VIRTUSHERITAGE

Pine Ridge Solar Farm
Cartwrights Road
Wyalong, NSW

DUE DILIGENCE ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

FINAL ♦ May 2021

Prepared for SLR Consulting on behalf of Providence Asset Group

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Version	Date	Prepared by	Approved by	Comments
1	12/02/2021	Martin Wright Elaine Lin	Dr. Mary-Jean Sutton (Virtus Heritage)	Draft report
1a	12/03/2021	Martin Wright Elaine Lin	Jeremy Every (PAG)	Draft report
2	22/03/2021	Elaine Lin	Jeremy Every (PAG)	Final report with comments from Linton Howarth (CEO, West Wyalong LALC)
3	19/05/2021	Elaine Lin	Jeremy Every (PAG)	Final report with updated DA plans and comments from Jeremy Every (PAG).

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All queries related to the content, or to any use of this report must be addressed to Dr Mary-Jean Sutton.

FIGURES

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EXECUTIVE SUMMARY

Virtus Heritage was engaged by SLR Consulting (hereafter "SLR") on behalf of Providence Asset Group (hereafter "PAG") to prepare an Aboriginal archaeological due diligence assessment for the Pine Ridge Solar Farm. The project is located at Cartwrights Lane (Lots 285, 284, 270, 209, 219 DP750615), Wyalong within the Bland Shire local government area (LGA). Proposed works include the development of a grid-connected 4.95 MVA solar PV farm with a 4-metre wide access gate and road connecting the proposed solar farm to Wargin Road in the north-western corner of the development. The proposed solar farm will include 13,020 panels, 165 single axis solar trackers, two 2475kVA inverters, and a medium voltage power station unit.

Consultation

The project area lies within the boundaries of the West Wyalong Local Aboriginal Land Council (LALC). Linton Howarth (CEO, West Wyalong LALC) attended the site inspection to assist with identifying Aboriginal sites and objects and to provide cultural information about the project area. Comments made during fieldwork were recorded (refer to **Section 5**). A copy of this draft report was provided to West Wyalong LALC for review and comment and a detailed consultation log for the project is included (refer to **Appendix A**). Formal written comments have been received from Linton Howarth and have been appended to the consultation log and addressed in relevant sections of the report.

Environmental Context

The landscape of Wyalong around the project area has been largely cleared for agriculture. Prior to European settlement, however, the open mixed woodland and grassland landscape would have provided Aboriginal people with a rich and diverse range of terrestrial resources. Eucalyptus species would have been abundant in these woodlands, with a thick understorey of varying grass types. The subhumid climate would have been warm and habitable all year round. The current mean annual temperature in the region is between 11 – 17°C, with a mean annual rainfall between 360 – 1266mm.

The topography of the greater region is characterised by large areas of foothills and ranges, with inland streams that pass across slopes in confined valleys with terraces and local areas of sedimentation. The project area itself is situated in flat agricultural land adjacent to the Wyalong section of the rail corridor. In terms of major waterways, the project area is situated approximately 19 km west of the Barmedman Creek and 34km from Lake Cowal. Smaller ephemeral waterways such as the Yiddah (3.5km) and Gagies Creek (7km) pass to the south and north respectively.

The project area is situated within the eastern part of the Lachlan Fold Belt which consists of a complex series of north to north-westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. It is predominantly within the Mitchell (2002) Manitoba Hills and Footslopes which is characterised by low ridges with outcrops and tors of granite with narrow, incised drainage contributing to major creeks. The landscape around the project area is dominated by red earth, with abundant ironstone and quartz nodules. The surface geology and associated soils of the region would have supported a dense and diverse ecosystem with vegetation such as small-flowered wallaby grass, panic grass, windmill grass and rough speargrass (King 1998: 98). In terms of biodiversity, extant communities in the South West Slopes Bioregion include both terrestrial and wetland species such as amphibians, reptiles, birds, and mammals.

On a regional scale, this combination of environmental factors would have resulted in high potential for the area to contain cultural materials. At a local scale, the absence of close perennial water sources combined with the heavy clearance of the wooded areas and intensive agricultural use since European settlement means the potential for cultural remains is greatly reduced. The land immediately around the project area has been

completely cleared for cropping and animal grazing and continues to function as a farmed rural plot.

Archaeological Context

The results of the background archaeological research, including heritage searches and a review of previous assessments in the region indicate that the most common site type are low density artefact scatters. The potential for scarred trees, though common in the region, is very low due to heavy deforestation and land clearance around the project area for cultivation and grazing. The archaeological context of the project area indicates that evidence of Aboriginal occupation is most likely to occur on the alluvial plains and in low catchments in close proximity to permanent water sources outside of the project area. Survival of evidence of Aboriginal occupation is, however, dependent on the impacts of previous land use history.

Site Inspection Results

The site inspection was undertaken on 9 February 2021 on lands within the West Wyalong LALC area. The site inspection was undertaken by Elaine Lin, Senior Archaeologist (Virtus Heritage), Martin Wright, Archaeologist (Virtus Heritage) and the CEO from West Wyalong LALC, Linton Howarth. The field survey was completed over one field day. The proposal area was inspected via pedestrian survey in four transects across the proposed lease area and one transect along the proposed access route, targeting all areas of exposure. The survey included an inspection of all mature trees within the project area. No drainage lines were identified during the inspection (refer to **Appendix D** for photographs of the site inspection).

There are no previously recorded sites within the project area based on heritage searches and background research of previous archaeological investigations to date. No Aboriginal objects or sites were observed in the project area and given the disturbance and lack of any undisturbed soils or sensitive landforms identified during survey, the project area is deemed to have a low potential for archaeological deposits. Comments from West Wyalong LALC CEO, Linton Howarth support the assessment of low archaeological potential on site during fieldwork.

Recommendations

The following recommendations have been made based on the information provided on project impacts, consultation to date, relevant archaeological and environmental background research, and the results of the site inspection.

1. No Aboriginal objects were identified during the site inspection. No Aboriginal places are registered within the project area. No areas of archaeological potential are identified within the project area requiring archaeological testing, salvage or mitigation.
2. All site workers and personnel involved in site impact works associated with the proposal should be inducted and briefed on the possible identification of Aboriginal sites and objects during construction and their responsibilities according to the provisions of the *NPW Act 1974*, in case any additional unknown objects or items are uncovered during proposed works.
    a. As part of this induction, the contact phone numbers of the Heritage NSW regional archaeologist and EnviroLine 131 555, the relevant Environmental Officer responsible for this project should also be given to all site workers and personnel, in case unknown objects or items are uncovered during excavation.
    b. Site workers should be made aware of the location of any Aboriginal sites that may at any stage occur within the proposal site and their scientific significance and their legal obligations in relation to the protection and management of these Aboriginal sites under the *NPW Act 1974*, and 2010 ancillary provisions and amendments.
    c. As part of this induction, workers should be made aware that in the event that any

unexpected human remains are uncovered on site, the area of the suspected remains must be secured and cordoned off and the NSW Police notified. No further works can be undertaken until the NSW Police provide written advice. If these remains are deemed to require archaeological investigation by the NSW Police or NSW Coroner, then Heritage NSW and the relevant Aboriginal parties must be notified. A plan of management for the preservation of any identified Aboriginal human remains or for their salvage must be put in place or conducted under an AHIP methodology and variation developed in consultation with all relevant Aboriginal parties and Heritage NSW.

d. Providence Asset Group or delegated authority may wish to consider the input and engagement of interested Aboriginal stakeholder groups and West Wyalong LALC in the development of inductions and toolbox talks for this project.

3. A copy of the final report has been provided to West Wyalong LALC. Comments from the review of the draft report by Linton Howarth (CEO, West Wyalong LALC) have been received and incorporated into relevant sections of this report. Any additional comments by the LALC will be considered where possible by PAG.

1. INTRODUCTION

Virtus Heritage was engaged by SLR Consulting on behalf of Providence Asset Group to prepare an Aboriginal archaeological due diligence assessment for the Pine Ridge Solar Farm Project. The project is located at Cartwrights Lane, Wyalong, within the Bland Shire local government area (LGA) (refer to **Figure 1**).

1.1 Project Description

This project proposes the development of a solar PV farm at Wyalong, including a grid-connected solar PV installation with a total PV plant capacity (DC) of 7.031 MWp. It is proposed to connect into the electrical transmission grid via the existing transmission lines which run along the northern boundary of the site. The solar PV farm will include the following components:

- 13,020 x 540w solar PV panels;
- 165 x single axis solar trackers;
- 2 x 2475kVA inverters; and
- 1 x medium voltage power station unit.

A 4m wide gate and access road is proposed to connect the solar farm to Wargin Road at the north-western corner of the lease area. The solar farm will be fully fenced with emergency access gates and temporary construction office. The proposal is indicatively located on the Development Plan (refer to **Figure 2**).

1.2 Report Aims and Statutory Requirements

This report was compiled with reference to the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010a) and where applicable, the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects, NSW* (hereafter referred to as the 'Code of Practice') (DECCW 2010b). The purpose of this report is to provide advice on Aboriginal archaeological (scientific) values of the project area in relation to the proposed works to guide the client in its decision-making process.

In general, the aims of a due diligence assessment are to:

- identify whether or not Aboriginal objects are, or are likely to be, present in the area;
- if objects are present or likely to be present, determine whether the proposed development activities are likely to harm Aboriginal objects; and
- determine whether further assessment or an Aboriginal Heritage Impact Permit (AHIP) is required.

The *National Parks and Wildlife Act 1974* (NPW Act), the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Heritage Act, 1977* are the relevant statutory controls protecting Aboriginal heritage within New South Wales.

1.2.1 National Parks and Wildlife Act 1974

Under the provisions of the NPW Act, all Aboriginal objects are protected regardless of their significance or land tenure. Aboriginal objects are defined as '*any deposit, object or material evidence (not being a handicraft made for sale) relating to Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal*

remains'.

