

Appendix E

Updated Aboriginal Cultural Heritage Assessment Report

Redacted



MALLEE WIND FARM
ARUMPO ROAD, MALLEE, NEW SOUTH WALES
ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Prepared for Umwelt Australia Pty Ltd

24 March 2026

Final - Redacted

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ACKNOWLEDGEMENT OF COUNTRY

We respect and acknowledge the First Nations Peoples of the lands and waterways on which we live and work, their rich cultural heritage, and their deep connection to Country, and we acknowledge their Elders past and present.

CULTURAL WARNING

Aboriginal and Torres Strait Islander readers are advised that this report may contain images or names of First Nations people who have passed away.

The logo for Austral Archaeology is located in the bottom right corner. It features a stylized white icon of a person with arms raised, positioned to the left of the company name. The name "AUSTRAL" is written in a large, bold, sans-serif font, and "ARCHAEOLOGY" is written in a smaller, bold, sans-serif font directly beneath it. The entire logo is set against a solid black rectangular background.

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EXECUTIVE SUMMARY

This report has been prepared for Umwelt (Australia) Pty Ltd (Umwelt) on behalf of Spark Renewables Pty Ltd (Spark Renewables) and details the results of an Aboriginal Cultural Heritage Assessment (ACHA) prepared for the Mallee Wind Farm Project (the Project). The report has been updated following the public exhibition of the Project's Environmental Impact Statement. Key submissions have been responded to primarily through revisions to Chapters 1, 3, 4, 5, 8, 9 and 10.

The Project land is situated within the South West Renewable Energy Zone (South West REZ), in New South Wales (NSW) (the Project Area), within the Wentworth Shire Council Local Government Area (LGA), and the parishes of Brewang, Cliffs, Gol Gol, Matong, Uki, Wambera and Winnegow in the County of Wentworth.

The Project Area consists of Lots and Deposited Plans as follows:

- Lot 3805, DP763156
- Lot 1, DP756995
- Lot 3, DP756993
- Lot 1727, DP763667
- Lot 1726, DP763664
- Lot 3, DP 1182353
- Lot 1, DP 1233260
- Lot 7, DP1256363

The Project Area is located approximately 4 kilometres (km) north-east of the township of Gol Gol and 16 km north-east of Buronga. It is within the boundaries of the Dareton Local Aboriginal Council (DLALC).

The proposed Project is a renewable energy development that will include the installation of up to 76 wind turbine generators (WTGs) and a containerised Battery Energy Storage System (BESS).

The Project is a State Significant Development (SSD) as defined under State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) and requires development consent under Part 4 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). Under section 4.41 of the EP&A Act, the need for an Aboriginal heritage impact permit under Section 90A of the National Parks and Wildlife Act 1974 (NPW Act) is not applicable. However, it is necessary to adhere to the other provisions and requirements of the NPW Act. This ACHA was undertaken to assess the archaeological potential for Aboriginal material as part of the SSD application (SSDA) being prepared. The ACHA has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), the *Guide to Investigating, assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment, Climate Change and Water NSW 2010a) (Consultation Requirements).

The Willandra Lakes World Heritage Area (WLWHA) and the Willandra Lakes Region National Heritage Property (WLRNHP) are located approximately 25 km from the Project Area. Spark Renewables undertook a self-assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), for Matters of National Environmental Significance (MNES). The Project was subsequently referred as a Proposed Action under the EPBC Act. A delegate of the Federal Minister for the Environment and Water (formerly Department of Agriculture, Water and the Environment) determined that Mallee Wind Farm was a controlled action under section 75 of the EPBC Act. Following this, a Supplementary SEARs was issued, requiring consideration of the relevant impacts of the Proposed Action upon the nearby WLWHA and WLRNHP properties. These matters are assessed within this ACHA.

