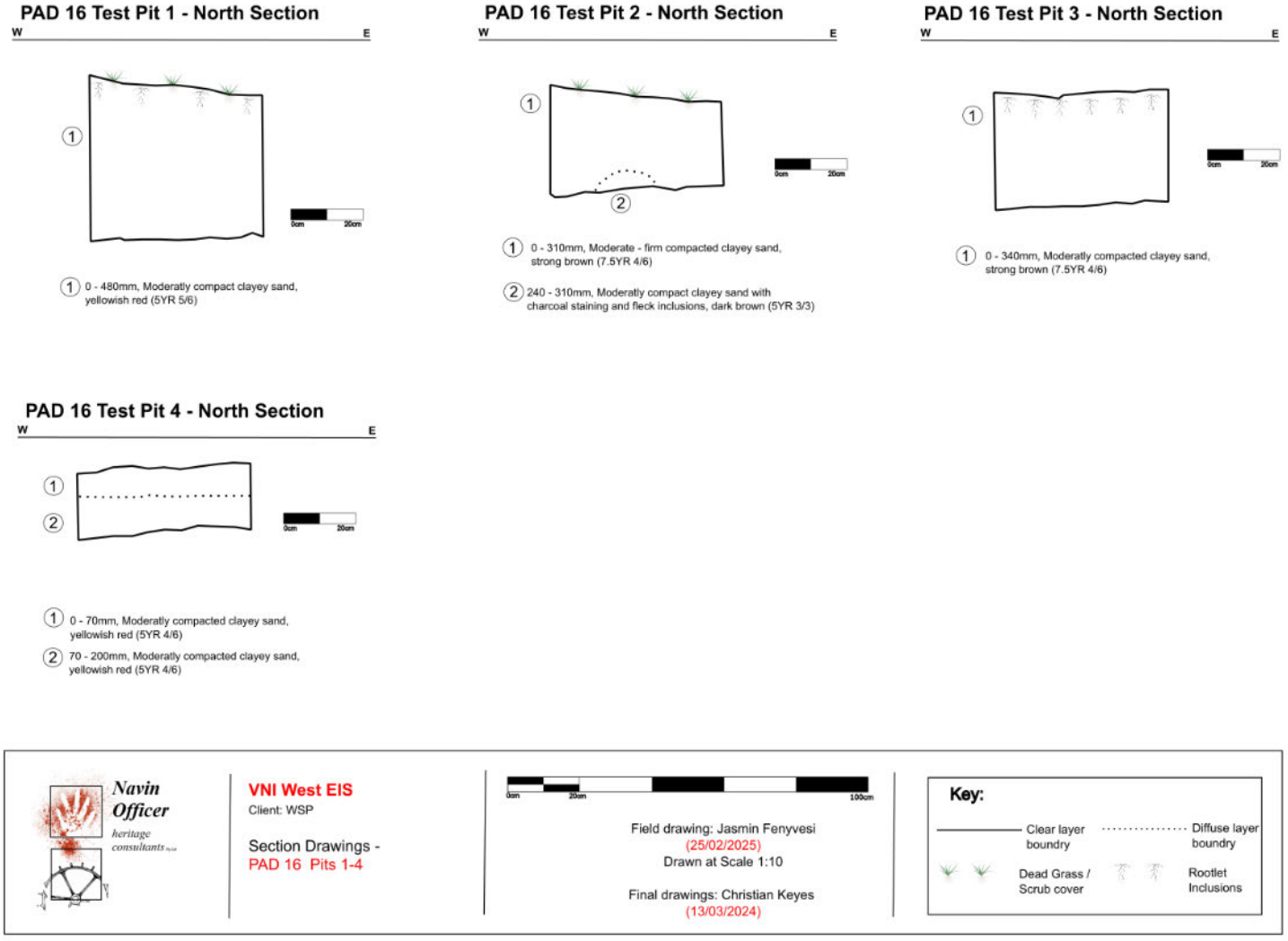


Figure A4-23 VNIW-A-PAD016: section drawings indicating soil textures and Munsell chart colours

Table A4-11 VNIW-A-PAD017 – summary of excavation results

PAD 16		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 12	Spits Excavated: 5	Spits Excavated: 7
Pit End Depth: 600mm	Pit End Depth: 500mm	Pit End Depth: 700mm
Description: Sparse grass cover and some grass roots. Soils: SU1 dry unconsolidated yellowish red sand becoming more consolidated with depth. Blackened tree root fragments/natural burning. Undisturbed profile. Clay base.	Description: No grass cover but some grass roots penetrating to ~350mm. SU1 dry unconsolidated yellowish red sand becoming more consolidated with depth. Lacking inclusions. Undisturbed profile. Clay base.	Description: Sparse grass cover and some grass roots. Soils: SU1 dry unconsolidated strong brown sand becoming more consolidated with depth; and SU2 yellowish red clayey sand. Lacking inclusions. Undisturbed profile. Clay base.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 5	Spits Excavated: 7	Spits Excavated: 5
Pit End Depth: 500mm	Pit End Depth: 700mm	Pit End Depth: 500mm
Description: No grass cover but some grass roots at depth ~400mm. Soils: SU1 dry unconsolidated yellowish sand becoming more	Description: No grass cover or grass roots. Soils: SU1 dry unconsolidated yellowish sand becoming more consolidated with depth.	Description: Sparse grass cover and some grass roots immediately below surface and at depth ~400mm . Soils: SU1 dry unconsolidated

consolidated with depth. Lacking inclusions. Undisturbed profile. Clay base.	Undisturbed profile. Clay base.	yellowish sand becoming more consolidated with depth. Lacking inclusions. Undisturbed profile. Clay base.
Aboriginal Objects: None	Aboriginal Objects: Artefact (quartz flake)	Aboriginal Objects: None

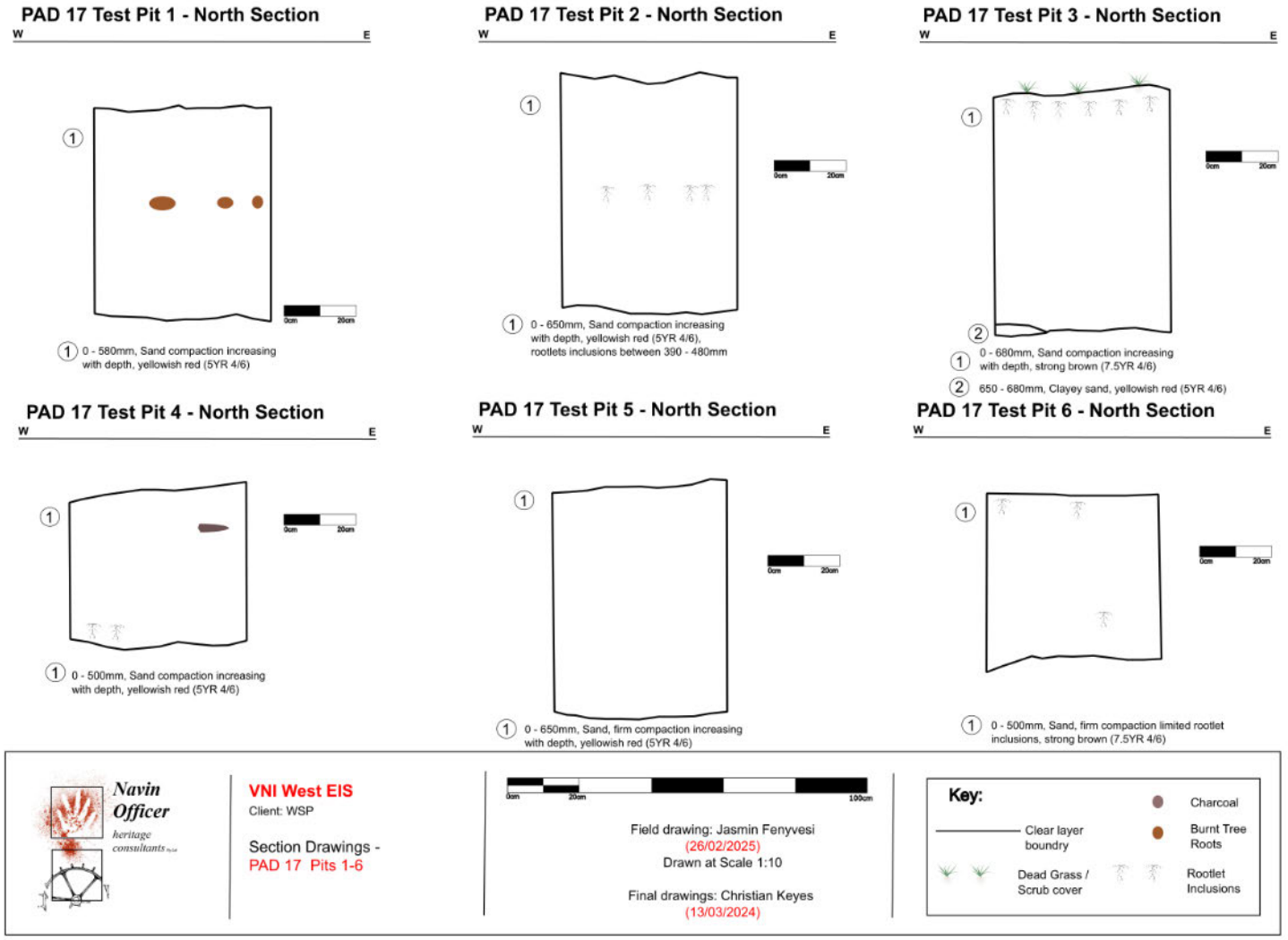


Figure A4-24 VNIW-A-PAD017: section drawings indicating soil textures and Munsell chart colours

Table A4-12 VNIW-A-PAD019 – summary of excavation results

PAD 19		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 2	Spits Excavated: 2	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 200mm	Pit End Depth: 100mm
Description: Extensive grass cover and some grass roots. SU1 dry heavily consolidated dark reddish brown light clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass roots. SU1 dry heavily consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass roots. SU1 dry consolidated dark reddish brown sandy clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover with some penetrating grass roots. SU1 dry heavily consolidated dark reddish brown sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass roots. SU1 dry heavily consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with few grass roots. SU1 dry consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.

Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 19		
Pit 7	Pit 8	Pit 9
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover with some grass roots. SU1 dry consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass roots. SU1 dry consolidated yellowish red medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover with no grass roots. SU1 dry heavily consolidated reddish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 10	Pit 11	Pit 12
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover with some grass roots. SU1 dry heavily consolidated yellowish reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some penetrating grass roots. SU1 dry heavily consolidated yellowish reddish brown sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with minimal grass root penetration. SU1 dry heavily consolidated reddish brown medium clay. Lacking inclusions. Undisturbed profile.

Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 19		
Pit 13	Pit 14	Pit 15
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Sparse grass cover with minimal grass roots. SU1 dry heavily consolidated dark reddish brown sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some penetrating grass roots. SU1 dry heavily consolidated yellowish red medium clay. Lacking inclusions. Undisturbed profile.	Description: Some grass cover with minimal grass roots. SU1 dry heavily consolidated reddish brown sandy clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 16	Pit 17	Pit 18
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover with some penetrating grass roots. SU1 dry heavily consolidated dark reddish brown sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass roots. SU1 dry heavily consolidated dark reddish brown sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with some grass root penetration. SU1 dry heavily consolidated yellowish red medium clay. Lacking inclusions. Undisturbed profile.

Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

PAD 19	
Pit 19	Pit 20
	
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Extensive grass cover with minimal grass roots. SU1 dry consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.	Description: Extensive grass cover with minimal grass roots. SU1 dry consolidated yellowish red sandy clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None

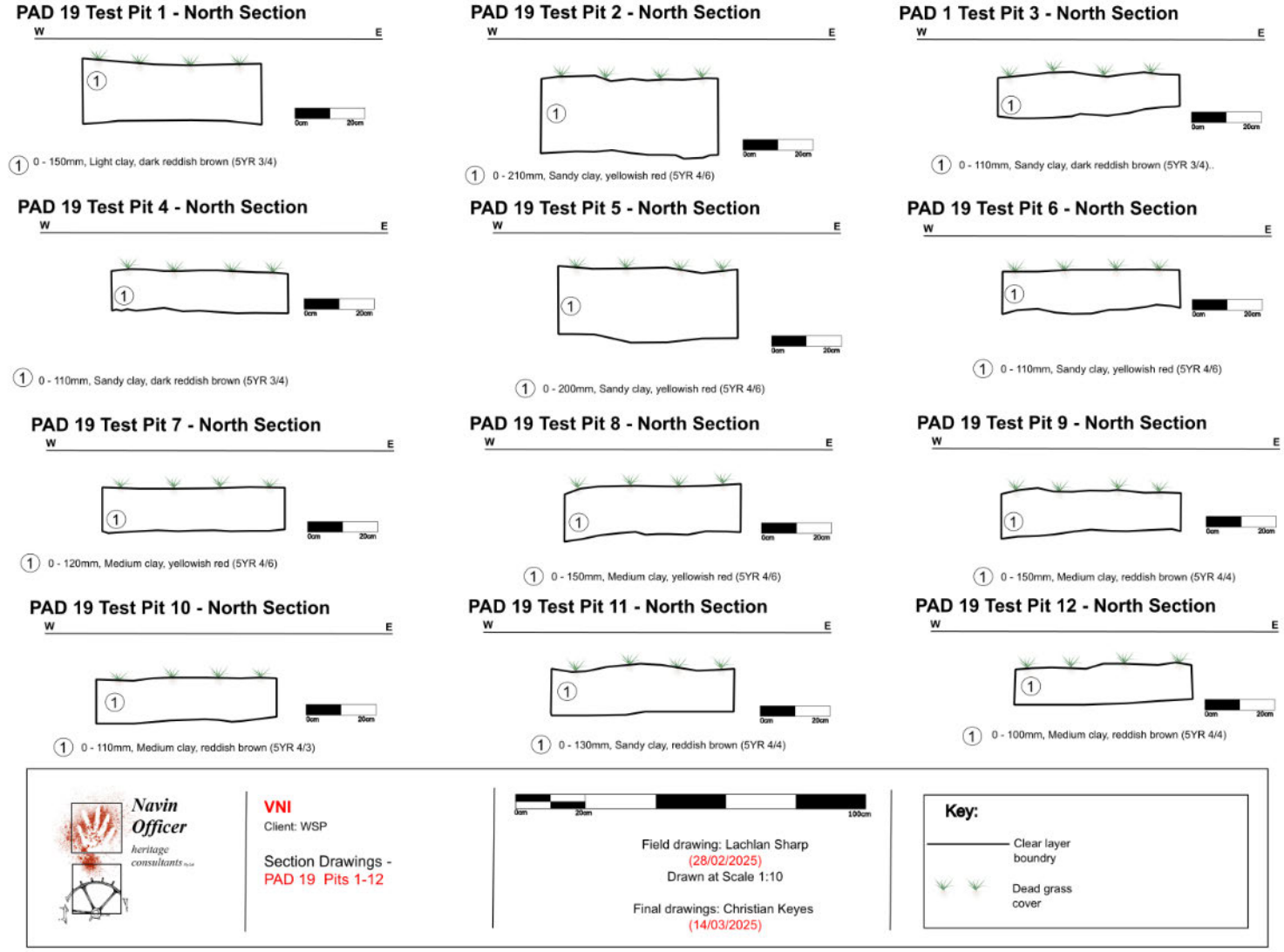


Figure A4-25 VNIW-A-PAD019 Pits 1–12: section drawings indicating soil textures and Munsell chart colours

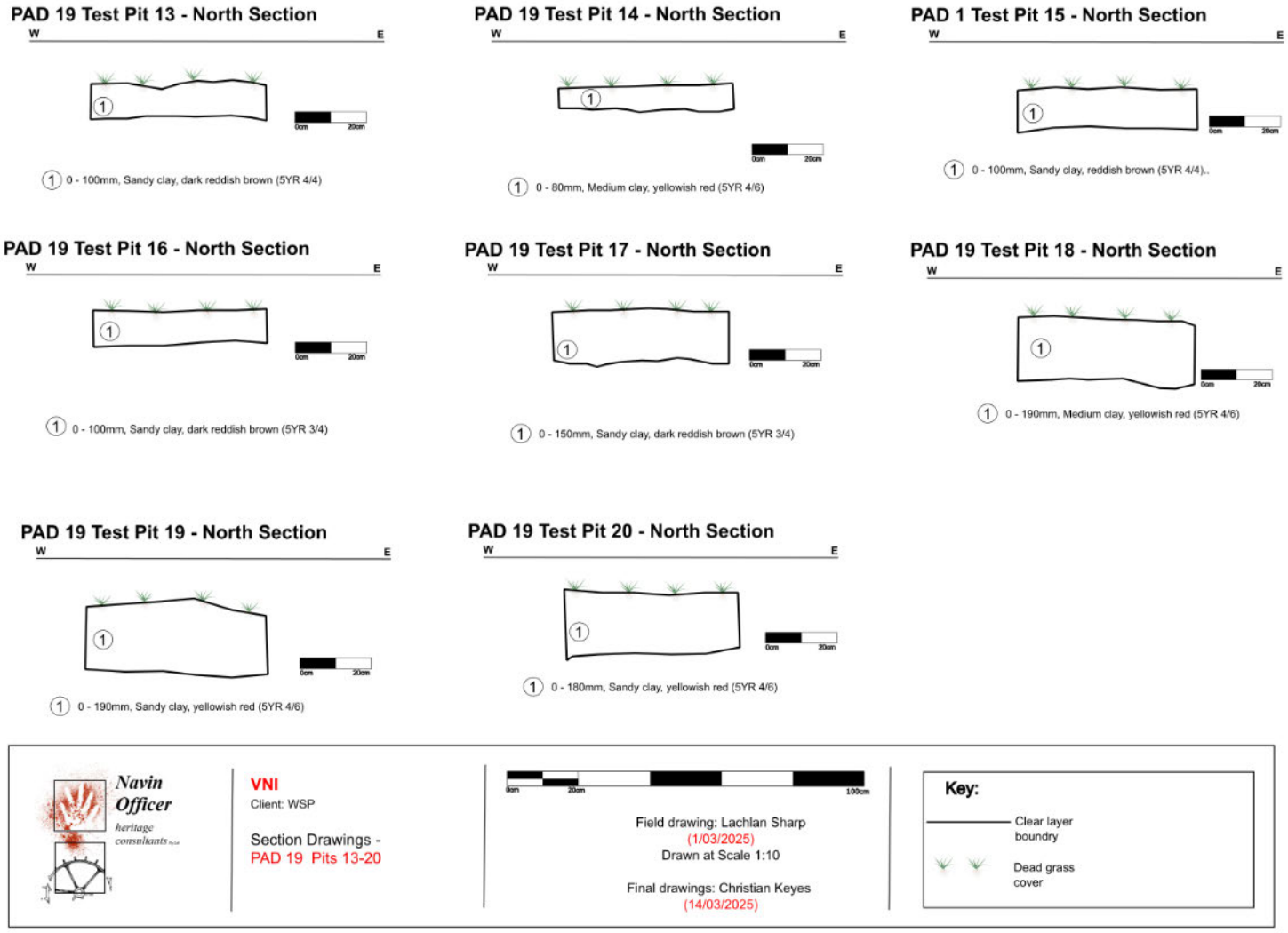
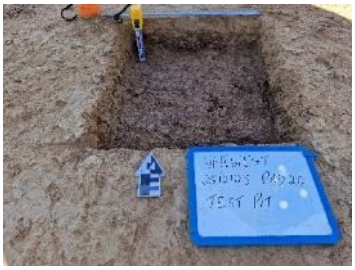


Figure A4-26 VNIW-A-PAD019 Pits 13–20: section drawings indicating soil textures and Munsell chart colours

Table A4-13 VNIW-A-PAD020 – summary of excavation results

PAD 19		
Pit 1	Pit 2	Pit 3
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 50mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 4	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 200mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: Sparse grass cover with minimal grass roots. SU1 dry consolidated reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover and no penetrating grass roots. SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.	Description: No grass cover and no penetrating grass roots. SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile.
Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None
Pit 4	Pit 5	Pit 6
		
Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm	Pit Size: 500mm x 500mm
Spit Depth: 100mm	Spit Depth: 100mm	Spit Depth: 100mm
Spits Excavated: 1	Spits Excavated: 1	Spits Excavated: 1
Pit End Depth: 100mm	Pit End Depth: 100mm	Pit End Depth: 100mm
Description: No grass cover and no penetrating grass roots. SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile	Description: No grass cover and no penetrating grass roots. SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile	Description: No grass cover and no penetrating grass roots. SU1 dry consolidated dark reddish brown medium clay. Lacking inclusions. Undisturbed profile

Aboriginal Objects: None	Aboriginal Objects: None	Aboriginal Objects: None

Official

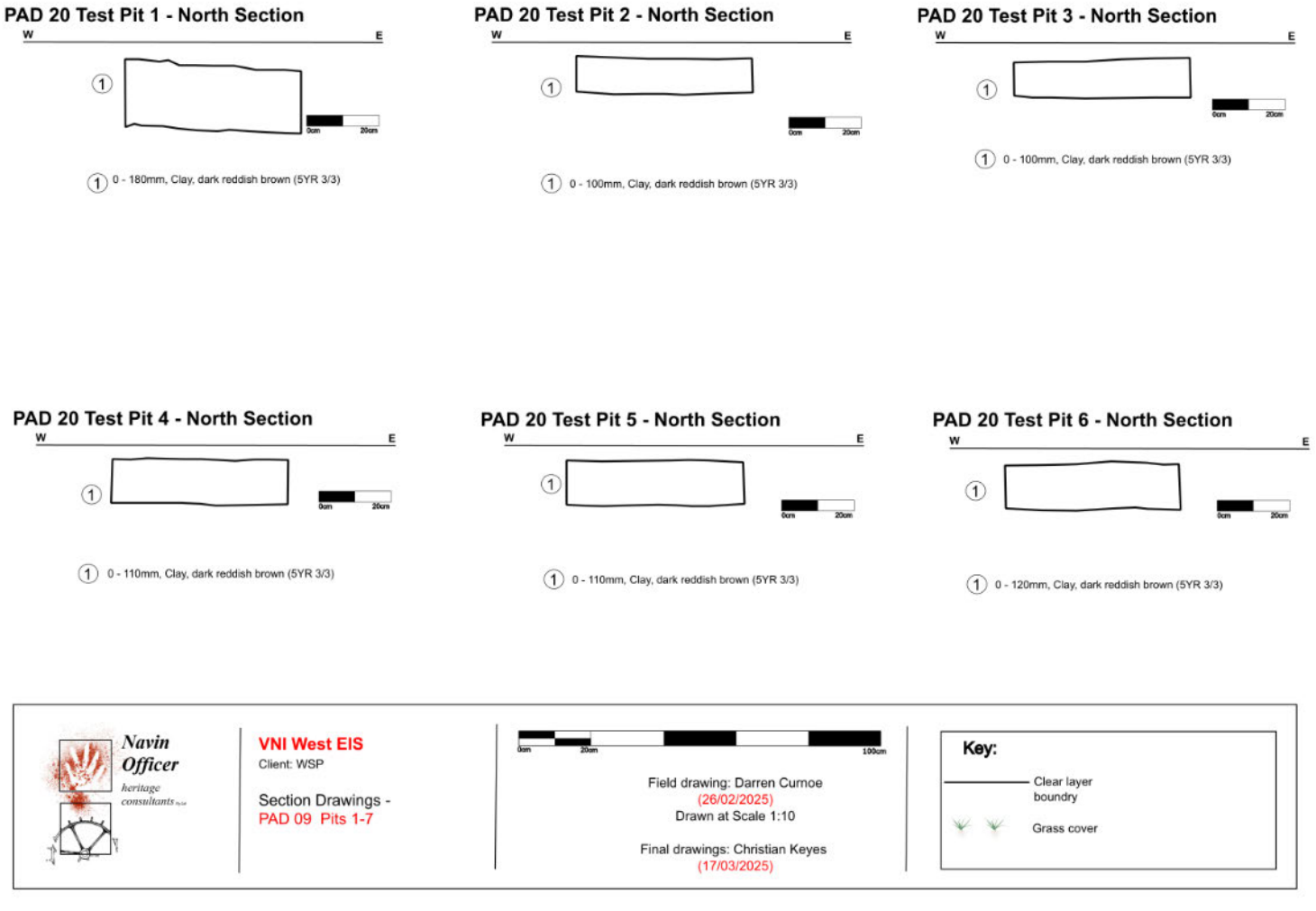


Figure A4-27 VNIW-A-PAD020: section drawings indicating soil textures and Munsell chart colours

APPENDIX 5

FIELD RECORDINGS EXCLUDED FROM THE SITE LIST DUE TO INSUFFICIENT SCIENTIFIC EVIDENCE

1. Field recordings

The following field recordings were made during survey of the project footprint largely at the request of RAPs (refer to Table A5-1). They include objects which do not exhibit sufficient scientific evidence to warrant classification as an Aboriginal object as per the following criteria as summarised from the scientific literature.