Aboriginal objects are therefore limited to physical evidence and may also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include pre-contact features such as scarred trees, middens and artefact scatters, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing or stockyards and missions.

The NPW Act also protects Aboriginal Places, which are defined as *'a place that is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects'.* Aboriginal Places can only be declared by the Minister administering the NPW Act. The NPW Act protects Aboriginal objects and Aboriginal places in NSW. Under the *National Parks and Wildlife Act 1974* (NPW Act), including the 2010 amendments, it is an offence to harm an Aboriginal object:

- Which the person knows is an Aboriginal object (a 'knowing offence'); and
- Whether or not a person knows it is an Aboriginal object (a 'strict liability offence').

The maximum penalty for a knowing offence is $550,000 for an individual or $1.1 million for a corporation and a 2 year gaol term. The maximum penalty for a strict liability offence is $110,000 for an individual or $220,000 for a corporation (DECCW 2010b: 5). A person or organisation who exercises due diligence in determining that their actions would not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP (DECCW 2010b, 2010:5). The due diligence defence is not available for activities which harm Aboriginal places. The Code of Practice sets out a procedure which, when followed, will satisfy the due diligence requirement. If a person or company can demonstrate that they exercised due diligence and determined that it was unlikely that Aboriginal objects would be harmed, then they have a defence to prosecution under the strict liability offence under Section 86(2) of the NPW Act (DECCW 2010b 2010: 5).

Harm includes activities that destroy, deface or damage an Aboriginal object or Aboriginal place, and in relation to an object; move the object from the land on which it has been situated. Under Section 91 of the Act, Heritage NSW must be informed upon the identification of all Aboriginal objects. Failure to do this within reasonable time is an offence under the Act. Under Section 90 of the Act, it is an offence for a person to destroy, deface, damage or desecrate an Aboriginal Object or Aboriginal Place without the prior issue of AHIP. AHIPs may only be obtained from Heritage NSW. Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them. If harm to Aboriginal objects and places is anticipated an Aboriginal Heritage Impact Permit (AHIP) is required.

The Act also provides for stop-work orders under Section 91A if an action is likely to significantly affect an Aboriginal object or Aboriginal Place. The order may require that an action is to cease or that no action is carried out in the vicinity of the Aboriginal object or Aboriginal Place for a period of up to 40 days.

1.2.2 Heritage Act, 1977

The *Heritage Act, 1977* (as amended in 2009) protects and aims to conserve the environmental heritage of New South Wales. *Environmental heritage* is broadly defined under Section 4 of the *Heritage Act* as consisting of "those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance" (Heritage Branch, DoP 2009: 4). Aboriginal places or objects that are recognized as having high cultural value (potentially of local and State significance) can be listed on the State

Heritage Register and protected under the provisions of the *Heritage Act*.

Amendments to the *Heritage Act* made in 2009 have changed the definition of an archaeological *'relic'* under the Act, so that it is no longer based on age. A relic is now an archaeological deposit, resource or feature that has *heritage significance* at a local or State level. This significance-based approach to identifying 'relics' is consistent with the way other heritage items such as buildings, works, precincts or landscapes are identified and managed in NSW (Heritage Branch, DoP 2009: 1). Section 4(1) of the *Heritage Act* (as amended 2009) defines 'relic' as follows:

> ***Relic*** *means any deposit, artefact, object or material evidence that:*
> *(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
> *(b) is of State or local heritage significance* (Heritage Branch, DoP, 2009: 6).

Other relevant State and Commonwealth legislation are discussed below.

1.2.3 Environmental Planning and Assessment Act 1979

The EP&A Act requires that consideration be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts include cultural heritage impacts. Part 3 of the Act relates to planning instruments including those at local and regional levels, Part 4 of the Act controls development assessment processes and Part 5 of the Act refers to approvals by determining authorities.

1.2.4 Native Title legislation

The Native Title Act 1993 (NTA) 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; and
- 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 NTA 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 NTA, including maintaining the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements and mediating native title claims.

1.2.5 Other Acts

The Australian Government *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* may be relevant if any item of Aboriginal heritage significance to an Aboriginal community or historical heritage is under threat of injury or desecration and state-based processes are unable to protect it. The *Environment Protection and Biodiversity Conservation Act 1999* is relevant to projects where there are heritage values of national significance present.

1.3 Consultation

Aboriginal people are the primary determinants of their culture and heritage, and cultural values can only be assessed and advised by the relevant Aboriginal parties for the locality. It should be noted that Aboriginal heritage refers both to Aboriginal archaeological sites and sites/places of cultural value to Aboriginal people, protected under the *National Parks and Wildlife Act, 1974* (NPW Act, 1974) as "Aboriginal objects" and "Aboriginal places". Sites and places of Aboriginal cultural significance can only be identified by the relevant local Aboriginal people and are likely in many cases (for example, song lines and story places) to not contain any archaeological evidence.

This assessment was conducted by an archaeologist providing advice on the archaeological (scientific) values of the project area. The cultural values of the project area were assessed by the West Wyalong Local Aboriginal Land Council (LALC). Linton Howarth from West Wyalong LALC did not know of any sites within the vicinity relating to the project area and did not think the area bore any cultural significance during the site inspection. He did note verbally, however, the presence of a large variety of extant native vegetation species among the exotic pasture species which provide numerous edible resources such as berries, starchy roots and fruits.

A copy of this draft report was provided to West Wyalong LALC for review. Linton Howarth (CEO, West Wyalong LALC) concurred with the findings in the report and provided additional clarification regarding the predictive model and archaeological potential for scarred and carved trees in the region. Amendments to **Section 4** have been made based on this local knowledge provided by Linton Howarth. The full consultation log for the project is included in **Appendix A**.

1.4 Limitations

This report is limited to the assessment of project impacts described in information provided by SLR on behalf of Providence Asset Group and mapped in this report. Virtus Heritage takes no responsibility for errors within the Department of Premier and Cabinet, Heritage NSW (Heritage NSW) Aboriginal Heritage Information Management Systems (AHIMS) data, and the Heritage NSW listings. Virtus Heritage has assumed information provided by Heritage NSW is accurate.

The site inspections undertaken were confined to the area of proposed works illustrated in **Figure 1**. Visibility on site was generally poor. Nevertheless, access on foot to the entire project area was unhindered. While pasture weeds and grass cover was dense, the paddocks had been trimmed with a tractor prior to site inspection.

1.5 Project Team and Qualifications

This report was compiled by Elaine Lin, Senior Archaeologist (M.Arch.Sci. (Adv) Hons., Australian National University; B.Arts (Hons.) Archaeology, University of Sydney), and Martin Wright (B.Arts (Hons.) Archaeology, University of Sydney) with quality review undertaken by Dr Mary-Jean Sutton, Principal Archaeologist and Director (PhD, Archaeology, University of Queensland; B.Arts, Hons. Prehistoric and Historical Archaeology, University of Sydney). Project information and description of works was provided by PAG.

1.6 Acknowledgements

We would like to acknowledge the assistance of the following individuals for the completion of this report:

- Linton Howarth, CEO West Wyalong LALC
- Rachel Pettitt, Town Planner, SLR Consulting
- Patrick Quinlan, Principal Consultant, SLR Consulting,
- Jeremy Every Solar Program Director, Providence Asset Group

Figure 1
Locality Plan and Project Area

Legend

- Roads
- Water Courses
- Desktop DD Area
- Proposed Lease Area
- Preliminary Construction Plan

Source: NSW Spatial Services, AHIMS, KDC
Projection: GDA94 MGA z55

Maps and figures contained within this document may be based on third party data, may not be to scale and are intended for use as a guide only. Virtus Heritage does not warrant the accuracy of such maps or figures.

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WEST WYALONG
WYALONG
NEWELL HIGHWAY
COLLINS LANE
GOLDFIELDS WAY
BELLARWI ROAD
DUFFS ROAD
LONE PINE ROAD
YIDDAH DRIVE
WARGIN ROAD
CARTWRIGHTS LANE
Desktop DD Area
Proposed Lease Area

N

0 0.5 1 1.5 2 km

LEGEND

- TREE (EXISTING)
- TREE (FOR REMOVAL)
- LOT BOUNDARY
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- SECURITY FENCE
- FENCE (EXISTING)
- LEASE BOUNDARY (PROPOSED)
- PV TABLE
- O/H 22kV POWERLINE
- WATERCOURSE

SYSTEM SUMMARY

ELECTRICAL CONFIGURATION:
- TOTAL PV PLANT CAPACITY (DC): 7.031 MWp
- TOTAL INVERTER CAPACITY (AC): 4.95MVA
- PV PLANT MAXIMUM EXPORT CAPACITY (AC): 4.95MW
- DC:AC RATIO: 1.420
- STRINGS OF 28 PV MODULES.
- 232/233 PV STRINGS PER INVERTER.
- 465 PV STRINGS TOTAL.