A desktop assessment was undertaken that included a review of background research and information and a search of the Aboriginal Heritage Information Management System (AHIMS) database. The background research determined that the Project Area is located within the semi-arid zone of Australia with dunes, swales and plains as the prevalent landforms present. Although permanent water is not identified within the Project Area, there is evidence of relict water sources adjacent that would have been used by Aboriginal people as they travelled through the back plains during the winter months. The Project Area is located within 7 different geological units, 3 different soil landscapes and 2 different soil types. Landscape resources within the Project Area include eucalyptus trees, chenopods, kangaroo, emu, and swamp wallaby. Past land use activities within the Project Area include deforestation and vegetation clearance, animal grazing, agricultural cropping and the construction of access tracks, bores, dams and roads.

The AHIMS database search was conducted in 2024, with a 25 km search radius applied, and did not identify any recorded cultural heritage within the Project Area; however, it did identify 93 previously recorded sites within 25 km of the Project Area. An additional search was conducted in January 2026 that identified 131 sites now located within a 25 km search area. This included all the sites identified during the survey for ACHA, as well as 3 sites which had been registered within the Project Area since the archaeological survey conducted for this Project. Previous archaeological studies in the region have identified numerous Aboriginal archaeological sites, typically consisting of scarred trees, artefact sites, and hearths. The outcomes of the desktop assessment suggest Aboriginal cultural heritage is likely to exist within the Project Area.

Two Aboriginal cultural heritage surveys were undertaken for the ACHA. The first survey, completed in June 2023 as part of a landform survey, identified 5 Aboriginal cultural heritage sites. An additional survey was undertaken in March 2024, which identified and recorded an additional 24 Aboriginal cultural heritage sites.

The Aboriginal sites identified during the archaeological surveys are described, along with their significance in the table below:

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm AS1 / AHIMS #46-3-0027	Mallee Windfarm AS1 (AHIMS #46-3-0027) is an artefact scatter. The site is located on a ridge on a sand dune formation and consists of 2 silcrete artefacts, one flaked piece and a proximal fragment. Based on these findings, the site is unlikely to have research potential. Mallee Windfarm AS1 (AHIMS #46-3-0027) has been assessed to not have historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance. This has been determined on the basis that the site consists of 2 silcrete artefacts that are not complete, nor show any unique technologies or are used for specific purposes.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm HR1 / AHIMS #39-6-0101	Mallee Windfarm HR1 (AHIMS #39-6-0101) is located on a flat landform and consists of a hearth. Mallee Windfarm HR1 (AHIMS #39-6-0101)'s condition is poor due to the site being highly dispersed over a 3mx3m area with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR1 (AHIMS #39-6-0101) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR2 / AHIMS #39-6-0103	Mallee Windfarm HR2 (AHIMS #39-6-0103) is located on a dune landform and is a hearth that consists of an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR2 (AHIMS #39-6-0103) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR3 / AHIMS #39-6-0104	Mallee Windfarm HR3 (AHIMS #39-6-0104) is located on a dune landform within a disturbed paddock and is a hearth that consists of an isolated burnt clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR3 (AHIMS #39-6-0104) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR4 / AHIMS #46-3-0237	Mallee Windfarm HR4 (AHIMS #46-3-0237) is located on a dune landform and is a hearth that consists of 3 burnt clay heat retainers with ochre, with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR4 (AHIMS #46-3-0237) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm HR5 / AHIMS #46-3-0238	Mallee Windfarm HR5 (AHIMS #46-3-0238) is located on a plain landform and consists of a hearth. Mallee Windfarm HR5 (AHIMS #46-3-0238) is eroding out of an informal dirt track and has been highly disturbed by the ongoing use of the track. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR5 (AHIMS #46-3-0238) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR6 / AHIMS #47-1-0072	Mallee Windfarm HR6 (AHIMS #47-1-0072) is located on a plain landform and consists of a hearth. Mallee Windfarm HR6 (AHIMS #47-1-0072) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR6 (AHIMS #47-1-0072) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR7 / AHIMS #46-3-0239	Mallee Windfarm HR7 (AHIMS #46-3-0239) is located on a plain landform and consists of a hearth. Mallee Windfarm HR7 (AHIMS #46-3-0239) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR7 (AHIMS #46-3-0239) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR8 / AHIMS #46-3-0240	Mallee Windfarm HR8 (AHIMS #46-3-0240) is located on a plain landform and consists of a hearth. Mallee Windfarm HR8 (AHIMS #46-3-0240) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR8 (AHIMS #46-3-0240) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm HR9 / AHIMS #46-3-0242	Mallee Windfarm HR9 (AHIMS #46-3-0242) is located on a dune landform and is a hearth that consists of an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR9 (AHIMS #46-3-0242) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR10 / AHIMS #46-3-0241	Mallee Windfarm HR10 (AHIMS #46-3-0241) is located on a dune landform within a worked paddock and consists of a hearth. Mallee Windfarm HR10 (AHIMS #46-3-0241) is an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR10 (AHIMS #46-3-0241) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm HR11 / AHIMS #46-3-0243	Mallee Windfarm HR11 (AHIMS #46-3-0243) is located on a plain landform and consists of a hearth. Mallee Windfarm HR11 (AHIMS #46-3-0243) is scattered with 2 clay heat retainers and is eroding out of an informal dirt track. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR11 (AHIMS #46-3-0243) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.	Low
Mallee Windfarm ISO1 / AHIMS #46-3-0229	Mallee Windfarm ISO1 (AHIMS #46-3-0229) is an isolated silcrete proximal flake located on a plain. The site is located on a dirt farm track and has likely been disturbed by the ongoing use of the informal track. Mallee Windfarm ISO1 (AHIMS #46-3-0229) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO2 / AHIMS #46-3-0230	Mallee Windfarm ISO2 (AHIMS #46-3-0230) is an isolated silcrete proximal fragment located on a flat. Mallee Windfarm ISO2 (AHIMS #46-3-0230) is situated on an informal farm track. Mallee Windfarm ISO2 (AHIMS #46-3-0230) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm ISO3 / AHIMS #39-6-0102	Mallee Windfarm ISO3 (AHIMS #39-6-0102) is an isolated silcrete flaked piece located on a flat. Mallee Windfarm ISO3 (AHIMS #39-6-0102) is situated on an informal farm track. Mallee Windfarm ISO3 (AHIMS #39-6-0102) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO4 / AHIMS #46-3-0232	Mallee Windfarm ISO4 (AHIMS #46-3-0232) is an isolated silcrete, longitudinally broken, flaked piece located on a flat. Mallee Windfarm ISO4 (AHIMS #46-3-0232) is situated on an informal farm track. Mallee Windfarm ISO4 (AHIMS #46-3-0232) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO5 / AHIMS #47-1-0064	Mallee Windfarm ISO5 (AHIMS #47-1-0064) is an isolated silcrete proximal fragment located on a plain. Mallee Windfarm ISO5 (AHIMS #47-1-0064) is situated on an informal farm track. Mallee Windfarm ISO5 (AHIMS #47-1-0064) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO6 / AHIMS #47-1-0065	Mallee Windfarm ISO6 (AHIMS #47-1-0065) is an isolated silcrete proximal fragment located on a plain. Mallee Windfarm ISO6 (AHIMS #47-1-0065) is situated on an informal farm track. Mallee Windfarm ISO6 (AHIMS #47-1-0065) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO7 / AHIMS #47-1-0067	Mallee Windfarm ISO7 (AHIMS #47-1-0067) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO7 (AHIMS #47-1-0067) is situated on an informal farm track. Mallee Windfarm ISO7 (AHIMS #47-1-0067) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO8 / AHIMS #47-1-0066	Mallee Windfarm ISO8 (AHIMS #47-1-0066) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO8 (AHIMS #47-1-0066) is situated on an informal farm track. Mallee Windfarm ISO8 (AHIMS #47-1-0066) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm ISO9 / AHIMS #47-1-0068	Mallee Windfarm ISO9 (AHIMS #47-1-0068) is an isolated silcrete core fragment located on a plain. Mallee Windfarm ISO9 (AHIMS 47-1-0068) is situated on an informal farm track. Mallee Windfarm ISO9 (AHIMS 47-1-0068) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO10 AHIMS #47-1-0069	Mallee Windfarm ISO10 (AHIMS #47-1-0069) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO10 (AHIMS #47-1-0069) is situated on an informal farm track. Mallee Windfarm ISO10 (AHIMS #47-1-0069) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO11 / AHIMS #47-1-0070	Mallee Windfarm ISO11 (AHIMS #47-1-0070) is an isolated silcrete core fragment located on a plain. Mallee Windfarm ISO11 (AHIMS #47-1-0070) is situated on an informal farm track. Mallee Windfarm ISO11 (AHIMS #47-1-0070) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO12 / AHIMS #47-1-0071	Mallee Windfarm ISO12 (AHIMS #47-1-0071) is an isolated silcrete proximal fragment located on a flat. Mallee Windfarm ISO12 (AHIMS #47-1-0071) is situated on an informal farm track. Mallee Windfarm ISO12 (AHIMS #47-1-0071) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO13 / AHIMS #46-3-0233	Mallee Windfarm ISO13 (AHIMS #46-3-0233) is an isolated silcrete flaked piece located on a plain. Mallee Windfarm ISO13 (AHIMS #46-3-0233) is situated on an informal farm track. Mallee Windfarm ISO13 (AHIMS #46-3-0233) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
Mallee Windfarm ISO14 / AHIMS #46-3-0234	Mallee Windfarm ISO14 (AHIMS #46-3-0234) is an isolated silcrete flaked piece located on a plain. Mallee Windfarm ISO14 (AHIMS #46-3-0234) is situated on an informal farm track. Mallee Windfarm ISO14 (AHIMS #46-3-0234) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low