2. Hearths/heat retainers

Scattered fragments or concentrations of apparent heat-fractured rock are common in the landscapes of western NSW. The possible cause of heating can be varied and may include:

- Lightning strikes on trees and the accompanying combustion of clay contained within the lower trunk or roots of a tree or bush;
- Wildfires and the accompanying combustion of vegetation and clay contained within the the lower trunk or roots of a tree or bush;
- Burning by Aboriginal communities (recent or past cultural burns) including the combustion of vegetation and clay contained within the lower trunk or roots of a tree or bush;
- Vegetation clearance and burning by landholders since European settlement including the combustion of vegetation and clay contained within the lower trunk or roots of a tree or bush; and
- Aboriginal combustion features (heat-retainer hearths).

Figure A5-1 is an example of heat-fractured rock (burned soil) deriving from the recent burning of vegetation located near the project footprint on the “Concord” property. It is indistinguishable from the many nodules of apparent “burned clay” scattered across the landscape in the project footprint and identified by some RAPs as an in situ hearth.



Figure A5-1 Fragment of heat-modified soil located on the “Concord” property (H223) associated with charcoal from recently burned vegetation (Photo: NOHC 2025)

Table A5-1 List of field recordings sufficient scientific evidence to warrant classification as an Aboriginal object

LGA	LALC	Object	Location: Lat	Location: Long
Edward River	Griffith	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Edward River	Griffith	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Edward River	Deniliquin	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Edward River	Deniliquin	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Edward River	Deniliquin	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Scarred tree – unlikely to be culturally modified	[redacted]	[redacted]
Murray River	Wamba Wamba	Scarred tree – unlikely to be culturally modified	[redacted]	[redacted]

LGA	LALC	Object	Location: Lat	Location: Long
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]
Murray River	Wamba Wamba	Indeterminate surface scattered clay ball fragments	[redacted]	[redacted]

Added to this, a variety of geomorphological, biological and anthropogenic processes can result in the dispersal, movement and accumulation of heat-fractured rocks in the landscape including:

- Wind (aeolian) and water erosion of soils including flood waters;
- Vegetation clearance by land holders and the disturbance of A Horizon soils;
- The levelling and ploughing of agricultural fields for cropping;
- The construction roads, irrigation channels, dams or fences including the removal or disturbance of A Horizon soils; and
- Movement of objects on the ground surface due to wind, water, livestock, native wildlife and vehicles.

Soils can be become heavily compacted and appear stained (blackened) due to a variety of natural weathering processes including physical alteration, water logging or loss, microbial action, and changes in the soil chemistry (Bellomo 1993). For example, the presence of manganese in soil can lead to a blackening even a “burned” appearance easily mistaken for burning while aluminium oxide results in a grey colouration of soil.

As Fanning et al. (2009, p. 15) have noted regarding the identification of Aboriginal hearths in Western NSW: “Identification is easiest when the heat-fractured stones are concentrated together but becomes progressively harder as erosion disperses the fragments. Identification also depends on the nature of the land surface: hearth remains on surfaces covered with a gravel lag, for instance, can be almost impossible to identify. In addition, erosion may lead to the combining of stones from a number of hearths, the individual identity of which may be very difficult to define.”

Holdaway et al. (2017) have applied six categories to describe the degree of hearth preservation: “buried,” “partially exposed,” “intact,” “disturbed,” “scattered” and “remnant”. “Disturbed,” “scattered” and “remnant” refer to hearths displaying increasing amounts of disturbance.

Holdaway et al. (2017, p. S232) have applied a strict definition to the identification of hearths “as concentrations of heat-fractured stone sometimes protecting an underlying deposit of charcoal.” Identification should also take account of landscape or context of the object.

In the present study, the criteria of Holdaway et al. (2017) were applied in the field and all hearth/heat retainers were positively identified if they fell within one of their six categories. However, as the identification of hearths in the final three (disturbed) categories can be very difficult, only sites where disturbed hearth materials were associated with either buried hearth materials, a remnant (structured) hearth or contained multiple including large scattered clay retainers were recorded as “hearths/heat retainers”.

The objects listed in Table A5-1 do not fall within these categories.

2. Modified trees

Trees with scars of Aboriginal origin form one of the major types of artefactual evidence found in southeast Australia. Each tree is normally considered to be a separate site. The identification of a scar as Aboriginal in origin is dependent on a set of inter-related interpretive criteria. The credibility of alternative causal explanations such as natural traumas and other types of human scarring must be considered for each scar.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and

Beesley (1989), and the field manual for Aboriginal scarred trees developed by Long (2003, 2005) and:

1. The scar does not normally run to ground level: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal origin (some ethno-historical examples of canoe scars reach the ground);

1(a). If a scar extends to the ground, the sides of the original scar must be relatively parallel: (natural scars tend to be triangular in shape;

2. The scar is either approximately parallel sided or concave, and symmetrical: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular, and often adzed);

3. The scar should be reasonably regular in outline and regrowth: scars of natural origin tend to have irregular outlines and may have uneven regrowth;

4. The ends of the scar should be "shaped", either squared off, or pointed (often as a result of regrowth): (a "keyhole" profile with a "tail" is suggestive of branch loss);

5. A scar which contains adze or axe marks on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);

6. The scar must date to the time of Aboriginal bark exploitation within its region: The traditional Aboriginal exploitation of bark probably ceased in most regions between 100 and 150 years ago. However, in some locations associated with Aboriginal settlement, the Aboriginal removal of bark may have continued to the present day or restarted as part of new cultural movements.

7. The tree must be endemic to the region: (and thus exclude historic plantings).

Long (2003) notes that there are many "natural" causes of scarring on trees including:

Lightning strikes: Lightning can cause scars when "lightning is discharged to earth through sap in the cambial layer between the bark and sapwood of a tree. The bark is seared in the process and either splits on impact or subsequently sloughs away". (Long, 2003, p. 18). This type of natural scarring is common in forested areas…*particularly on river red gums, which, as a species, tend to survive these traumatic events more effectively* (Long, 2003, p. 18).

Branch tears: "The loss of a branch during or after high winds will invariably cause scarring. If the branch falls from the socket where it connects with the trunk, it will rip a section of bark, and possibly wood, away from the trunk below the limb". (Long, 2003, p. 19).

Larval activity: "The formation of holes and galleries in the cambium and sapwood by grubs causes the death of the trunk section and the eventual loss of the bark. This is a gradual degenerative process that can take several years to result in a definable 'scar'". (Long, 2003, p. 20)

Termite activity: "Infestation of a tree by termites ('white ants') causes the death of the trunk section and the eventual loss of the bark. This is a gradual, degenerative process that can take several years to result in a definable 'scar'; this mechanism is not clearly understood at this stage…This process can create fresh scars and also influence the deterioration of existing scars, the latter providing an easy access into the heartwood. The regular outline associated with this form of scarring can frequently lead to misidentification with cultural scars less than 2 metres in length,

which have a similar rounded profile. They are primarily distinguishable through differences of surface weathering". (Long, 2003, p. 21)

Bird Damage: "A number of species of flocking birds (e.g., galahs and cockatoos) strip bark from various species of trees (e.g., grey box) to leave distinctive scars on the trunk and limbs of a tree". (Long 2003, p. 22)

Fire Damage: "The action of intense heat generated by a bush fire or lightning strike can frequently kill the cambium of a tree without necessarily burning or scorching the underlying sapwood. These are the most common type of scars in forest environments…two distinctive types of scar are formed by fire

1. A distinctive triangular scar with a wide base descending to ground level;
2. A continuous elongated, or discontinuous series of small curvilinear scars extending up the length of the trunk". (Long, 2003, p. 23).

Abrasion: "The repeated action of rubbing by adjacent limbs results in the loss of bark and creation of a scar…The scar may be partially hidden by an associated limb or trunk. This limb may have been removed or fallen subsequent to the formation of the scar. This is a gradual process that can result in the continual modification of the scar shape and size. These scars can be potentially misidentified as cultural scars largely occluded by epicormic stems. Check the position and surface of the scar carefully to determine whether the secondary limb resulted from the creation of the scar, or vice versa". (Long 2003, p. 24)

In addition to natural causes of scarring on trees, Long (2003) notes that scars can occur as the incidental result of human land use and other activities. These include Impact damage caused by the collapse of an adjacent tree, impact from debris during flood events, vehicle damage from bulldozers and farm machinery, car accidents and felling damage. Stock can cause abrasion damage through rubbing or scratching, while land clearing can result in ring barking or partial ringbarking. Boundary and survey markers can also sometimes be confused with Aboriginal scars.

Field based identification of Aboriginal scars is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence of several diagnostic criteria or the balance of interpretation leaning toward an Aboriginal origin. For this reason, interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories were used:

1. Aboriginal scar – This is a scar where an Aboriginal origin is considered the most likely. The scar conforms to all of the criteria and a natural and /or non-Aboriginal origin is considered unlikely and improbable;
2. Probable Aboriginal scar – This is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out; and

Trees with scars identified by RAPs as culturally important may not meet the criteria. These scars conform to some criteria however an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. Some characteristics of these scars will also be consistent with a natural cause.