PV MODULES:
- MFR: LONGI SOLAR
- MODEL: LR5-72HPH-540M
- NAMEPLATE: 540Wp
- QUANTITY: 13,020 MODULES

INVERTERS:
- MFR: SUNGROW
- MODEL: SG2475HV-MV
- NAMEPLATE: 2475kVA
- QUANTITY: 2

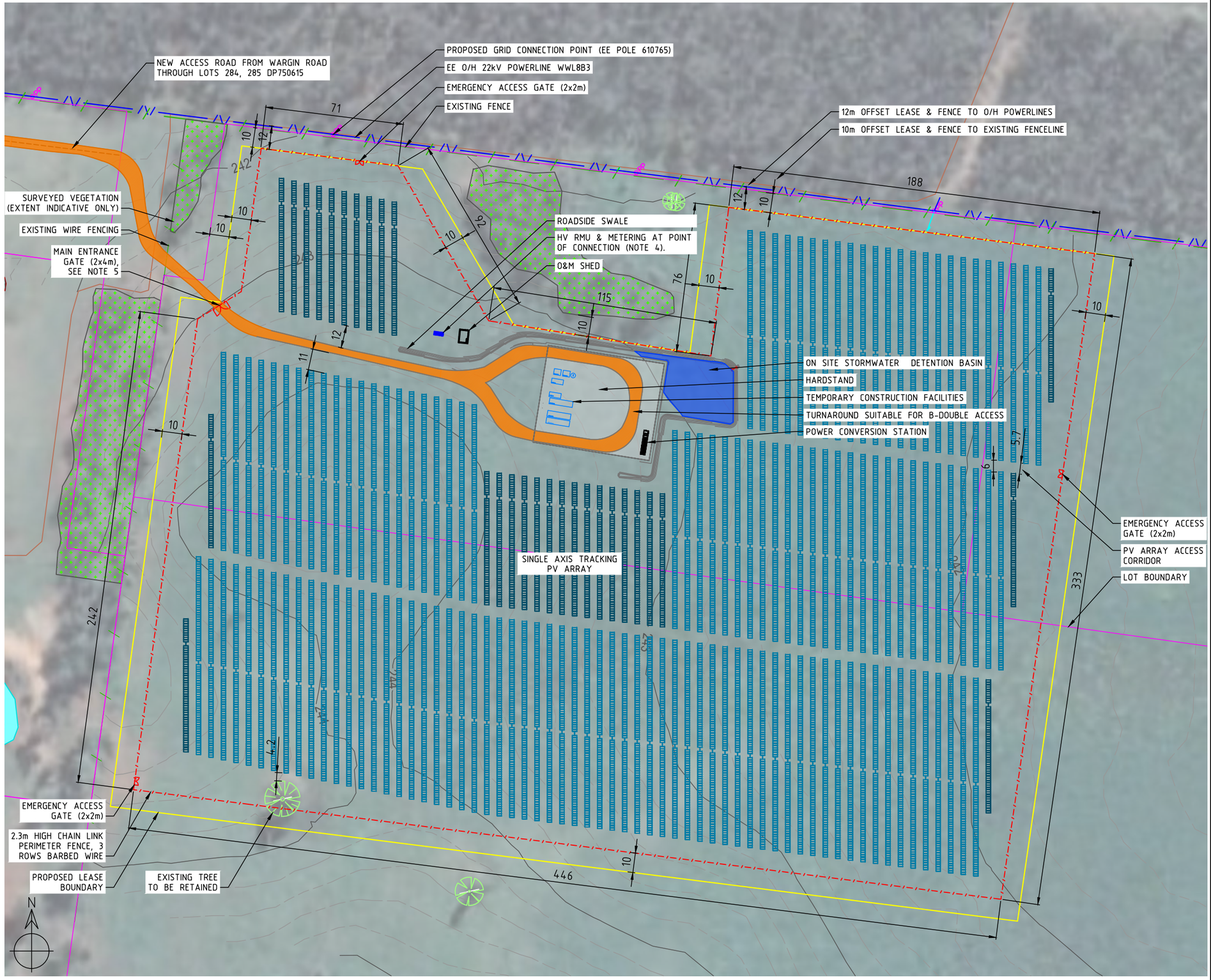
MV POWER STATION:
- MFR: SUNGROW
- MODEL: SG4950HV-MV
- QUANTITY: 1

TRACKER ARRAY:
- TYPE: GROUND MOUNT SINGLE AXIS TRACKING
- CONFIGURATION: INDEPENDENT TYPE
- RANGE OF MOTION: ±60°
- PITCH: 6.4m
- GCR: 35.25%
- QUANTITY: 165 TABLES (135 LONG, 30 SHORT)

FENCED AREA: 136,794 m²
LEASE AREA: 149,941 m²

GENERAL NOTES:

1. SITE ACCESS VIA NEW ACCESS ROAD FROM WARGIN ROAD.
2. DETAIL SHOWN IS PRELIMINARY, MAY CHANGE IN DETAILED DESIGN.
3. CLEARANCE BETWEEN SOLAR TRACKER ARRAY & SITE SECURITY FENCE TYPICALLY 10m.
4. HV RMU & METERING (LOCATION AND TYPE TO BE DETERMINED, IS SUBJECT TO ESSENTIAL ENERGY FEEDBACK).
5. FOR SECURITY GATE DETAILS REFER TO DRAWING 10190-C-DET-02-1.
6. WATERCOURSE, WATERBODY DETAIL FROM SIXMAPS, MGA ZONE 55 PROJECTION.
7. REFER TO CIVIL DETAIL DRAWING 10190-C-DET-01-1.



SCALE (m) 0 25 100 / 10 50

REFERENCES	

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A	2021.04.08	FIRST ISSUE	JM	JM	SS	JM
REV.	DATE	DESCRIPTION	DRWN.	DESIGNED	CHKD.	APPR.

TITLE
PROVIDENCE ASSET GROUP
PINE RIDGE SOLAR FARM
GENERAL ARRANGEMENT
SYSTEM DETAIL

DWG No. 10190-G-GAD-03-1

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2. ENVIRONMENTAL CONTEXT

This section of the report describes the environmental context of the project area spanning previous land-use history, topography and landforms, soils and geology, and fauna and flora. These factors are integral influences of Aboriginal land use, the resultant patterning of archaeological sites, and the survival of sites in the modern landscape.

2.1 Previous Land Use History

The area that was to become Wyalong was first visited in 1817 by the explorer and Surveyor-General John Oxley. Oxley was dismissive of the region stating that "from want of timber, grass and water, it would never be inhabited by civilised man (Dowd 1934: 27). Despite occupation of this area being prohibited until 1833, some early occupation occurred. A small number of pastoral stations were set up after 1833 with John Cartright listed as holding Barmedman while Dr Andrew Gibson and Edward Ryan held pastoral licences around the same vicinity during this period (Dowd 1934).

Apart from the pastoral stations, no other settlement took place until 1889 when Conditional Leases and Conditional Purchase were taken up to the north and northwest of West Wyalong (Dowd 1934). In the early 1890s additional leases to the south were taken up, and in 1893 George W Neeld obtaining a Conditional Lease and Condition purchase tenure on 921 acres of land situated between the modern sites of Wyalong and West Wyalong. It was here that the Neeld family discovered gold and in late 1893 the reporting of their discovery drew thousands of prospectors (Dowd 1934).

In February 1894, only 2 months after the discovery of gold, the Surveyor J. Richmond was given urgent instructions to lay out the township of Wyalong. As gold deposits were depleted, agriculture, particularly wheat-growing, became more important for the economic survival of the twin towns. In 1898, 12,000 acres of land to the southeast of Wyalong were set aside by the Lands Department for Homestead selection. These 400 – 700 acre lots were rapidly taken up for agricultural purposes and in 1902, a further 7,000 acres was set aside for the same purpose (Dowd 1934: 314).

Parish maps of Wyalong from 1895 show that an anticipated future train line had been pegged directly through what would become the proposed project area. When the line was opened on December 12, 1903, the railway line connecting Wyalong to Temora ran further to the east along its current route to the north and east of the proposed project area. In 1917, the line was extended to connect West Wyalong to Lake Cargelligo (Dowd 1934).

The amount of wool, wheat, and sheep transported by rail from Wyalong in 1905 increased by 10 to 20 times by 1933, demonstrating increasing focus on agriculture in the area (Dowd 1934: 316). This agricultural focus continues to this day, with the majority of land in the Wyalong area being used for dryland cropping, some grazing or modified pastures and occasional areas of production forestry (NSW DPIE 2010: Australian Land Use and Management Classification Dataset 2007). While gold mining in the region had mostly diminished since the gold rush of the late 1800's, an active gold mine still operates in nearby Lake Cowal, approximately 33km northeast of the project area (Evolution Mining Website, accessed 23 February 2021).

2.2 Topography, Hydrology and Climate

The proposed area of works is situated in the South Western Slopes Bioregion (SWSB). The SWSB is a large area of foothills and ranges comprising the western fall of the Great Dividing Range to the edge of the Riverina Bioregion. A very wide range of rock types is found across the bioregion, which is also affected

by topographic and rainfall gradients that decrease toward the west. These physical differences have an impact on the nature of the soils and vegetation found across the bioregion. Inland streams pass across the slopes in confined valleys with terraces and local areas of sedimentation. Geology, soils, and vegetation are complex and diverse but typified by granites and meta-sediments, texture contrast soils and a variety of eucalypt woodlands (NPWS 2003: 120). The SWSB is situated within the subhumid eastern zone of Australia and is characterised by hot summers and no dry season (NSW NPWS 2003: 119). The mean annual temperature is 11 – 17°C, with a mean annual rainfall of 360 – 1266mm (NSW NPWS 2003: 119).

The project area sits predominantly within the Manitoba Hills and Footslopes landscape, however a small portion of its northeast corner sits within the Bimbi Plains landscape (Mitchell 2002). The Manitoba Hills and Footslopes landscape is characterised by low ridges with outcrops and tors of granite with narrow, incised drainage contributing to major creeks. The Bimbi Plains landscape is mostly cleared and cultivated and characterised by Quaternary alluvial plains from bedrock hills and ridges of the Gobondery/Gillenbine and the Belmont/Brooklyn land systems. The general elevation of the Manitoba Hills and Footslopes is 200 – 310m, while the Bimbi Plains has a general elevation of 200 – 250m; both landscapes have a local relief to 30m (Mitchell 2002: 90, 94).

The nearest major waterway to the project area (19km) is the mainly perennial Barmedman Creek (previously Back Creek). Further to the north-east (34km) is Lake Cowal, a large, shallow, ephemeral body of water; this is an important Aboriginal cultural and archaeological area (Artefact 2019: 15). Smaller waterways include the Yiddah creek which passes 3.5km to the south and south-east and Gagies Creek, 7km to the north. Isolated ephemeral drainage lines cross the general vicinity and are associated with minor changes in topography (Artefact 2019: 15).