Appendix 5 References

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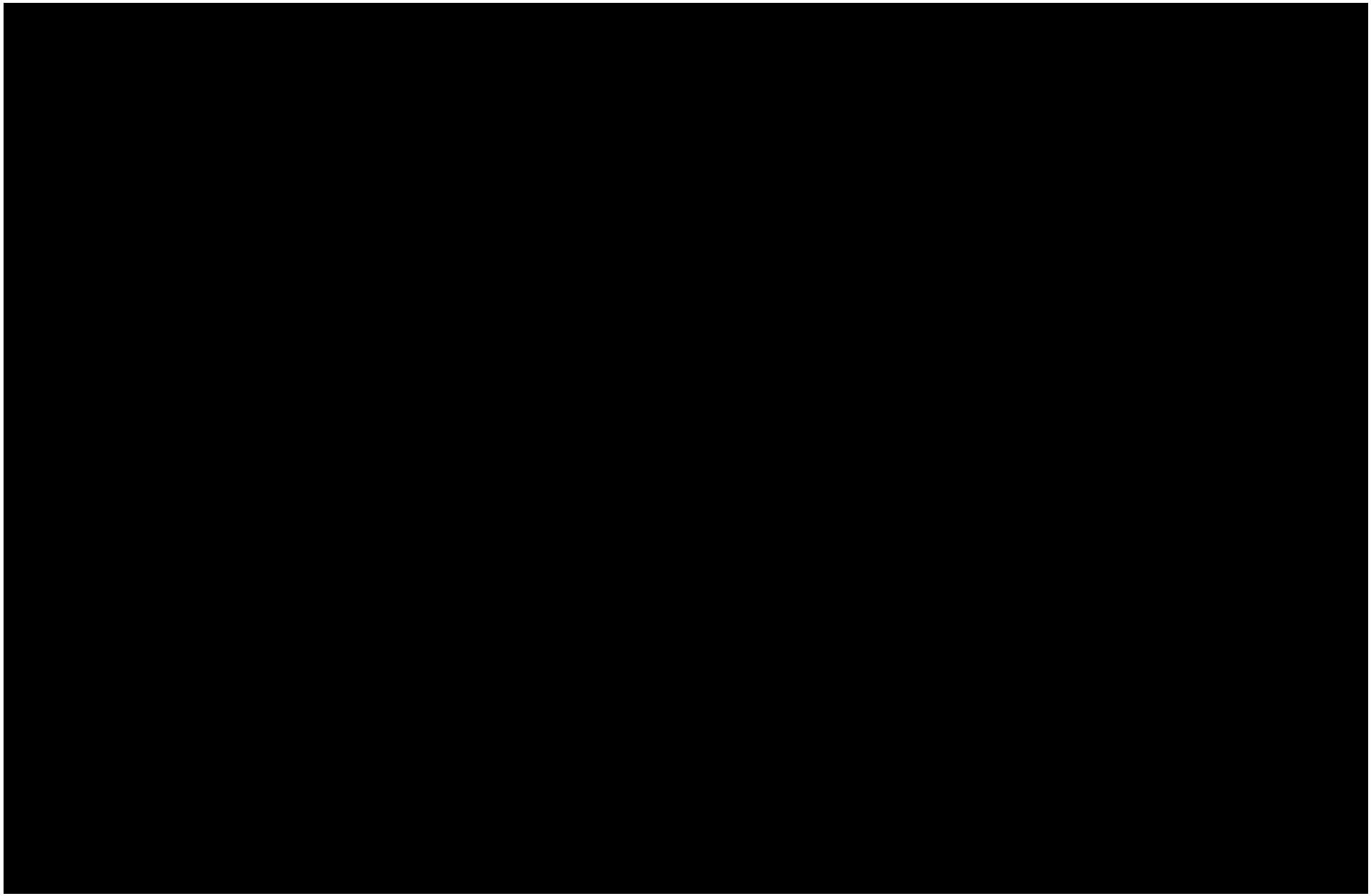
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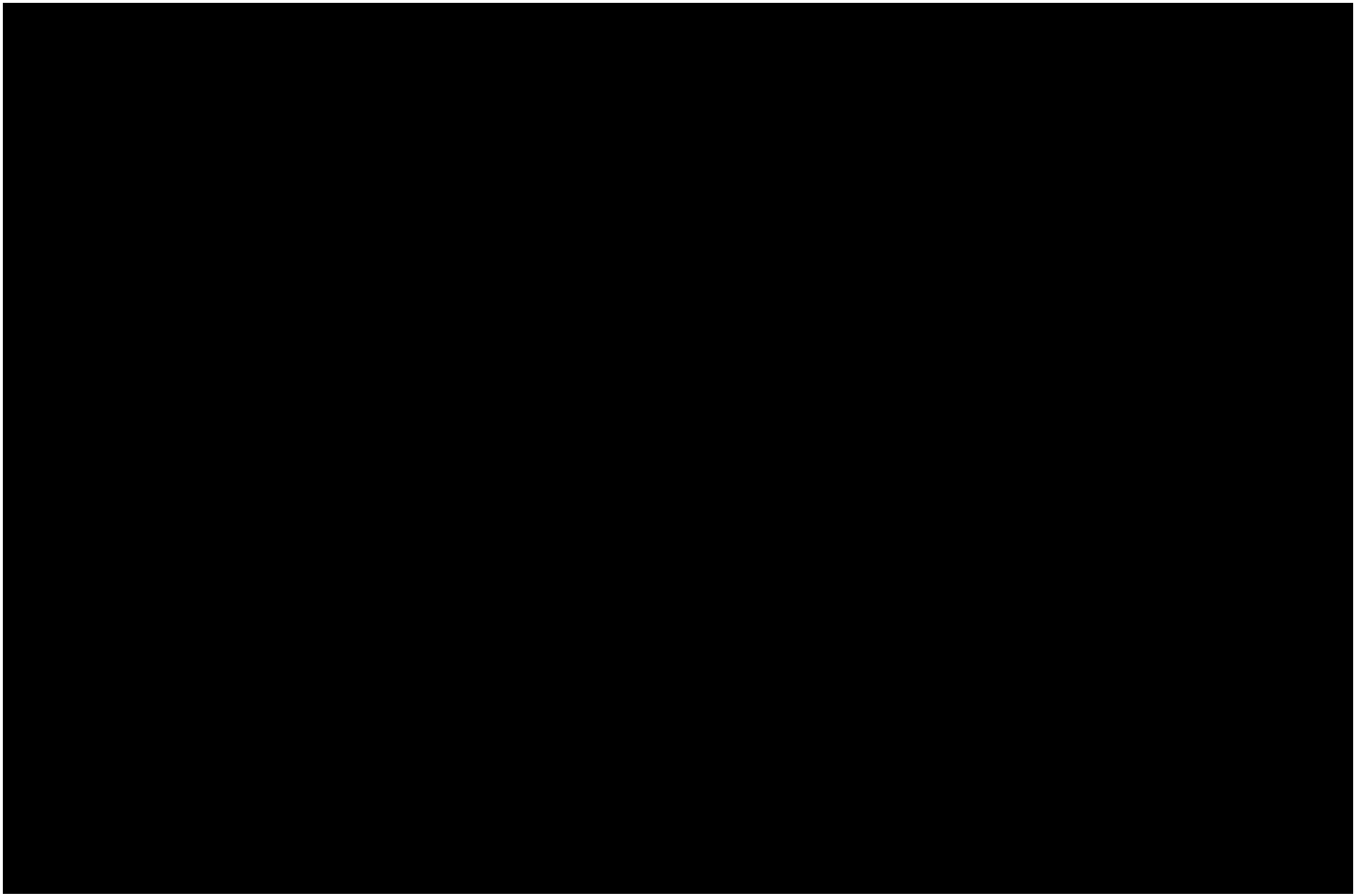
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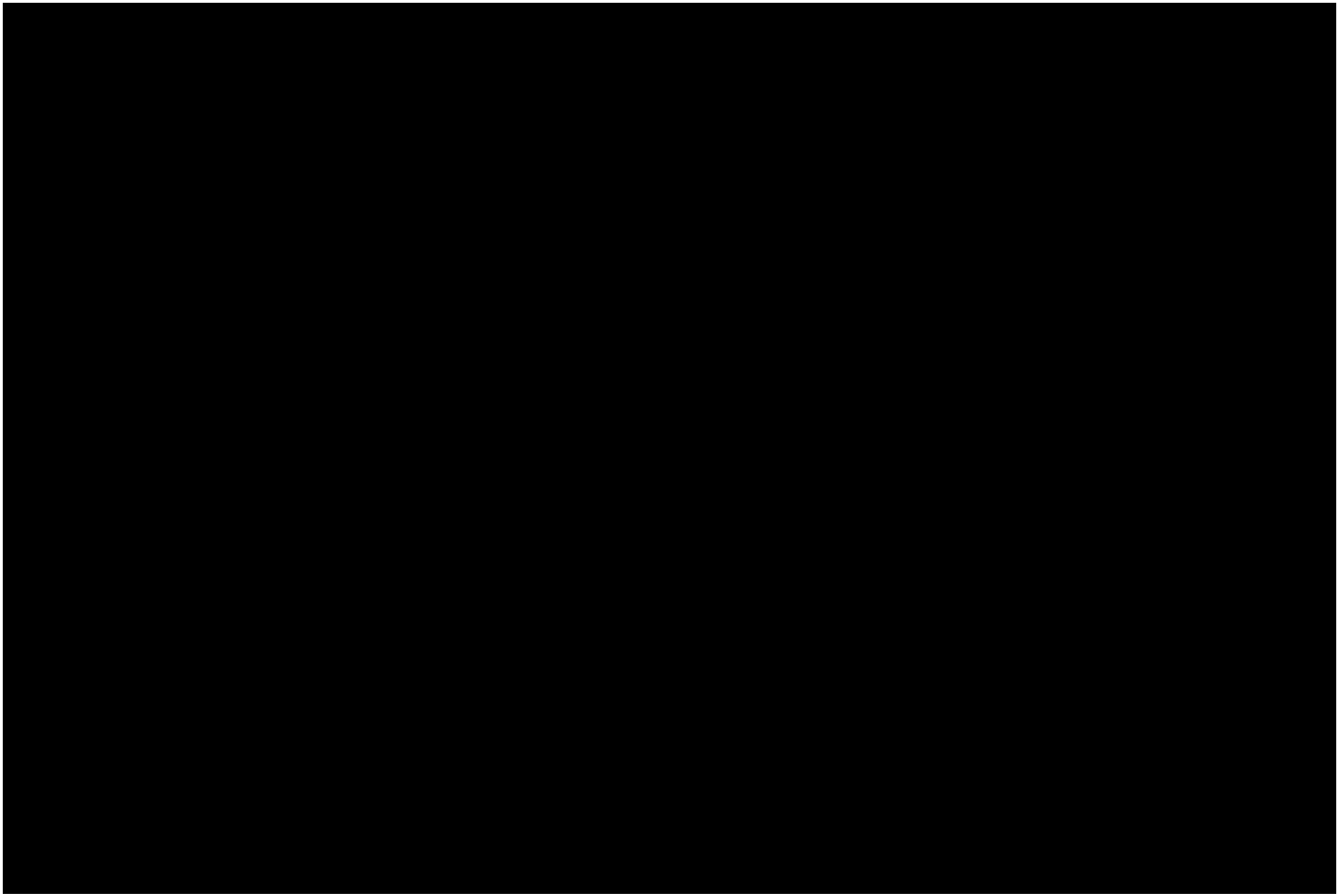
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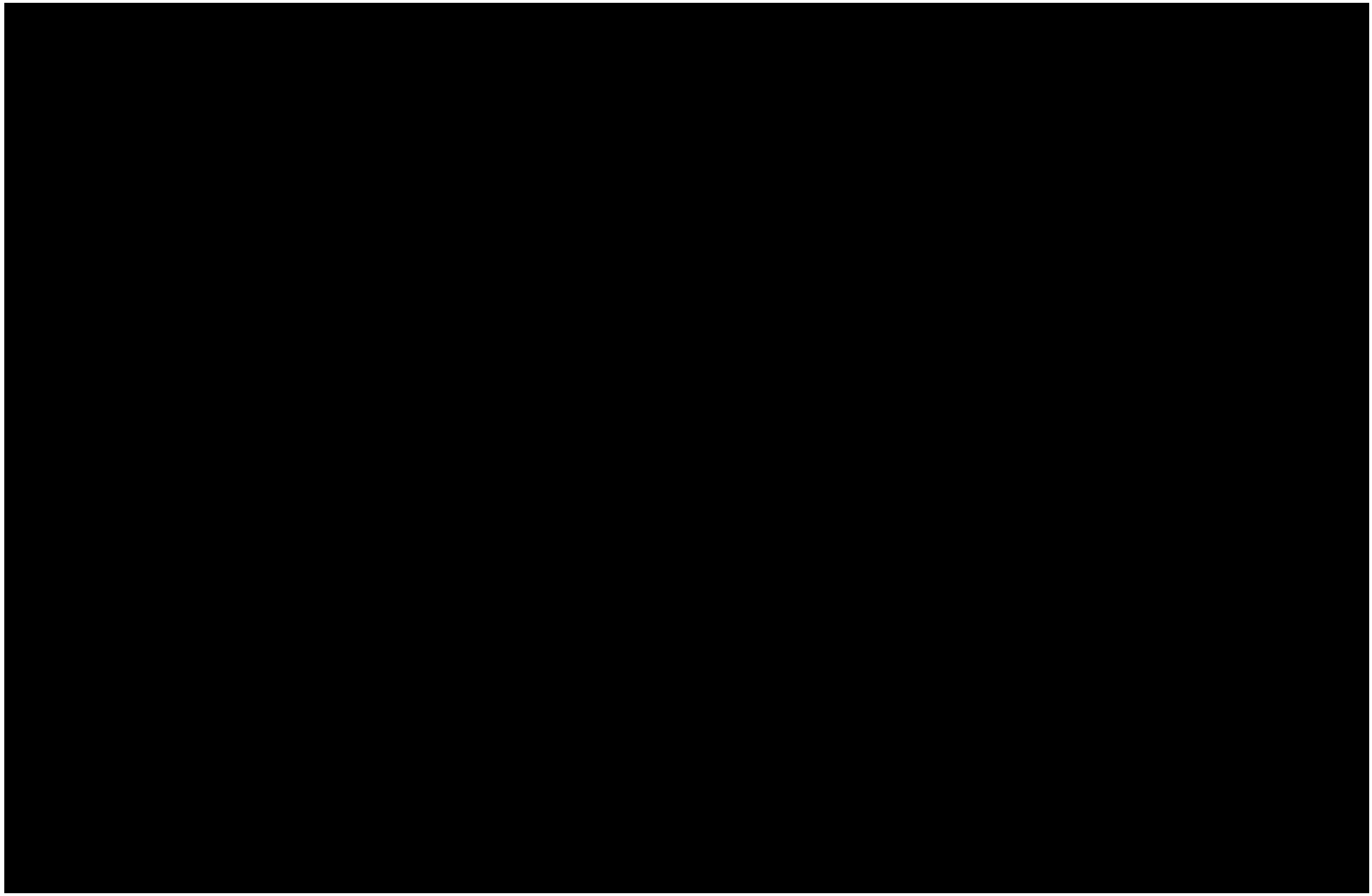
APPENDIX 6

MAPPING OF ALL SITES IN THE PROJECT FOOTPRINT

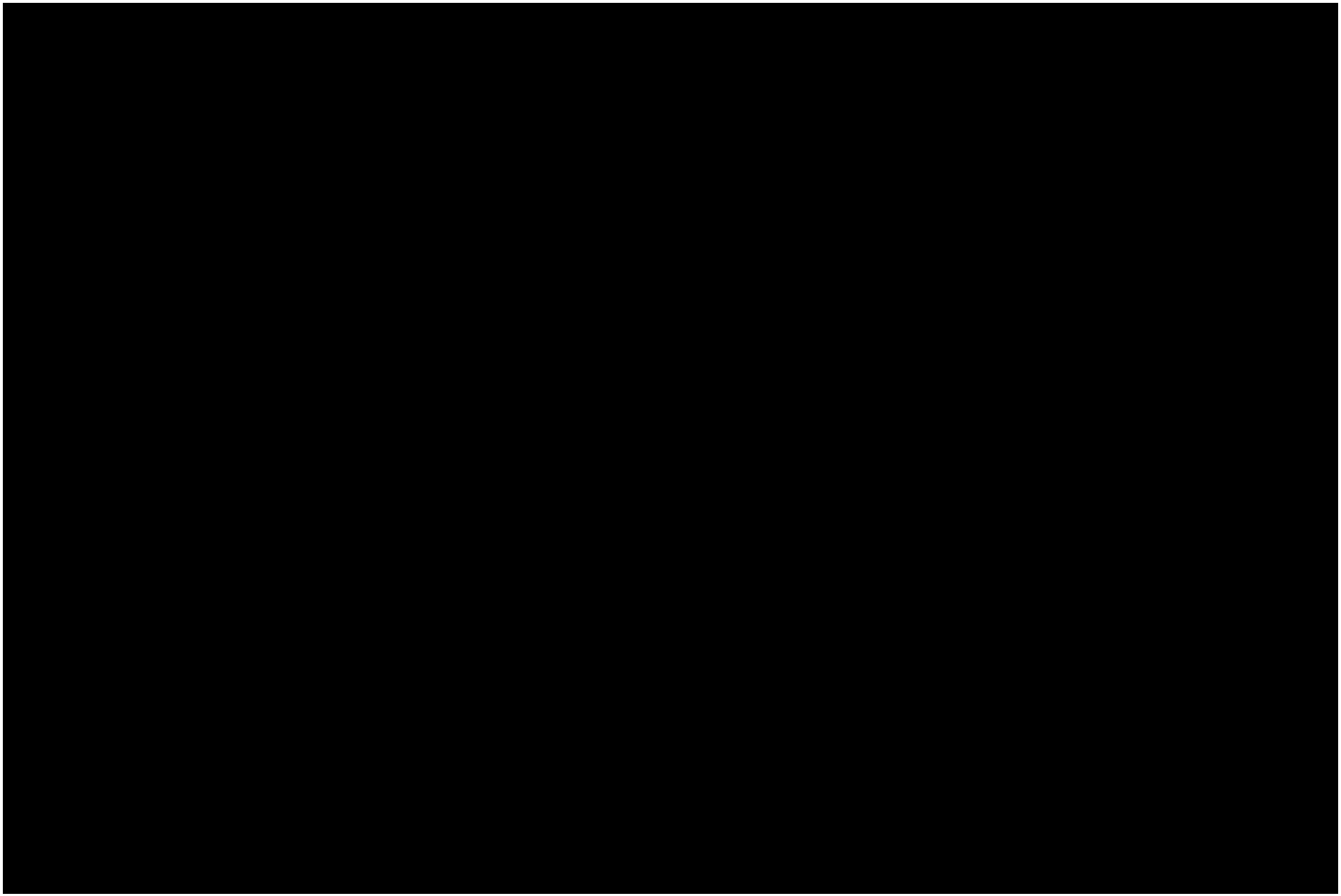


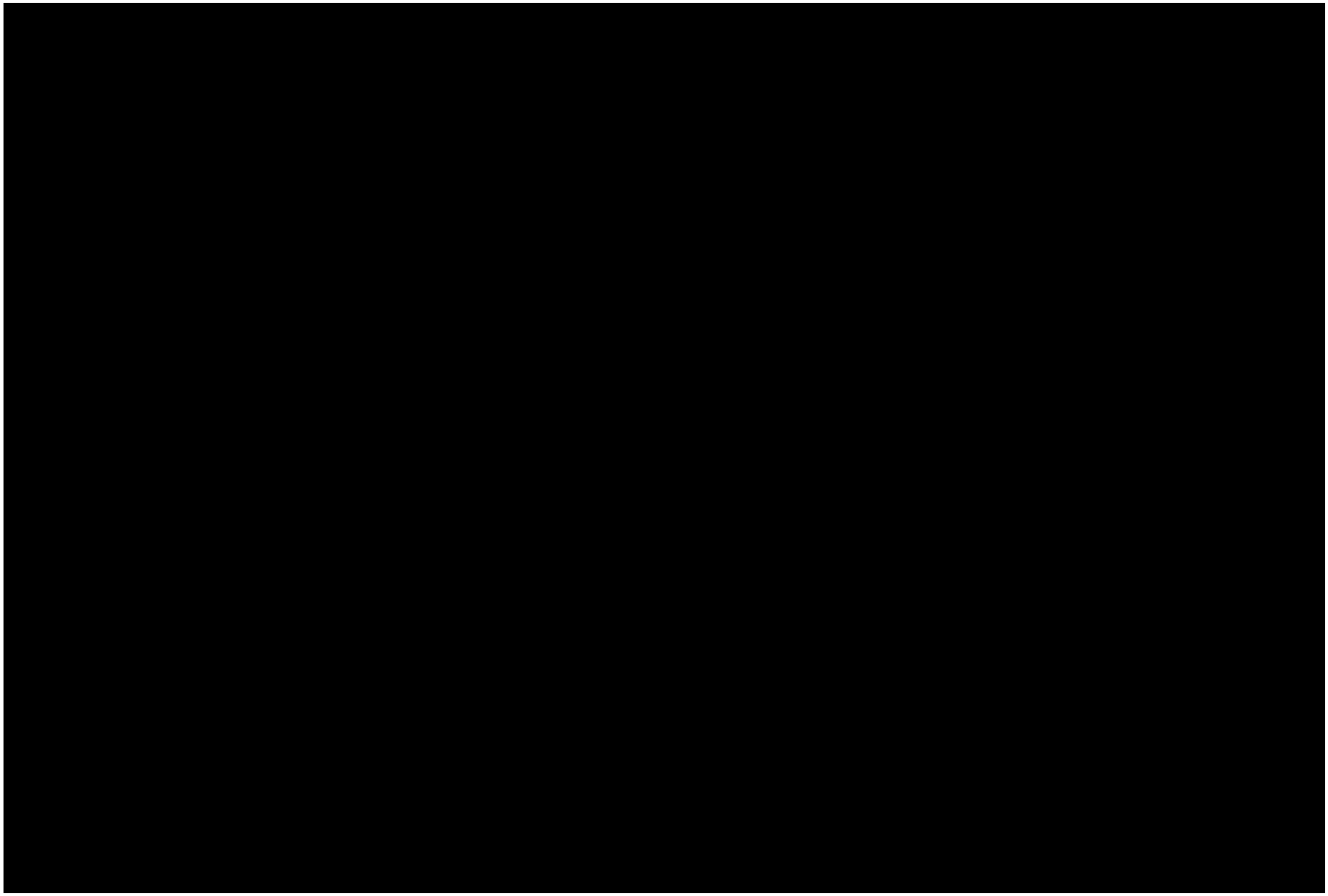


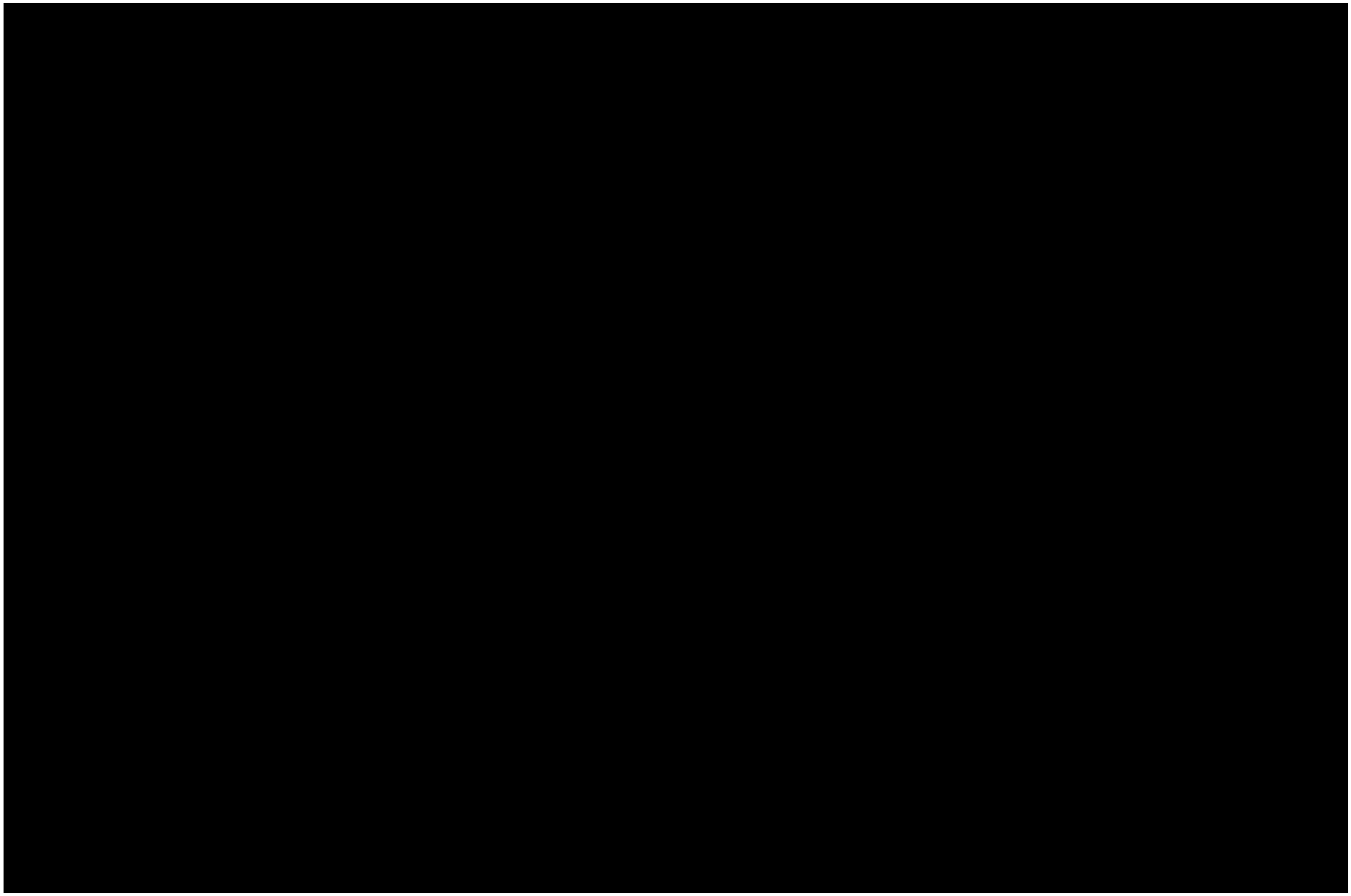


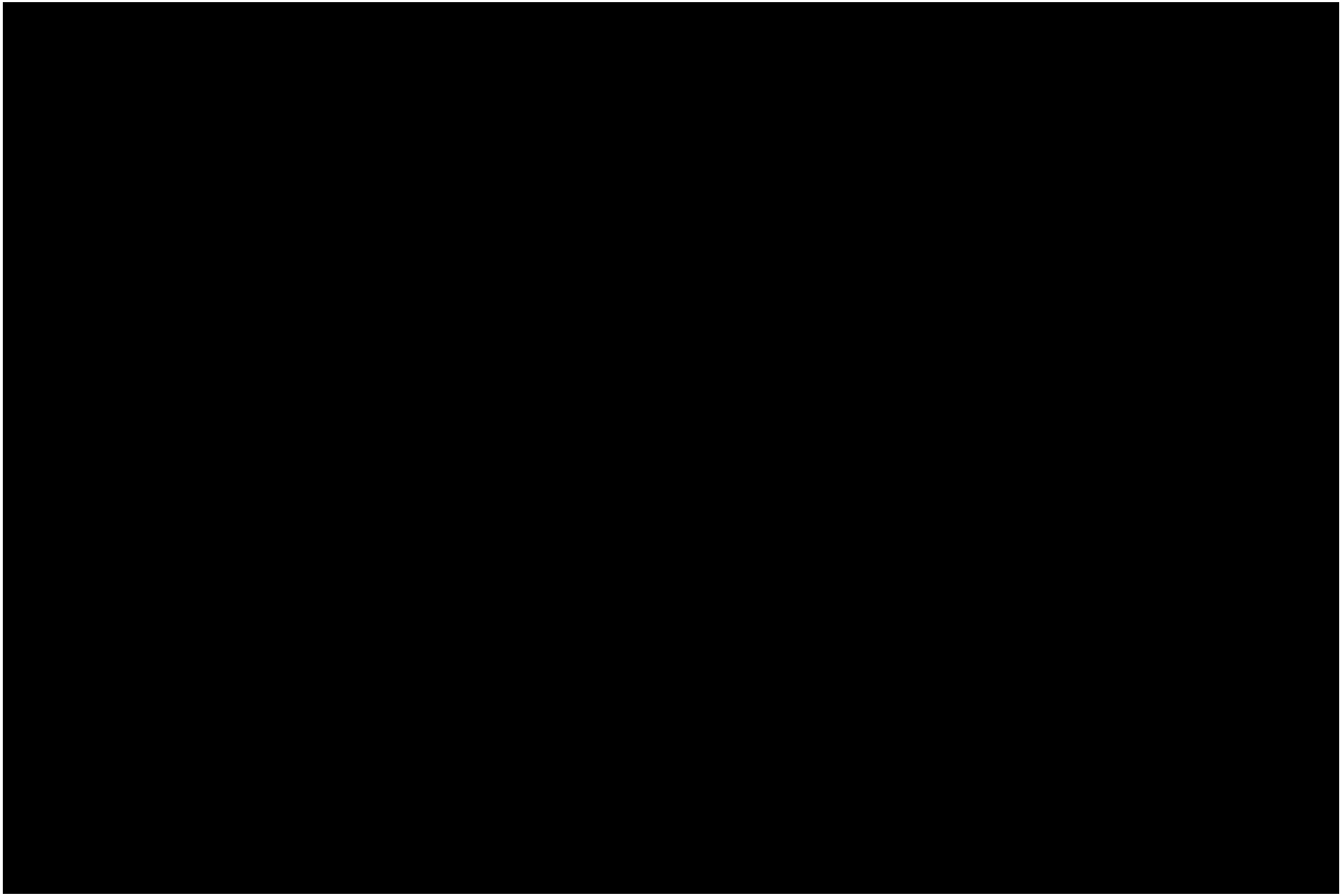


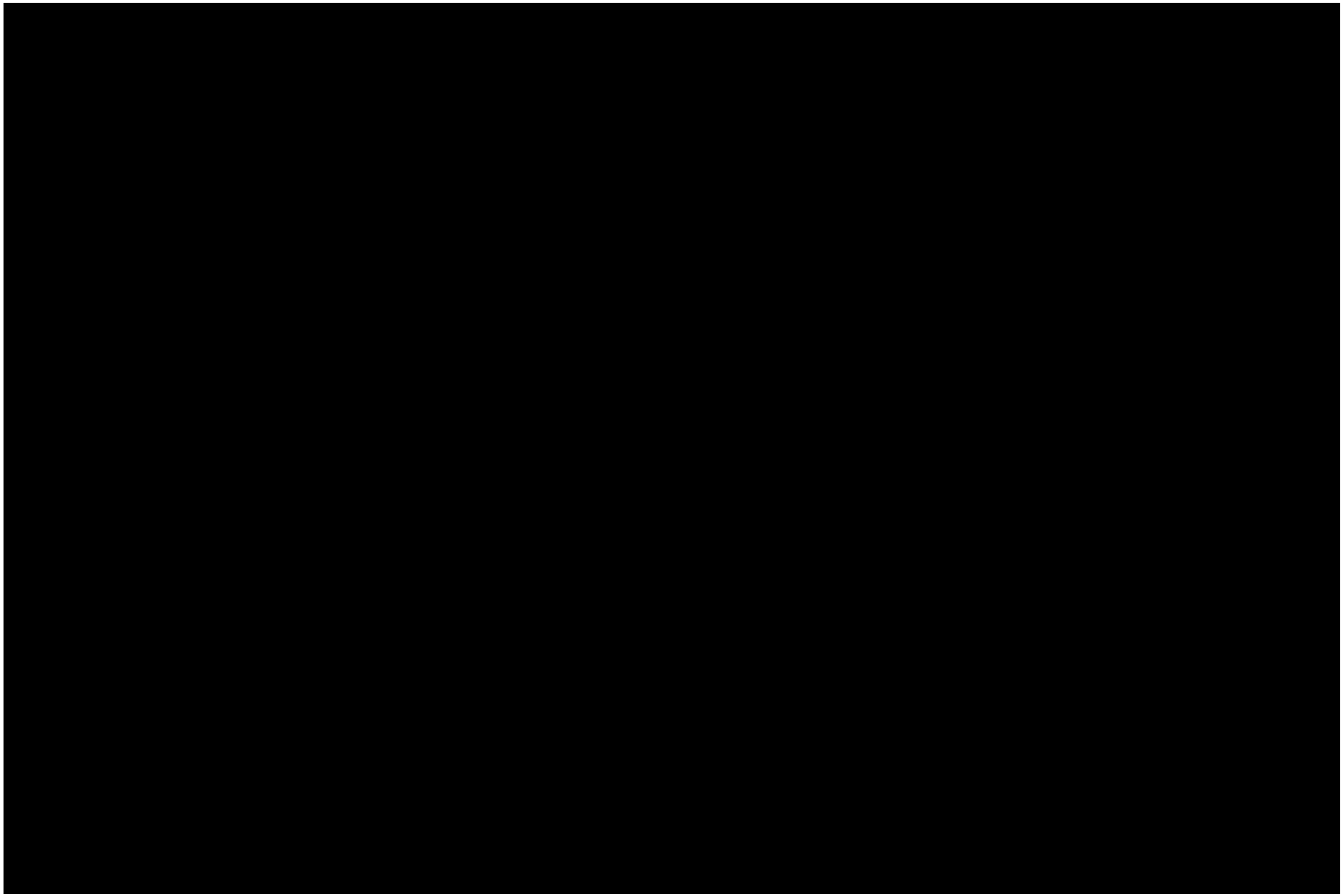
















APPENDIX 7

PLAN FOR THE FURTHER INVESTIGATION AND MANAGEMENT OF NEWLY IDENTIFIED SITES DURING THE CONSTRUCTION WORKS PHASE AND UNEXPECTED FINDS PROTOCOLS

A7.1 Plan for the further investigation and management of newly identified sites during the construction works

Site Number	Scientific Significance	Management Measure
VNIW-A-03	Moderate	Surface collection and/or movement prior to construction commencement.
VNIW-A-05	Moderate	Surface collection and/or movement prior to construction commencement.
VNIW-A-06	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-017	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-020	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-022	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-027	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-028	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-067	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-073	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-076	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-077	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.

Site Number	Scientific Significance	Management Measure
VNIW-A-078	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-079	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-080	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-081	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-082	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-083	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-084	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-085	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-086	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-087	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNWI-A-092	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.

Site Number	Scientific Significance	Management Measure
VNIW-A-093	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-094	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-095	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-096	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-097	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-098	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-099	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0108	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0126	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0129	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0132	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0135	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0140	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0142	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0143	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0144	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0145	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0146	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0148	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of earth mounds in accordance with the methodologies presented in Appendix 8.
VNIW-A-0149	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0152	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0157	Moderate	Surface collection and/or movement prior to construction commencement.
VNIW-A-0158	Moderate	Surface collection and/or movement prior to construction commencement.
VNIW-A-0163	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0168	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0172	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0173	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0175	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0176	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0178	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0179	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0185	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0186	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0187	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0188	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0189	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.

Site Number	Scientific Significance	Management Measure
VNIW-A-0190	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0191	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0192	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0193	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0196	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0197	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0198	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0210	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0211	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0214	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0215	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0216	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0218	Moderate	Surface collection and/or movement prior to construction commencement.
VNIW-A-0220	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0221	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of hearths/heat retainers in accordance with the methodologies presented in Appendix 8.
VNIW-A-0222	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of earth mounds in accordance with the methodologies presented in Appendix 8.
VNIW-A-0223	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of hearths/hear retainers in accordance with the methodologies presented in Appendix 8.
VNIW-A-0224	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of earth mounds in accordance with the methodologies presented in Appendix 8.