2.3 Geology and Soils

The SWSB Bioregion is situated within the eastern part of the Lachlan Fold Belt which consists of a complex series of north to north-westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. Granites are common and mostly located in large scale upfolded bodies of rock. Granite landscapes occur either as central basins surrounded by steep hills formed on contact metamorphic rocks, or as high blocky plateau features with rock outcrops and tors. Hilly landscapes developed on the sedimentary and volcanic rocks are controlled by structural features (bedding and faults) and typically form lines of hills extended along the strike of more resistant rocks such as quartzite. The valleys between ranges are in generally softer rocks such as shale, phyllite or slate. Limited areas of Tertiary basalt with underlying river gravels and sands occur, and as the country becomes lower to the west and north, wide valleys filled with Quaternary alluvium and occasional lakes become the dominant landscape form (King 1998).

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 an 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. Dryland salinity is widespread. Alluvial sands and loams are more common than clays in most parts of the landscape but alluvial clays become more important nearer to the Riverine Plain. Over the Quaternary, soils in these landscapes have accumulated a considerable quantity of windblown silt and clay from western NSW (NSW NPWS 2003: 120).

The Manitoba Hills and Footslopes portion of the project area contains calcareous and neutral red earths with hills of shallow loamy and sandy lithosols with abundant surface grit grading into red earths down slope (Mitchell 2002: 94). The Bimbi Plains portion contains gravelly clay loams and red brown clays, red-brown

texture-contrast soils on higher slopes grading to red-brown gradational and uniform profiles of clay loams and clays along creeks (Mitchell 2002: 90). The project area lies predominantly within the Mildil Soil Landscape ("SI5507mi"; King 1998: 98 – 100), with a small portion of the south eastern corner situated within the Wyalong Soil Landscape ("SI5507wy"; King 1998: 127 – 128). **Table 1** summarises the two major soil types in the project area by classification system.

Table 1. Soil Classifications

Classification	Soil Type	Location
Australian Soil Classification (CSIRO 2016)	Sodosols (SO)	Majority of project area.
Australian Soil Classification (CSIRO 2016)	Chromosols (CH)	Southwestern corner of project area.
Great Soil Group (modified from Stace *et al.* 1968)	Solodic Soils (SC);	Majority of project area.
Great Soil Group (modified from Stace *et al.* 1968)	Non Calcic Brown Soils (NKB)	Southwestern corner of project area.

2.4 Flora and Fauna

The landscape around the project area with the exception of the railway corridor and associated conservation area has largely been cleared for agriculture. In moderate to open landscapes, species of flora include Dwyer's mallee gum, tumbledown gum, white cypress pine, red box, kurrajongs, bimble box, scattered western golden wattle, variable spear grass, and wire grass. River red gum and bimble box also occur along major creeks in this Bioregion. Additional species include Mallee (Eucalyptus spp.), sugarwood, grey box, yarran, Dean's wattle, grasses and forbs (Mitchell 2002: 94). Common grass species include hairy panic, small-flowered wallaby grass, rough speargrass, and windmill grass (King 1998: 98). Understorey species include wedge-leaf hopbush, sweet quandong, streaked wattle, hakea wattle, miljee, Wyalong wattle, purple burr-daisy, silver cassia, and cough bush (King 1998: 98)

Due to the substantial clearance and limited study of the proposed work area, a reconstruction of native fauna populations is not possible (Artefact 2019: 16-17). A partial scoping study of the SWSB recorded 23 amphibian species, 88 reptiles, 304 birds, and 64 mammal species (NSW NPWS 2001). Sixty-seven species listed in the schedules of the TSC Act are found in SWSB and of these, 13 are listed as endangered and 54 are listed as vulnerable (NSW NPWS 2001). The nearby Barmedman/Yiddah Creek Floodplain is considered to be able to support 32,000 waterbirds and may have been a significant source of resources to local Aboriginal people in the past (Kingsford *et al.* 1997).

2.5 Summary

The alluvial plains, low ridges, long footslopes and drainage lines of the landscape around the project area would have provided an easily traversable region of high biodiversity, with abundant woodlands, diverse grasslands, and numerous aquatic species along major creeklines. The landscape would have provided many nearby permanent water sources as well as ephemeral creeks and small drainage channels over the

surrounding alluvial plains and footslopes. The situation of the project area in a landscape on deep Quaternary alluviums and colluviums would have in the past provided catchments of deposits and cultural remains. Due to heavy disturbance since European settlement, however, preservation of evidence for Aboriginal cultural occupation and land use is unlikely. Extensive land clearance around Wyalong and the proposed area of works has largely stripped the area of all topsoil, as demonstrated in the site inspection for this project. The potential for scarred trees is also very low due to heavy deforestation for cultivation and grazing beginning from the earliest European pastoral settlement of the site. The maintenance of this degraded rural landscape continues to the present day.

3. ARCHAEOLOGICAL CONTEXT AND ETHNOHISTORY

This section presents the ethnohistorical and archaeological context for the evaluation of the project area, specifically known archaeological sites identified by previous archaeological investigations, and the understanding of Aboriginal heritage developed by previous archaeological and heritage studies.

3.1 Ethnohistorical Context

This ethno-historical context is drawn from review of accessible sources including:

- *Australian Dictionary of Biography*,
- a review of primary sources including parish maps and newspaper articles,
- sources identified on the National Library of Australia's *Trove* database,
- consultation with Aboriginal community organisations in the locality,

Wyalong sits within the Southwestern Slopes Bioregion (SWSB) and falls within the traditional country of the Wiradjuri peoples, the largest language group in NSW (Attenbrow 2010, Tindale 1974, Witter 2004). The Wiradjuri tribal area lies within the Murray Darling Basin, covering three primary physiographic divisions: the riverine plains in the west, the transitional western slopes in between, and the highlands or central tablelands in the east (White 1986). Wiradjuri lands are also known as the "land of three rivers" after the rivers that border their lands: Murrumbidjeri (Murrumbidgee), Kalari (Lachlan) and Wombol (Macquarie) Rivers (Niche 2018). Attenbrow (2010: 35) notes that these tribal boundaries are approximations, based upon the surviving linguistic evidence identified in the 19th century and can be treated as indicative at best. Kabaila (2005) also notes that the boundaries defining the Wiradjuri lands would have changed depending upon seasons and changing circumstances with their neighbours. What can be stated with some surety is that the Wiradjuri country was the largest language grouping in the area that is now New South Wales (Attenbrow 2010).

The expansion west of European colonists during the early 1800s brought conflict, disease, and disruption to the Wiradjuri. Open conflict flared between 1822 – 1824 culminating in the "Battle of Bathurst" on 18 September 1824 resulting in the deaths of many Wiradjuri people. With the discovery of gold at Bathurst in 1851, the local European population swelled placing more pressure on the Wirdajuri and displacing them from their traditional lands (Kabaila 2005). Despite the hardships imposed upon them, to this day the Wiradjuri maintain a strong sense of cultural identity as is demonstrated in their involvement in the care and custodianship of their traditional lands and cultural heritage (Niche 2018).

Previous archaeological investigations in this region will be addressed later in this section.

3.2 Heritage Register and Database Searches

The following heritage registers and database searches were undertaken as part of this preliminary assessment:

- National Native Title Tribunal (NNTT);
- Aboriginal Heritage Information Management System (AHIMS);
- The Australian Heritage Database (AHD);
- State Heritage Register (SHR) and Inventory (SHI); and

- West Wyalong Local Environmental Plan (2011).

3.2.1 National Native Title Tribunal

A search was undertaken of the National Native Title Register maintained by the National Native Title Tribunal (NNTT) on 3 November 2020 of the project area to identify if Native Title exist over the project area. The searches identified that no Native Title issues exist for the site however a Future Acts Notice (NS2008/0012) is in place for the project area (refer to **Appendix B**).

3.2.2 Aboriginal Heritage Information Management System (AHIMS search)

Searches were conducted of the AHIMS register on 7 December 2020 for any Aboriginal heritage sites recorded within and adjacent to the project area. The search covered the area datum: GDA, Zone: 55, Eastings: 518040 - 528040, Northings: 6239741 - 6249741 (approximate 5km radius around project area). A total of 8 Aboriginal sites and 0 Aboriginal places were listed (refer to **Appendix C**, **Table 2** and **Figure 3)**.

Table 2. AHIMS Search Results

AHIMS Site ID	Site Name	Site Type	Features	Number of Sites	Sites Within Project Area
43-4-0046	Birribee Scarred Tree 1	Modified Tree	Open site with one modified tree	1	0
43-4-0047	Birribee Scarred Tree 2	Modified Tree	Open site with one modified tree	1	0
43-4-0048	Birribee Scarred Tree 3	Modified Tree	Open site with one modified tree	1	0
43-4-0049	Birribee Scarred Tree 4	Modified Tree	Open site with one modified tree	1	0
43-4-0050	Birribee Scarred Tree 5	Modified Tree	Open site with one modified tree	1	0
43-4-0051	Birribee Scarred Tree 6	Modified Tree	Open site with one modified tree	1	0
43-4-0052	Bee Tree 1	Modified Tree	Open site with one modified tree	1	0
43-4-0037 (AHIMS location error)	ANE Burial	Burial	Open site with 2-3 skulls, burnt bones, and 3-4 artefacts	1	0

Eight sites were identified within 5km of the project area. Of these, seven sites were modified tree sites (refer to **Table 2**). The eighth site, a burial, has been erroneously placed in West Wyalong by the AHIMS Site Recording System. Handwritten information on the provided site card (including coordinates which were subsequently digitised incorrectly) has helped to adjust the location of the burial site, which is in fact situated over 500 km west of the project area on the edge of Lake Victoria. However, none of the sites listed above occur within or adjacent to the proposed project area (refer to **Figure 3**).