VNIW-A-0225	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0226	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0227	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0228	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0229	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0230	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0231	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0232	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0233	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0234	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0235	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0236	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0237	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0238	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0239	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0240	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0241	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0242	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0243	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0244	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0245	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0249	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0250	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0251	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0252	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0255	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0256	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0257	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.

Site Number	Scientific Significance	Management Measure
VNIW-A-0258	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0259	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0260	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0261	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0262	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0269	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0270	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0271	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0272	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0273	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0274	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0275	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0276	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0277	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0278	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0279	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0280	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. If the removal is required, the tree will be subject to 3D scanning. Consultation will be undertaken with the RAPs on salvaging the scarred tree trunk.
VNIW-A-0283	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0284	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0285	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0286	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-0287	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0288	Moderate	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0289	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0290	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0293	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of hearths/heat retainers in accordance with the methodologies presented in Appendix 8.
VNIW-A-0294	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of shell midden in accordance with the methodologies presented in Appendix 8.
VNIW-A-0299	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of earth mounds in accordance with the methodologies presented in Appendix 8.
VNIW-A-0301	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0303	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0304	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0305	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0306	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0307	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0308	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0309	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0310	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.

Site Number	Scientific Significance	Management Measure
VNIW-A-0311	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0312	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-0313	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNW-A-0314	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
VNIW-A-PAD01	Low	Construction can provide with caution.
VNIW-A-PAD02	Low	Construction can provide with caution.
VNIW-A-PAD03A	Low	Construction can provide with caution.
VNIW-A-PAD03B	Low	Construction can provide with caution.
VNIW-A-PAD05	Low	Construction can provide with caution.
VNIW-A-PAD06	Low	Construction can provide with caution.
VNIW-A-PAD07	Low	Construction can provide with caution.
VNIW-A-PAD08	Low	Construction can provide with caution.
VNIW-A-PAD09	Low	Construction can provide with caution.

Site Number	Scientific Significance	Management Measure
VNIW-A-PAD012	Low	Construction can provide with caution.
VNIW-A-PAD013	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD014	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD016	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of hearths/heat retainers in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD017	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. Further testing of PAD should occur within 50 m of earth mounds in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD019	Low	Construction can provide with caution.
VNIW-A-PAD020	Low	Construction can provide with caution.
VNIW-A-PAD021	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD022	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD023	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD024	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.

Site Number	Scientific Significance	Management Measure
VNIW-A-PAD025	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD026	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD027	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD028	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
VNIW-A-PAD029	Moderate-high	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.
NA-01	Moderate	Surface collection and/or movement prior to construction commencement.
NA-02	Moderate	Surface collection and/or movement prior to construction commencement.
NA-03	Low	Further consideration of the potential to avoid direct or indirect impacts to be conducted.
NA-PAD-01	High	Further consideration of the potential to avoid direct or indirect impacts to be conducted. PAD not previously subject to test excavation and be tested in accordance with the methodologies presented in Appendix 8.

APPENDIX 8

ABORIGNAL SITE AND BURIALS PROTOCOLS

A7.2 Protocol to follow if Aboriginal object(s) or historical relics (other than human remains) are encountered

In the event that object(s) which are suspected of being Aboriginal object(s) or relic(s) are encountered during works, then the following protocol would be followed.

1. Cease any further excavation or ground disturbance, in the area of the find(s):
    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted
    b. The site supervisor and the Principal will be informed of the find(s).
    c. Do not remove any find(s) or unnecessarily disturb the area of the find(s).
    d. Ensure that the area of the find(s) is adequately marked as a no-go area for machinery or further disturbance, and that the potential for accidental impact is avoided.
    e. Note the location and nature of the finds and report the find to the relevant project personnel responsible for project and construction direction and management.
    f. Where feasible, ensure that any excavation remains open so that the finds can be recorded and verified. An excavation may be backfilled if this is necessary to comply with work safety requirements. An excavation that remains open should only be left unattended if it is safe and adequate protective fencing is installed around it.
2. Consult with the project archaeologist and RAPs to determine if the items are Aboriginal objects or historical relics, this can be done by sending photos to the project archaeologist or via an onsite inspection. Depending on the object type the following will apply:
    a. If suspected **human skeletal material** is encountered, the protocol for the discovery of human remains should be followed (refer below).
    b. If **Aboriginal objects** identified as **stone artefacts** are encountered the project archaeologists and RAP representative/s will complete a site recording form and collect the object/s that are to be directly impacted by the project.
    c. If **Aboriginal objects** identified as **hearth/s** are encountered a site recording form will be competed and a sample of materials would be collected. This includes charred organics, bone, and shell.
    d. If **Aboriginal objects** identified as **midden materials** are encountered a site recording form will be competed and a sample of midden materials would be collected. Of a large deposit of midden is encountered then a baulk sample will be collected (i.e. all sediment and organics), and not sieved. Sieving and analysis would take place under controllable conditions in a laboratory.
    e. If isolated **Aboriginal objects** such as **isolated shell and bone** are encountered a site recording form will be competed and the item/s recovered.
    f. If suspected **historical relics** are encountered the project archaeologist will undertake a site visit to determine if the items are relics and/or indicative of an archaeological deposit and the potential historical significance of that item/deposit. The project archaeologist will then make recommendations for further assessment (or not) as appropriate and consult with Heritage NSW where appropriate. Undertake the recommendations as advised by the project archaeologist.
3. Work in the area of the find(s) may re-commence.

A7.3 Protocol to follow in the event of the discovery of suspected human remains

The following protocol will be actioned if suspected human material is revealed during development activities or excavations.

1. All works must halt in the immediate area of the find(s) and any further disturbance to the area of the find(s) prevented.
    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and
    b. The site supervisor and the Principal/Project manager will be informed of the find(s).
2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which are not human). If conducted, this opinion must be gained without further disturbance to the find(s) or the immediate area of the find(s). (Be aware that the site may be considered a crime scene that retains forensic evidence). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.
3. Immediately notify the following of the discovery:

    a. the local Police (this is required by law)

4. Co-operate and be advised by the Police and/or coroner with regard to further actions and requirements concerning the find area. If required, facilitate the definitive identification of the material by a qualified person (if not already completed).
5. In the event that the Police or coroner instigate an investigation, construction work is not to resume in the designated area until approval in writing is gained from the NSW Police.
6. In the event that the Police and/or Coroner advise that they do not have a continuing or statutory role in the management of the finds then proceed with the following steps.
7. If the finds are not human in origin but are considered to be archaeological material relating to Aboriginal occupation then proceed with Protocol for the discovery of Aboriginal objects (other than human remains as above).
8. If the finds are Aboriginal or probably Aboriginal in origin
    a. notify the following:
        i. Heritage NSW
        ii. representative(s) from the registered Aboriginal parties (RAPs), and
        iii. the project archaeologist (if not already notified).
    b. Ascertain the requirements of the Project Manager, and the views of the RAPs, and the project archaeologist.
    c. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:
        i. avoiding further disturbance to the find and conserving the remains *in situ*
        ii. conducting archaeological salvage of the finds following receipt of any required statutory approvals

iii. scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial

iv. recovering samples for dating and other analyses, and/or

v. subsequent reburial at another place and in an appropriate manner determined by the RAPs.

9. If the finds are non-Aboriginal in origin:

a. ascertain the requirements of the Heritage NSW, Project Manager, and the views of any relevant community stakeholders and the proposal archaeologist.

b. based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

i. avoiding further disturbance to the find and conserving the remains *in situ*

ii. conducting archaeological salvage of the finds following receipt of any required statutory approvals

iii. scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial

iv. recovering samples for dating and other analyses, and/or

v. subsequent reburial at another place and in an appropriate manner determined in consultation with the Heritage Office and other relevant stakeholders.

10. Work in the area of the find(s) may re-commence.

APPENDIX 9

METHODOLOGIES FOR FURTHER WORKS

A9.1 Survey of unassessed areas

In areas where surface survey was not able to be completed during field survey will be undertaken. Field survey will involve:

1. By-foot survey of the proposal focussed on the proposal centreline

The archaeological field survey will be focused within the project footprint on high and moderate sensitivity areas and sampling some low potential areas in the survey sections. Within these areas survey would be completed on foot by at least two archaeologists, and RAPs walking systematic transects and/or selected traverses (straight lines), spaced a regular distance apart e.g. 5-25 metres apart.

The exact nature and location of the walkover will depend on an in-field assessment of the visible constraints and cultural and archaeological sensitivity.

The survey will also include opportunistic inspection of any existing exposed ground in the project footprint.

Survey variables, such as ground surface visibility, traverse locations and landform category will be recorded, as required by Heritage NSW standards and requirements.

Where feasible, all old-growth native trees in the survey area will be inspected for the presence of culturally derived scars.

2. Field Consultation with Representative Aboriginal Parties (RAPs)

RAP field participants will be invited to communicate any knowledge that they may have regarding the cultural heritage values of the proposal project footprint, archaeological and cultural sites, and the overall landscape.

The project team will act in a culturally sensitive manner and treat the information provided with respect (and in confidence, where requested and required).

3. Site recording

All surface archaeological sites, potential archaeological deposits and places of Aboriginal cultural value will be documented. All sites will have the following details recorded using standard recording forms.

- Site name, recorder and date
- Site type
- GPS coordinates
- Landscape and landform character
- Site dimensions
- Site condition and potential to be larger
- Site content including numbers and artefact types, raw materials and detailed recording of a sample of artefacts.
- Photos
- Any other relevant information, such as oral information and informant details.

A9.2 New access tracks and root ball removal

The location of new access tracks and root ball removals will be inspected in areas of high and moderate sensitivity to assess for the location of PAD and surface artefacts. If PAD or sites are identified, then tracks may be reviewed and realigned to avoid if possible. If surface artefacts are found and they cannot be avoided, then the surface collection methodology will be used, refer to Section 0. If a larger than expected concentration of artefacts are found (greater than 10 artefacts per m^2) during field survey and/or monitoring following grading and where there is a noted soil deposit, i.e. more than 10 cm, then the test excavation method may be triggered, (refer to Section 0) subject to an assessment of prior disturbance and or the potential for in-situ archaeological material at that location. If PAD cannot be avoided, then the 'Creek crossings and PADs' test excavation method will be used, refer to Section 0.

A9.3 Proposed methodology for subsurface test excavation

A9.3.1 Study aims

An archaeological subsurface testing program will be undertaken in consultation with the RAPs within PADs not previously the subject of test excavation. The aim is to ascertain the nature and extent of archaeological deposits within PADs that are to be directly impacted by the location of new access tracks, new creek crossings, temporary worker accommodation facilities and construction compounds. The methodology has been designed to test the density, horizontal and vertical, of substantial archaeological deposits. The methodology will not conclusively prove or disprove that Aboriginal objects are present or absent from the wider area of large landscape-based PADs. We recognise in some cases for these large landform PADs that the testing may not reduce the size of the PAD outside the area of testing. The locations of such test pits will be determined in the field based on an infield appreciation of the possible extent of the PAD.

A9.3.2 Test Excavation methodology

A9.3.2.1 Transmission line structure locations:

The test excavation will be undertaken in two stages of testing (see Figure 7).

Stage 1

Within PADs impacted by structure locations five pits will be placed within each proposed structure location (Figure 1). This is aimed to test the approximate location of the highest impact within each structure location, ie the four structure legs and the centre point.

Following an on-site review, the test pit locations may be varied slightly in order to avoid hazards and obstructions including the following:

large stone cobbles or tors;

outcropping bedrock;

highly disturbed or eroded ground including rabbit burrows, ants nests, buried infrastructure such as pipes or cables; and/or

substantial vegetation.

If no artefacts are identified during the first phase of testing, additional pits may be placed within the structure location, to test the absence of cultural material. Pits will be placed between each phase 1 pit, up to four additional pits will be competed (Figure 1).

If substantial or significant deposits are identified during the test excavation program this will indicate the need for the relocation of a tower or for a future mitigation program which might include salvage.

A9.3.2.2 Temporary worker accommodation facilities and construction compounds:

Within PADs impacted by temporary worker accommodation facilities and construction compounds, a line (transect) of pits will be placed within the area of impacts. The exact location of any test transect will depend on the PAD location and the impact location. A cross transect may be placed to ensure the length and width of the impact area is tested. Pits will be placed a maximum of 10 metres apart. Pits will be excavated until bedrock or archaeologically sterile layers are encountered.

Following an on-site review, the test pit locations may be varied slightly in order to avoid hazards and obstructions including the following:

large stone cobbles or tors;

outcropping bedrock;

highly disturbed or eroded ground including rabbit burrows, ants nests, buried infrastructure such as pipes or cables; and/or

substantial vegetation.

If substantial or significant deposits are identified during the test excavation program this will indicate the need for accommodation facilities or construction compounds to be relocated or redesigned, or for a future mitigation program which might include salvage.

Excavation procedures and protocols may be modified at the discretion of the archaeologist in consultation with the RAPs and client as the conditions in the field and nature of the excavations develop in order to properly characterise the nature of the archaeological deposit. This may include a provision for additional transects and/or transect extensions according to an archaeological appreciation of the results from the initial pits.

A9.3.2.3 PADs on new access tracks and creek crossings:

Within PADs impacted by new access tracks and creek crossings, a line (transect) of pits will be placed along the proposed crossing/track alignment, in the PAD or on either side of the creek. Pits will be placed a maximum of 10 metres apart.

Following an on-site review, the test pit locations may be varied slightly in order to avoid hazards and obstructions including the following:

large stone cobbles or tors;

outcropping bedrock;

highly disturbed or eroded ground including rabbit burrows, ants nests, buried infrastructure such as pipes or cables; and/or

substantial vegetation.

If substantial or significant deposits are identified during the test excavation program this will indicate the need for the relocation of a track or for a future mitigation program which might include salvage.

A9.3.2.3 Hand Excavation

The test excavation program would be carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Part 6 National Parks and Wildlife Act 1974) (DECCW 2010) Requirement 16a. All pits would be excavated by hand using 50 x 50 centimetre (cm) units. An indicative testing methodology would consist of the following:

1. Mark out and record pit location(s).

The size of an individual test pit will be 50 x 50 cm.

2. Excavate pit.

Pits will be excavated by shovel and trowel using standard by-hand archaeological methodologies including vertical and horizontal recording of spit levels and sedimentary, cultural and stratigraphic features.