3.2.3 Australian Heritage Database

The Australian Heritage Database (AHD) is a Commonwealth administered heritage database that includes entries from the former Register of the National Estate and the current Commonwealth and National Heritage Lists. This database was searched on 12 February 2021 for all Indigenous heritage items within the Bland Shire Local Government Area. The AHD search listed 10 results within the

Bland Shire LGA for heritage places. Of these four were near the project area, however none were Indigenous Places nor were any within the project area.

3.2.4 NSW State Heritage Register and NSW State Heritage Inventory

The State Heritage Register is a heritage database administered by the NSW Heritage Branch of the Office of Environment and Heritage. This database includes heritage listings for State significant heritage items. This database was searched on 12 February 2021 for all heritage items within the Bland Local Government Area.

The results indicate no items listed on the register, and no Aboriginal places in the LGA nor within the project area.

The State Heritage Inventory is a heritage database administered by the NSW Heritage Branch of the Office of Environment and Heritage. This database includes heritage listings from local and regional planning instruments and heritage studies and state significant heritage items. This database was searched on 12 February 2021 for all Indigenous heritage items within the Bland Shire Local Government Area.

The results of the search identified 54 historical items, of which 36 are in Wyalong or West Wyalong, however, none of these items are within or adjacent to the project area. No Indigenous heritage items were listed on the SHI.

3.2.5 Bland Local Environmental Plan (2011)

The Bland Local Environmental Plan (LEP) is a planning instrument administered by Bland Shire Council, which contains provisions and listings of items of environmental heritage including heritage, conservation areas and archaeological sites within Schedule 5. The LEP was searched on 12 February 2021. There were 43 items listed within the Bland LGA, of which 20 were listed in the town of West Wyalong and nine at Wyalong.

The results of the search identified no registered Indigenous heritage items within the project area.

VIRTUSHERITAGE

Figure 3
Project Area and Known Aboriginal Heritage Sites

Legend

- AHIMS Sites
- Roads
- Water Courses
- Desktop DD Area
- Proposed Lease Area
- Preliminary Construction Plan

Source: NSW Spatial Services, AHIMS, KDC
Projection: GDA94 MGA z55

520000 521000 522000 523000 524000 525000 526000

6246000 6245000 6244000 6243000 6242000 6241000

NEWELL HIGHWAY
WYALONG
QUANDIALLA ROAD
GOLDFIELDS WAY
YIDDAH DRIVE
LONE PINE ROAD
WARGIN ROAD
Desktop DD Area
Proposed Lease Area
43-4-0052
CARTWRIGHTS LANE
43-4-0046
43-4-0047
43-4-0048
43-4-0050
43-4-0051

N

0 0.5 1 1.5 2 km

3.3 Previous Archaeological Research

A review of the AHIMS library and online searches were undertaken to obtain copies of previous Aboriginal heritage studies and archaeological investigations within the locality of the project area. No investigations have been published from the immediate surrounds of the proposed site (5km radius). As such, other sources for archaeological reports were consulted to gain a better understanding of the archaeological research near Wyalong and the project area (refer to **Table 3**). This section outlines the studies in the locality that can assist in building up a picture of the potential archaeology of the region. This in turn can help to predict the types of sites that may be expected to be present within the project area.

Table 3. Previous Archaeological Surveys within the Locality

AUTHOR/ DATE	LOCALITY	INVESTIGATION AND DISTANCE TO PROJECT AREA	NO. RECORDED SITES	SITE TYPES	SITES WITHIN PROJECT AREA
Artefact Heritage Pty Ltd 2019	West Wyalong	Aboriginal Cultural Heritage Assessment for Lightsource Development Services Australia Pty Ltd (approx. 17km NE of project area)	3	Two isolated finds (chert and silcrete flakes), one artefact scatter (14 artefacts), and a cultural modified Belah Bee Tree	0
OzArk Environment & Heritage 2018	West Wyalong	Aboriginal Cultural Heritage Assessment Report for ESCO Pacific Pty Ltd (approx. 8km east of project area).	12	Two artefact scatters, one consisting of 5 silcrete artefacts and the other with one silcrete and one quartz artefact. Ten isolated finds (7 silcrete, 3 quartz).	0
Niche Environment and Heritage, 2018	West Wyalong	Aboriginal Cultural Heritage Assessment for Evolution Mining (Cowal) Pty Limited (approx. 34km NE of project area). These investigations covered 747.15 ha.	65	The majority of sites were stone artefact sites, containing either single or multiple artefacts, followed by heat retainers (either single or multiple examples). A single scarred tree was also identified.	0

3.4 Regional Character

As stated previously, the project area is situated within the traditional country of the Wiradjuri peoples and within the Southwestern Slopes Bioregion (Attenbrow 2010, Tindale 1974, Witter 2004). While our knowledge of the Wiradjuri prior to European contact is incomplete, it can be said that despite their large pre-contact population and territory, the Wiradjuri maintained a coherent group identity through their regular communication, trading links, and a cycle of ceremonial participation that moved in a ring around the whole tribal area (Kabaila 2005).

The Lachlan and Macquarie rivers provided both transport and food for the Wiradjuri. Their river diet was

supplemented with animals such as kangaroos, emus, snakes, and lizards while also incorporating grass seeds, roots, and tubers (Tindale 1974). A recent study by Pardoe *et al.* (2019) has shown that distinctive pitted stone cobbles that have been found in the West Wyalong region were used to crack open the nut inside of Quandongs so its kernel could be eaten or ground into a paste for medicinal use.

In Witter's 2004 review of Aboriginal archaeology in western NSW, he suggests that open campsites (sites with stone artefacts on the ground surface) are extremely common, occurring in all parts of the region, but most frequently in stream valleys and upon crests. Witter (2004: 137) suggests the prevalence of open sites is indicative of the exploitation of woodland resources. Due to the extensive agricultural development in the region though, it is likely that ploughing has impacted many sites due to their open context. This will be pertinent to the proposed project area.

Quartz is the most common raw material for making stone artefacts in this region. The use of quartz presents diagnostic issues as quartz tools are difficult to identify and present little variability compared to other raw materials (Witter 2004: 138). The use of non-local materials is limited and usually related to the production of microblades (Witter 2004: 137). Grind stones are uncommon but as noted above, the grinding of grass seeds and Quandong kernels suggests that these implements would have been important to the Wiradjuri. Site types other than open campsites are relatively rare, however scar trees and carved trees are important to the region — this is supported by the dominance of scar trees listed in the AHIMS searches for the project area (**see Table 2)**. Heat retainer ovens and ground stones (axes) are uncommon, as are rock shelters with stratified deposits and outcrops of rock for the production of rock art (Witter 2004: 137).

The Wiradjuri are amongst some of the oldest cultures that lived in Australia, likely thriving on country as early as 45,000 years ago (Pardoe 2013). Witter (2004) has noted however that sites of Pleistocene age (generally older than 10,000 years) will be hard to detect in the region due to poor landscape preservation conditions. Very few reliable dates have been generated for sites within the Southwestern Slopes Bioregion with the earliest (13,959 BP) coming from the Noola rockshelter located near Rylstone (Kigoshi 1964). The closest secure date to the project area (8,311 BP) comes from human remains at Cliefden Caves, 20 kms northeast of Cowra (Pardoe & Webb 1986).

3.5 Summary

The results of the background archaeological research, including heritage searches and a review of previous assessments in the region indicate that the most common site type are low density artefact scatters. The potential for scarred trees, though common in the region, is very low due to heavy deforestation and land clearance around the project area for cultivation and grazing. The archaeological context of the project area indicates that evidence of Aboriginal occupation is most likely to occur on the alluvial plains and in low catchments in close proximity to permanent water sources outside of the project area. Survival of evidence of Aboriginal occupation is, however, dependent on the impacts of previous land use history.

4. PREDICTIVE MODEL AND ARCHAEOLOGICAL POTENTIAL

Based on the known archaeological, environmental and landscape context of the locality, a predictive model for evidence of Aboriginal occupation for the project area is presented below:

Scarred trees and **carved trees** contain evidence of scars and carved patterns which can be attributed as having Aboriginal cultural origin. Scarred trees are typically created by the removal of bark from the trunk of the tree (usually with a stone axe) to make shields, canoes, implements and other types of items which leave a wound on the tree trunk. Scar trees are a common site type in the Wyalong region as indicated by the AHIMS search results. Carved trees contain carved patterns on the tree trunk and are often found in association with ceremonial grounds, burials or cultural sites. These are uncommon in the area. They hold greater significance due to these associations, and only one is known in the broader regional area, outside of West Wyalong LALC boundaries (Linton Howard 2021, pers. comm., 15 March). Both scarred and carved trees may be found where areas of mature trees are extant within the project area. Due to the clearance of trees from the area, the potential is low in the proposed area of works.

Isolated artefacts and **open campsites (artefact scatters)** are the locations of discarded stone artefacts, often material that has been discarded as part of making stone tools or over frequent episodes of occupation/visitation in an area. The objects are most likely to be found within 100 metres of a major water course, well drained alluvial flats, lower slope adjacent water courses, crests, and areas near the lake foreshore where the landscape has not been heavily modified. The potential for artefact scatters and isolated artefacts is low to moderate. They are the most common site type in the broader region, though potential has been limited due to heavy impacts to the landscape associated with intensive agriculture as well as its relatively large distance to permanent sources of water.

Middens are the accumulation of debris from fish, crustaceans and shellfish (shells, fish bones) consumed as part of Aboriginal people's diet. Middens also often contain charcoal, stone artefacts, bone and other types of material used by Aboriginal people. Middens often occur within close proximity to freshwater and saltwater sources which have potential to contain mussels, oysters, and other types of edible shellfish. The potential is very low due to the absence of permanent or major water sources within the project area.

There are no known **bora grounds** or **stone arrangements** within the project area based on Aboriginal consultation to date and preliminary previous archaeological and historical research for this assessment. While a **burial site** (AHIMS site card 43-4-00347) has been identified in the general vicinity, they are a very rare site type and are unlikely to be found in areas of high modification. Additionally, a study of the original site card has indicated that the burial site has been incorrectly placed in West Wyalong due to errors with the AHIMS System; the burial is in fact situated in Lake Victoria 500 km west of the project area. As burials are commonly within shell middens, the potential for a site of this type is particularly low due to a lack of known middens recorded in the vicinity of the project area.

Petroglyphs (also referred to as Rock Engravings) are art sites where marks have been made in stone by Aboriginal people (for example, spirit figures, animals, implements and footprints). **Rock shelter sites with art** consist of rock overhangs used for shelter by Aboriginal people and where smooth surfaces on the walls of the shelter (sandstone surfaces) are painted with ochres and pigments). **Rock shelter sites with occupation deposits** include sediment deposits that potentially retain archaeological material. No known landforms supportive of rock shelters have been recorded in the vicinity of the project area.

Aboriginal axe grinding grooves are grooves most often found in sandstone where Aboriginal people

have sharpened or manufactured stone axes and other implements, and in some cases, ground seed and grains in the sandstone forming 'bowls'. This site type may occur if suitable geology is present such as outcropping sandstone or suitable sandstone shelves in creek beds. The potential for this site type within the project area is low due to a lack of suitable geology. No outcroppings of stone nor grinding groove sites were identified during site survey.

Potential Archaeological Deposits refer to soil profiles within landforms which are predicted to contain buried evidence of Aboriginal occupation. This buried evidence is most often stone artefact scatters which survive frequently in the archaeological record and may occur in both primary and secondary depositional environments. Nearly all soil landscapes and landform types in Australia are connected to Aboriginal occupation and have potential to contain evidence of such.

Artefacts are most commonly recorded in A unit soils (topsoils) and at great depth in B unit alluvial deposits. They occur also in other types of B unit subsoils and deposited between the cracks of C unit cracking clays, where artefacts have moved down the soil profile. Evidence of Aboriginal occupation occurs commonly in both natural secondary deposits as well as in many types of disturbed contexts. Due to the large number of environments and soils where artefacts can occur, deposits are considered to have archaeological potential unless the absence of artefacts is anticipated as a result of post-depositional factors. How archaeological potential is defined and to be assessed in this report is provided in **Table 4.**

Table. Definitions of Archaeological Potential

ARCHAEOLOGICAL POTENTIAL	DEFINITION
Low to Zero	Landforms that have been totally modified and have low to zero potential for any remaining original soil profile or intact archaeological deposits. This is infrequent as usually disturbed sites remain redeposited or partially redistributed in the landscape. In order to designate areas as having low to zero potential, complete stripping of original soil profiles down to or through bedrock must be evident. Sites of that description are rare and are usually deep quarries or open cut mines.
Low	Landforms that may have been utilised by Aboriginal people in the past, but at a lower intensity relative to all surrounding landforms, resulting in a lower artefact density than all surrounding landforms. This category also includes landscape areas of low terrain integrity, where geomorphic processes or human action may have redistributed artefacts from their deposited locations, such as stripping of soil or excavation to create culverts or dams, resulting in site disturbance or destruction.
Moderate	Landforms that are predicted to have been utilised by Aboriginal people in the past, but not intensively or repeatedly. There is therefore potential for artefactual deposition, but at a lower frequency and density than in areas of high archaeological potential. This category may also refer to landforms known to be sensitive for higher levels of Aboriginal occupation but where prior ground surface disturbances has decreased the archaeological integrity and potential of finding evidence of Aboriginal occupation (for example, creek confluences, alluvial terraces and riverbanks, where stratigraphic integrity may

	have decreased due to previous land use).
High	Landscape areas predicted to have been intensively or repeatedly utilised by Aboriginal people in the past, such as creek confluences, Pleistocene terraces, floodplains or elevated landforms above major watercourses (high stream order tributaries) or floodplains. In these areas, site and artefact density are expected to be higher than the surrounding landscape, and sites in these areas may possibly be more complex. Though terrain integrity in these areas may be variable, the high archaeological potential of these areas give the associated deposits research potential, or the capacity to provide valuable information on past Aboriginal land use.

No Potential Archaeological Deposits were recorded during the survey. The area has been identified as having low potential for intact archaeological deposits and low sensitivity in terms of landform. Intensive clearing and farming practices appear to have stripped the majority of topsoil from the property, which in conjunction with the lack of mature trees, revealed no archaeological materials during the site inspection to indicate potential for preserved cultural materials.

4.1. Summary

The project area is in a heavily disturbed landscape, whereby remnant A1 topsoils may have been re-distributed or almost entirely removed, limiting the potential for intact Aboriginal objects and sites to occur. During the site inspection no outcroppings of stone and no evidence of grinding grooves were identified. Mature trees were also uncommon in the landscape due to land clearance and deforestation for agriculture. As such, the potential for axe grinding grooves and scarred or modified trees is low.

The landforms in the area may be suitable for artefact scatters or isolated artefacts to occur dependent on the level of disturbance and modification, though the potential is low due to previous land use history and the lack of vegetation required for topsoil retention. While the potential is low, these site types have been demonstrated to occasionally occur within cracks in clayey subsoil horizons, or in remnant pockets of topsoil within undulating parts of otherwise disturbed landscapes. Other site types such as stone arrangements, art sites, burials and ceremonial sites such as bora rings are unlikely to occur in the project area.

5. SITE INSPECTION AND RESULTS

The site inspection was undertaken on 9 February 2021 on lands within the West Wyalong LALC area. The site inspection was undertaken by Elaine Lin, Senior Archaeologist (Virtus Heritage), Martin Wright, Archaeologist (Virtus Heritage) and the CEO from West Wyalong LALC, Linton Howarth. The field survey was completed over one field day. The proposal area was inspected via pedestrian survey in four transects across the proposed lease area and one transect along the proposed access route, targeting all areas of exposure. The survey included an inspection of all mature trees within the project area. No drainage lines were identified during the inspection (refer to **Appendix D** for photographs of the site inspection).

5.1 Site Inspection Results

General visibility was low to moderate over the project area as the entire paddock was overgrown with thick grass and numerous exotic pasture grass, shrub and weed species (including pigweed). While the vegetation had been recently trimmed by tractor, grass coverage remained dense with exotic species and occasional extant species of native plants such as saltbush, umbrella grass and *Dianella revoluta* (blue flax-lily). The general exposure ranged between 0 – 40%, with occasional areas of exposure with visibility ranging between 80 – 100%. The project area has been heavily disturbed by European farming activities for plant cultivation and animal grazing, such as ploughing and tree clearing. The soil, where visible, was a red loamy to fine sandy clay with 20% ironstone fragments, consistent with the "stony red earths" of the Mildil Landscape and the "stony soils with soil structure decline" of the Wyalong Landscape described by King (1998) regarding the Soil Landscapes of the project area. No outcroppings of bedrock, stone nor drainage lines were identified during the site inspection.

Trees located on the property were scarce, and no scarring was identified on any potential mature or native tree species within the project area. No Aboriginal cultural material was observed during the survey in the proposed lease area. The study area has been identified as having very low potential for intact archaeological deposits to occur. Intensive clearing and farming appear to have stripped the majority of topsoil from the area, which in conjunction with the lack of mature trees and the lack of materials in the occasional large areas of exposure, has produced no archaeological materials to indicate any potential for preserved cultural materials.

5.1.1 Cultural Comments and Potential for Archaeological Deposits

During the site inspection, the West Wyalong LALC CEO, Linton Howarth supported the assessment of the proposed works area as having low potential for evidence of Aboriginal occupation due to heavy disturbance of the site. He noted the presence of scarred trees in the easement outside of the proposed area (AHIMS sites listed in **Table 2**) but also noted that the vegetation within the easement to the north of the proposed area was new growth and therefore unlikely to contain additional scarred trees. Linton indicated that during West Wyalong's gold mining period, the proposed area would have been too close to the town and any Aboriginal people who lived here would have been displaced from the area.

Further formal comments received from Linton Howarth (CEO, West Wyalong LALC) concur with the findings in this report, including the assessment of low potential for archaeological deposits in the project area. Clarification regarding the potential for other site types such as scarred and carved trees was also provided. **Section 4** of the report has been amended to reflect these comments, which have been included in full in **Appendix A**.

5.2 Summary of Site Inspection

There are no previously recorded sites within the project area based on heritage searches and background research of previous archaeological investigations to date. No Aboriginal objects or sites were observed in the project area and given the disturbance and lack of any undisturbed soils or sensitive landforms identified during survey, the project area is deemed to have a low potential for archaeological deposits. Comments from West Wyalong LALC CEO, Linton Howarth support the assessment of low archaeological potential on site during fieldwork.

6. RECOMMENDATIONS

The following recommendations have been made based on the information provided on project impacts, consultation to date, relevant archaeological and environmental background research, and the results of the site inspection.

1. No Aboriginal objects were identified during the site inspection. No Aboriginal places are registered within the project area. No areas of archaeological potential are identified within the project area requiring archaeological testing, salvage or mitigation.
2. All site workers and personnel involved in site impact works associated with the proposal should be inducted and briefed on the possible identification of Aboriginal sites and objects during construction and their responsibilities according to the provisions of the *NPW Act 1974*, in case any additional unknown objects or items are uncovered during proposed works.
    a. As part of this induction, the contact phone numbers of the Heritage NSW regional archaeologist and EnviroLine 131 555, the relevant Environmental Officer responsible for this project should also be given to all site workers and personnel, in case unknown objects or items are uncovered during excavation.
    b. Site workers should be made aware of the location of any Aboriginal sites that may at any stage occur within the proposal site and their scientific significance and their legal obligations in relation to the protection and management of these Aboriginal sites under the *NPW Act 1974*, and 2010 ancillary provisions and amendments.
    c. As part of this induction, workers should be made aware that in the event that any unexpected human remains are uncovered on site, the area of the suspected remains must be secured and cordoned off and the NSW Police notified. No further works can be undertaken until the NSW Police provide written advice. If these remains are deemed to require archaeological investigation by the NSW Police or NSW Coroner, then Heritage NSW and the relevant Aboriginal parties must be notified. A plan of management for the preservation of any identified Aboriginal human remains or for their salvage must be put in place or conducted under an AHIP methodology and variation developed in consultation with all relevant Aboriginal parties and the Heritage NSW.
    d. Providence Asset Group or delegated authority may wish to consider the input and engagement of interested Aboriginal stakeholder groups and West Wyalong LALC in the development of inductions and tool box talks for this project.
3. A copy of the final report has been provided to West Wyalong LALC. Comments from the review of the draft report by Linton Howarth (CEO, West Wyalong LALC) have been received and incorporated into relevant sections of this report. Any additional comments by the LALC will be considered where possible by PAG.