The first excavation unit at each site will be excavated and documented in 5 cm spits. Depending upon the results of the first excavation unit, subsequent spit intervals will be at 10 cm, except in circumstances where the excavation of cultural features or stratigraphic units necessitates a smaller interval.

Excavation will cease when the natural B horizon or the base of Aboriginal object bearing units is reached, or until deposits are sterile. The first pit that is being excavated in 5 cm spits will extend 1 spit to below the sterile layer.

1. Archaeological investigation will not go beyond 150 cm in depth or beyond a depth considered unsafe based on field conditions.
2. For each pit photographic and scale-drawn records of the stratigraphy/soil profile will be completed.
3. Where cultural features are identified, such as heat treatment pits or hearths, knapping floors are identified then three-dimensional co-ordinates may be taken and detailed plans will be drawn and samples of dateable material will be collected.
4. Other samples may be obtained for the potential analysis of paleoenvironmental indicators such as pollen, phytoliths and microfauna.
5. All excavated material will be sieved through at least a five millimetre (mm) mesh, with use of a top larger mesh (10 x 10 mm) where appropriate. All identified or suspected cultural material recovered from sieving will be retained, bagged and labelled.

Bioarchaeological material that may be encountered during testing and salvage includes faunal remains, shell, macrobotanicals, and charcoal. Collection of this material provides information on subsistence, past environments, and are a source for dating materials. Recovery of these materials can occur in three situations: 1) associated with hearths, 2) from middens, 3) low density or isolated materials collected from sieves. Collecting material from these contexts during sub-surface investigations varies:

Hearth materials. Materials would be collected and recorded in situ where possible. This includes charred organics, bone, and shell. A series of charcoal samples would be collected from appropriate stratigraphic contexts for possible further analysis. Bone and shell found during sieving would be bagged separately to lithics, and if wet, allowed to dry prior to storage to prevent bacterial and fungal growth.

Midden materials. A bulk sample of Midden materials would be collected (i.e. all sediment and organics), and not sieved during excavation. Sieving and analysis would take place under controllable conditions in a laboratory. This provides a valuable analysis of midden materials as biological materials, and small bone and shell tools (e.g. bone points), are frequently not identified during onsite excavations. Remainder of the Midden samples would be sieved in the field and bagged separately to the lithic assemblage.

Isolated materials. Isolated shell and bone from archaeological deposits would be recorded and recovered in situ where possible, however biological materials are likely to be found during sieving. Only faunal bone and shell would be recovered from sieves and bagged separately to lithics. If wet, all organic materials are to be allowed to dry prior to storage to prevent bacterial and fungal growth.

A9.3.3 Salvage Excavations

- The conduct of salvage excavations would be dependent on the test results, which will be assessed on a site-by-site basis. The need for salvage excavations will be determined by the project archaeologist, and in consideration of previous test excavation results for sites of comparable significance/degree of proposed impact.

- Where salvage is to be undertaken, the initial 50 x 50 cm test pit will be expanded to 1 x 1 m with additional 1 x 1m squares excavated around the deposit in a contiguous open area until a representative sample has been recovered. Salvage excavation will be limited to the area of impact (disturbance footprint). Individual excavation squares would be hand excavated in stratigraphic units (Unit A, Unit B, etc.). Squares would be excavated until the basal layer or culturally sterile deposit is reached. Where results indicate no archaeological stratigraphy within units, i.e. the A1 and A2 soil layers are culturally one layer (suffering from cyclical soil transfer resulting in a mixed cultural profile within the soil), these can be salvaged as one unit where possible.

- Sieving and recording will be conducted in the same manner as Section A8.3.2 above.

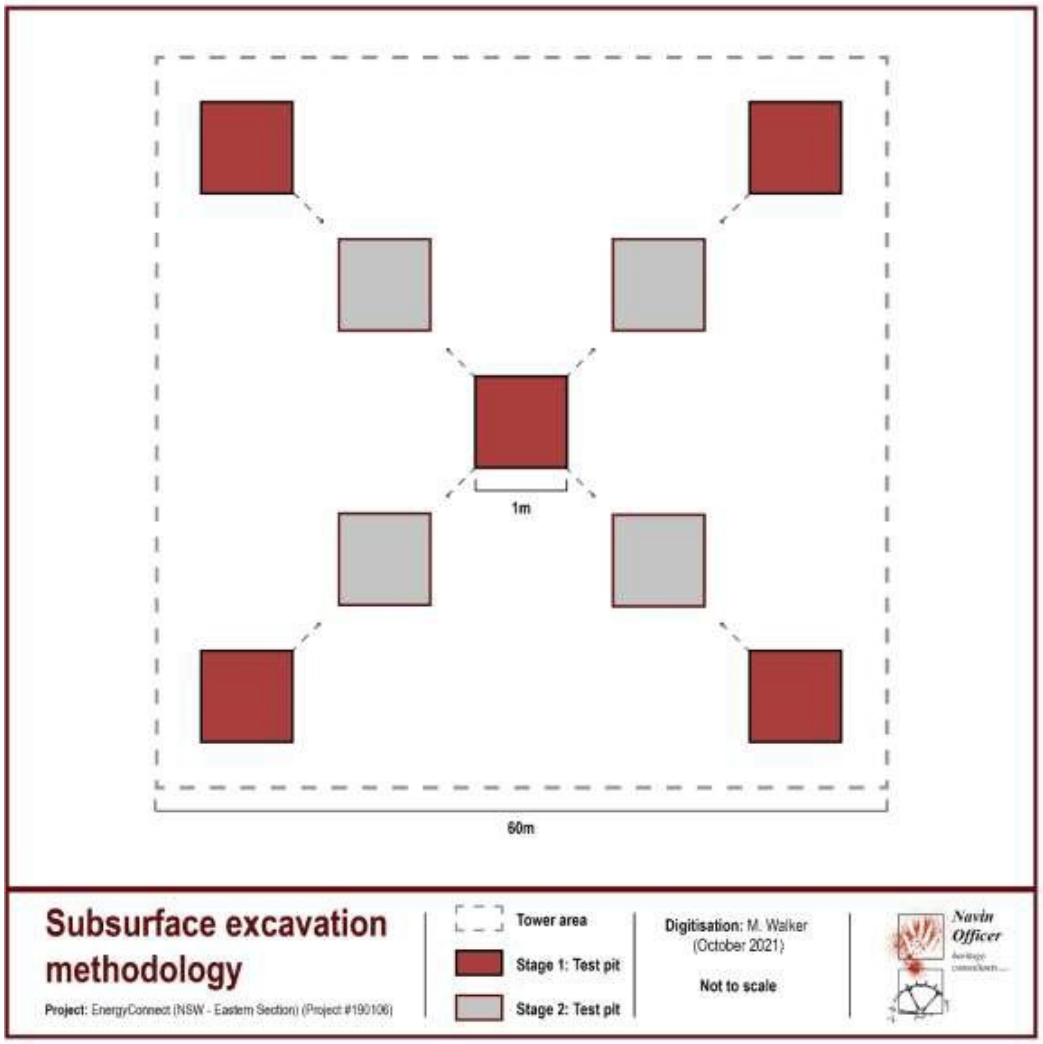


Table A8-0-1 Location of Yest Pits in Tower Locations

A9.4 Surface Collection Methodologies

The following methodology will be implemented for salvage collection of the identified surface artefacts.

Re-visit the location of the previously recorded surface artefact occurrence.

Salvage personnel will collect the artefact.

A sketch map will be drafted for the collected site, showing:

Local features, including vehicle tracks and north direction;

A graphic approximation of artefact densities;

The spatial extent of the surface distribution; and

The location of any separate collection areas.

GPS positions will be logged for the collection area.

One or more digital photographs will be taken and logged, showing the general context of the artefact.

The collected artefact will be appropriately bagged and labelled.

The collected artefact will be temporarily held by the consultants and described by a lithic specialist:

Basic technological traits will be recorded; and

The artefact will be photographed using a digital camera.

A9.5 Materials Analysis

A9.5.1 Lithic (stone) Material

All lithic items would be examined in detail by a lithic specialist, using a low-power binocular microscope and incident illumination and/or hand lens. Descriptive recording of collected material would be to a level concomitant with the stated testing and salvage aims of the investigation, and the number of artefacts/type of material recovered.

Attributes for each artefact in the assemblage would be entered into a relational database and digital photographs may be taken of select artefacts, where appropriate. Information for each specimen recorded in the analysis would be provided in an appendix in the final report. The analysis would specifically address the following:

- Source information. What raw material resources were used; where did they come from; and what does this tell us about Aboriginal use of the region in the past?
- Stone reduction technology. How was the stone worked and used? Does this change over time? Can the function of the site be inferred from the artefact assemblage? What does this tell us about Aboriginal occupation, use, settlement and activities undertaken through time in this region?
- Post-depositional influences. What post-depositional influences have impacted the assemblage, and what does this tell us about the integrity and significance of the site?
- Site chronology. When was the site occupied? Was the assemblage the product of repeated occupations or a single event? Is there spatial patterning in the assemblage, and what does this tell us about repeated use, activities and/or occupation of the region through time?

If suitable material is identified during the excavation conjoin analysis (re-fitting) on a sample of artefacts may be undertaken.

The primary aim of the analysis of the lithic items retrieved from the test locations would be to assist in the assessment of the significance of the sites/deposits and to identify appropriate management strategies.

The analysis will be consistent with standards and guidelines defined by Heritage NSW.

A9.5.2 Midden (shell) and animal bone

Bioarchaeological materials such as midden (shell) and animal bone will be examined by a trained Bioarchaeologist, (or other suitably qualified faunal specialist, depending on availability), using a stereoscope and/or hand lens. Descriptive recording of collected material would be to a level concomitant with the stated testing and salvage aims of the investigation, and the amount of material recovered. Analysis of bioarcheological material varies based on the mode of collection:

- Bulk collected materials; and/or
- Isolated finds and materials from sieves.

Material collected in bulk (e.g., from middens or hearths) would be processed in the NOHC or KNC lab. Organic materials, including faunal bone, shell, macrobotanicals, and charcoals, will be separated and available for further analysis. All material will be entered into a relational database and photographs may be taken of selected materials, where appropriate.

Shell and faunal materials will be further analysed to understand aspects of past life ways. Shells and faunal assemblages will be analysed using quantitative methods. Information for each specimen recorded in the analysis would be provided in an appendix in the final report. The analysis would specifically address the following:

- Assemblage composition: What species are recovered; are these endemic, native or introduced; and what do they tell us about past subsistence patterns or past environments?
- Anthropic modifications: is there evidence of butchery or other modifications (e.g. tools); and how does this contribute to regional models of tool production?
- Post-depositional influences. What agents have impacted the assemblage; what does this tell us about natural or anthropic assemblage origins; and how does this influence site formation models and significance assessments?

The analysis will be consistent with standards and guidelines defined by Heritage NSW.

A9.5.3 Hearth material

If hearths are identified during excavation, these will be recorded using digital photography and/or drawn in plan and section. Charcoal, if present, will be sampled to allow radiometric dating and other appropriate analysis to be undertaken. Samples may be taken of hearth heat retainers be they stone or clay.

A9.6 Care and Management of Recovered Artefacts

After examination and measurement, all recovered artefacts will be stored individually in standard resealable plastic bags or bagged in appropriate and identifiable units. The bags will be labelled using a permanent black pen with the item's unique identification number (where generated and appropriate), and/or details of its provenance within the excavation (as appropriate). The material will be stored at the NOHC lab premises.

Following completion of the analysis of the recovered artefacts; the long-term management of the artefacts will be discussed with the RAPs. One option for the long-term management is that Aboriginal

objects be repositioned back into the landscape ('returned to country'). All locations of repositioned artefacts would be recorded on appropriate AHIMS recording forms and lodged with the AHIMS.

A9.7 Report preparation

Information gained in the course of the survey and information provided by the Aboriginal community will be documented in a report (except where information has been identified as culturally sensitive and therefore restricted). The report will be provided within 12 months from the completion of fieldwork, pending time required for analysis (dependant on size of artefact assemblage recovered). The report will detail the archaeological test excavation methodology, results and assessment of significance of identified sites.