7. REFERENCES

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APPENDIX A
CONSULTATION LOG

Gmail Martin Wright <m.wright@virtusheritage.com.au>

222 - Draft Due Diligence Assessment: Pine Ridge Solar Farm, Wargin Rd, West Wyalong

wyalonglalc@gmail.com <wyalonglalc@gmail.com> Mon, Mar 15, 2021 at 2:28 PM
To: Martin Wright <m.wright@virtusheritage.com.au>

Dear Martin,

Thank you for providing the feedback on the survey of the Wargin Rd proposed solar farm.

I concur with the findings of the report in general but would like to note that in Part 4 Predictive Model and Archaeological Potential that the section on scarred and carved trees the report states that “Carved trees are a common site type in the West Wyalong region as indicated by the AHIMS search results…”, I believe that scarred trees for implement construction are more commonly found and that this is supported by the AHIMS data. Carved trees are much less common and often hold greater significance due to their association with burials and other ceremonial activities. I am only aware of one carved tree in the broader regional area and this is outside of the West Wyalong LALC boundaries.

Thanks for providing the opportunity for feedback.

Regards,

linton

Linton Howarth

Chief Executive Officer

West Wyalong Local Aboriginal Land Council

(02)69723493, Mob. 0418723498

Yindyamarra

From: Martin Wright <m.wright@virtusheritage.com.au>
Sent: Friday, 12 March 2021 4:47 PM
To: wyalonglalc@gmail.com
Cc: Elaine Lin <e.lin@virtusheritage.com.au>; Mary-Jean Sutton <mj.sutton@virtusheritage.com.au>; Virtus Consultation <consultation@virtusheritage.com.au>; Jeremy Every <jeremy.every@providences.com.au>
Subject: 222 - Draft Due Diligence Assessment: Pine Ridge Solar Farm, Wargin Rd, West Wyalong

Dear Linton

Thank you for coming out with Elaine and I last month to look at the proposed Pine Ridge solar farm site on Wargin Rd, West Wyalong.

Please find attached the draft Due Diligence Assessment for your comment. Could you please provide any feedback by close of business on 26/03/2021.

Have a great weekend.

regards

--

Martin Wright

Archaeologist

VIRTUSHERITAGE

Mobile: 0413 457 093

Email: m.wright@virtusheritage.com.au

Website: www.virtusheritage.com.au

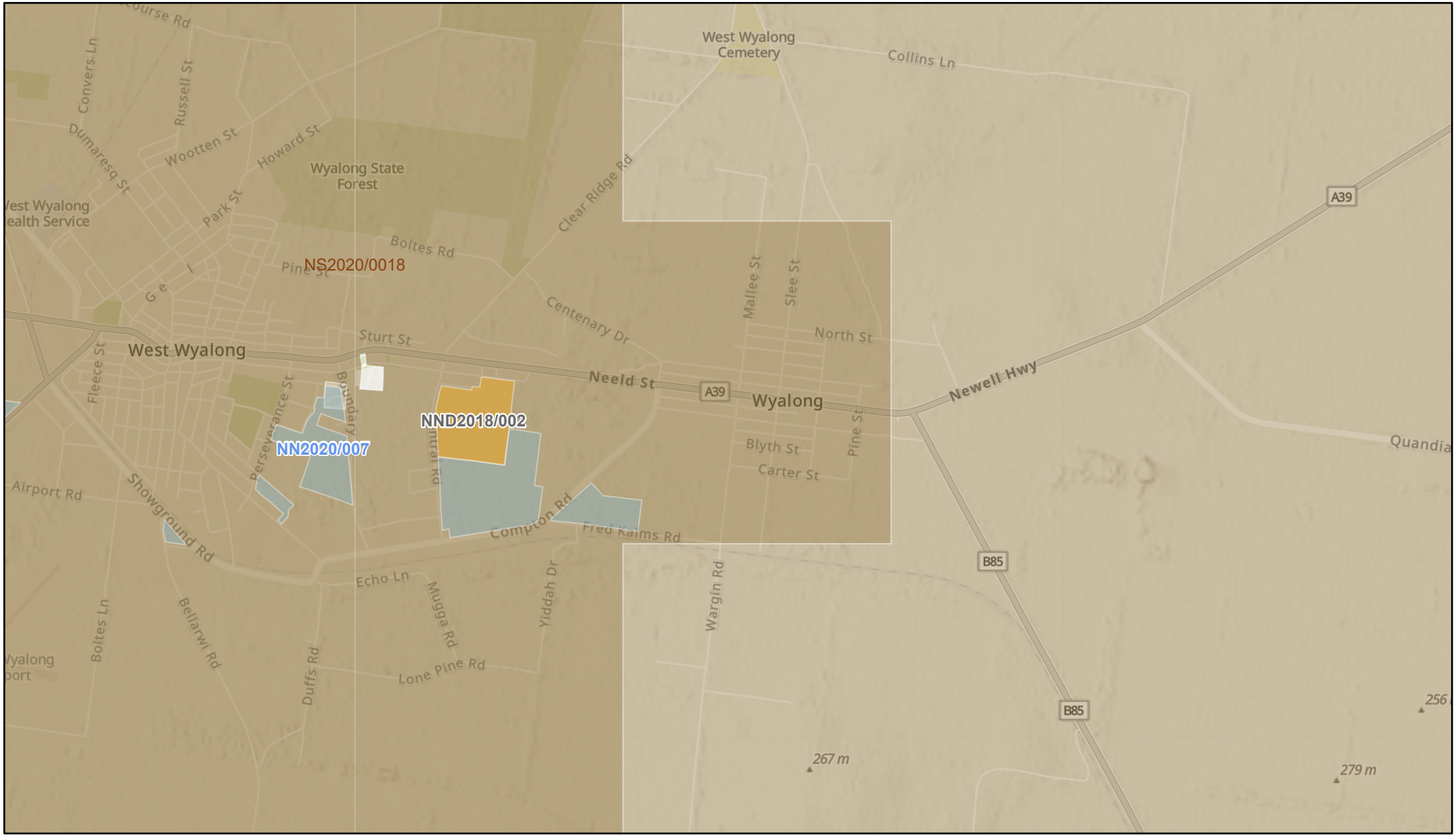
***Winner, Innovation for Cultural Heritage Services for NSW Business** Chamber, Northern NSW Regional Awards, 2019
*Winner, Innovation for Cultural Heritage Services in Small Business Excellence Awards, Tweed Region (BEATS), 2019
*Finalist, National Small Business Champions Awards and NSW State Business Chamber Awards, 2019

[Quoted text hidden]

APPENDIX B

NATIONAL NATIVE TITLE TRIBUNAL SEARCH

Map of Search



11/3/2020, 5:27:59 PM

Determinations

In effect - Finalised

Applications (Schedule)

Future Act Notices (Current)

1:36,112

0 0.25 0.5 1 mi

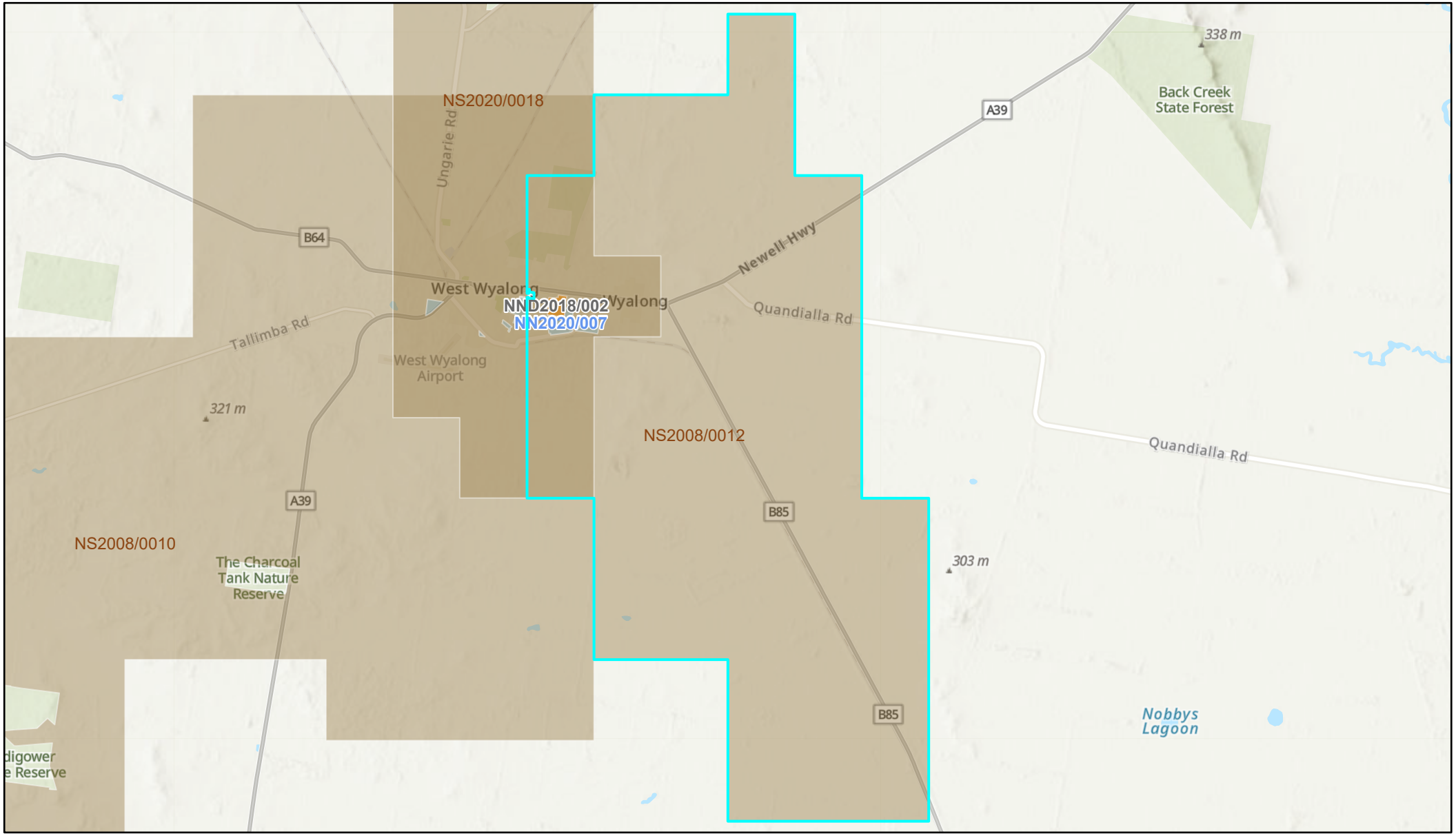
0 0.4 0.8 1.6 km

Esri, Geoscience Australia, NASA, NGA, USGS, Esri, HERE, Garmin, METI/NASA, USGS

Native TitleVision

Esri, CGIAR | Esri, HERE, Garmin, METI/NASA, USGS | National Native Title Tribunal,

Future Act Notices



11/3/2020, 5:25:19 PM

RATSIB Areas

Determinations

In effect - Finalised

Determined Outcomes

Native title does not exist

Applications (Schedule)

Future Act Notices (Current)

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Esri, Geoscience Australia, NASA, NGA, USGS, Esri, HERE, Garmin, METI/NASA, USGS

Native TitleVision

Esri, USGS | Esri, HERE, Garmin, FAO, METI/NASA, USGS | National Native Title Tribunal,

APPENDIX C

AHIMS SEARCH

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 222 - West Wyalong Solar

Client Service ID : 555630

Elaine Lin

Date: 07 December 2020

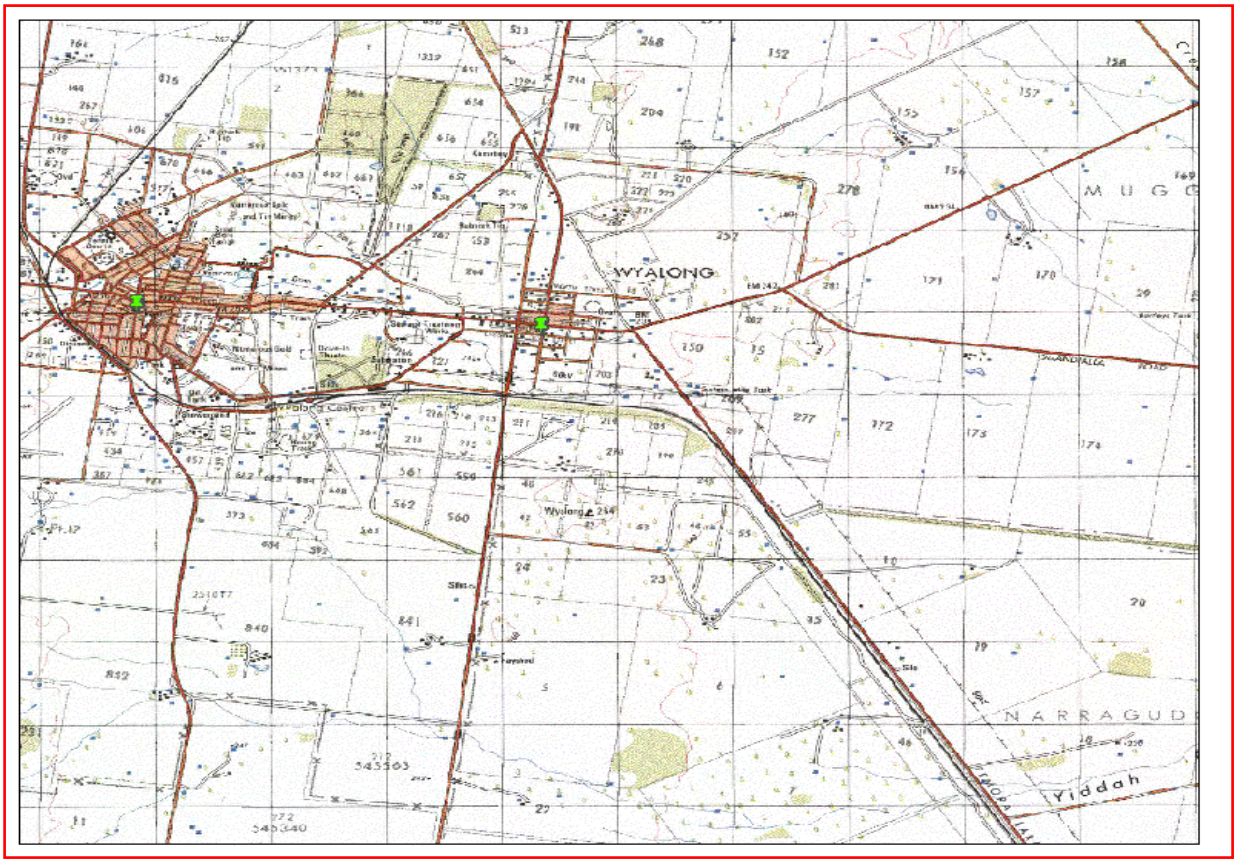
Attention: Elaine Lin

Email: e.lin@virtusheritage.com.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 518040 - 528040, Northings : 6239741 - 6249741 with a Buffer of 0 meters. Additional Info : Redoing search as per advice from Eva due to mapping issue with AHIMS system - fee to be waived, conducted by Elaine Lin on 07 December 2020.

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



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

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

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 222 - West Wyalong Solar

Client Service ID : 547203

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
43-4-0046	Birribee Scarred Tree 1	GDA	55	524628	6243334	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0047	Birribee Scarred Tree 2	GDA	55	525286	6242209	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0048	Birribee Scarred Tree 3	GDA	55	525400	6241927	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0049	Birribee Scarred Tree 4	GDA	55	525530	6241734	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0050	Birribee Scarred Tree 5	GDA	55	525583	6241659	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0051	Birribee Scarred Tree 6	GDA	55	525779	6241211	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0052	Bee Tree 1	GDA	55	524016	6244538	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	**Recorders**	Mr.Joseph Brooke					**Permits**		
43-4-0037	ANE Burial	AGD	55	523999	6245231	Open site	Valid	Burial : 3, Artefact : 3		
	Contact T Russell	**Recorders**	Steven Meredith					**Permits**		

Report generated by AHIMS Web Service on 03/11/2020 for Elaine Lin for the following area at Datum :GDA, Zone : 55, Eastings : 518040 - 528040, Northings : 6239741 - 6249741 with a Buffer of 0 meters. Additional Info : Site inspection and mapping. Number of Aboriginal sites and Aboriginal objects found is 8

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

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

Important information about your AHIMS search

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

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

APPENDIX D

PLATES

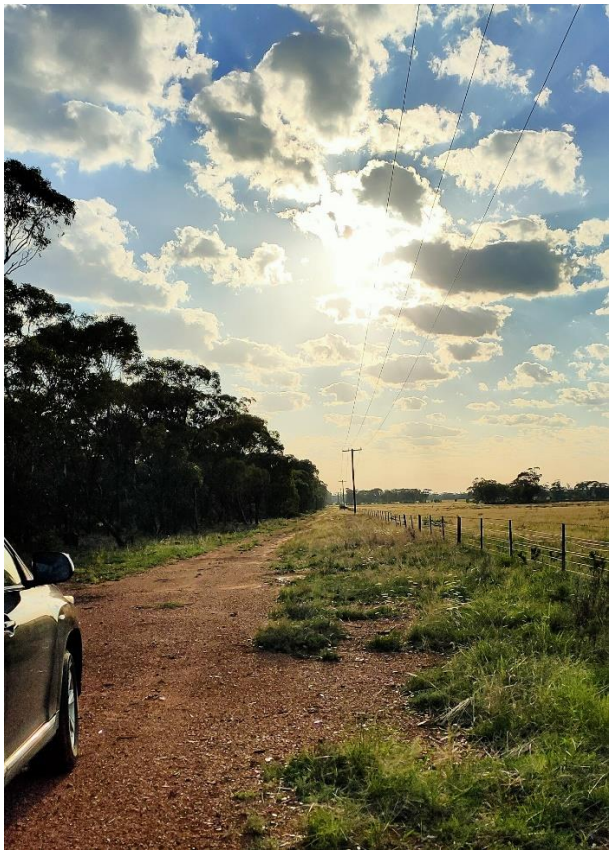


Plate 1. Access to proposed solar farm lease area from Wargin Road, West Wyalong, NSW; facing east.

Plate 2. Proposed solar development lease area and start of transect one; facing east.

Plate 3. End of transect two showing grassy paddock with exotic pasture species; facing west.

Plate 4. End of transect four showing overgrown grass in paddock and poor visibility; facing west.

Plate 5. Example of general visibility in proposed lease area.

Plate 6. Example of occasional large area of exposure with approximately 90% visibility.