Site Name & AHIMS No.	Aboriginal Cultural Heritage Values	Significance
Mallee Windfarm ISO15 / AHIMS #46-3-0235	Mallee Windfarm ISO15 (AHIMS #46-3-0235) is an isolated silcrete flaked piece located on a plain. Mallee Windfarm ISO15 (AHIMS #46-3-0235) is situated on an informal farm track. Mallee Windfarm ISO15 (AHIMS #46-3-0235) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.	Low
[REDACTED] AHIMS #46-3-0227	[REDACTED] (AHIMS #46-3-0227) [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] This site has been avoided by the proposed works.	High
Mallee Windfarm PAD /AHIMS #46-3-0236	Mallee Windfarm PAD (AHIMS #46-3-0236) cannot be assessed for aesthetic, historic, scientific and/or social and spiritual values since the extent and nature of the site has not been determined. This site has been avoided by the proposed works therefore no further assessment has been undertaken.	Unknown
Dansons Road CMT1 / 46-3-0250	Dansons Road CMT1 (AHIMS #46-3-0250) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT1 (AHIMS #46-3-0250) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.	Moderate
Dansons Road CMT2 / 46-3-0251	Dansons Road CMT2 (AHIMS #46-3-0251) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT2 (AHIMS #46-3-0251) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.	Moderate
Dansons Road CMT3 / 46-3-0254	Dansons Road CMT3 (AHIMS #46-3-0254) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT3 (AHIMS #46-3-0254) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.	Moderate

ABORIGINAL COMMUNITY CONSULTATION

Consultation with Aboriginal stakeholders has been completed in accordance with the Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a). A summary of this process is included in the table below:

Stage	Component	Commenced	Completed
Stage 1	Letters to agencies	11 October 2022	N/A
	Registration of stakeholders	25 January 2023	8 February 2023
Stage 2	Project information	9 May 2023	N/A
Stage 3	Review of Project methodology	9 May 2023	6 June 2023
Stage 4	Review of ACHA by Aboriginal stakeholders	19 July 2024	16 August 2024
Stage 4	Review of Revised ACHA by Aboriginal stakeholders	16 February 2026	16 March 2026

This updated ACHA addresses matters raised by the NSW Government – Heritage NSW and does not include any substantive changes to the assessment findings or recommended management strategies. As a result, a further formal review period was not required in accordance with the Consultation Requirements. However, Spark Renewables briefed stakeholders on the updated ACHA as part of a Project update in early 2026, and the revised documents have been made available to stakeholders to confirm that the proposed management strategies remain appropriate.

Further information on the consultation completed for the Project can be found in Section 2 and Volume 2 of this report.

IMPACT ASSESSMENT

This ACHA has included a programme of investigations that have characterised the nature, extent and significance of Aboriginal sites within the Project Area.

Although the WLWHA and WLRNHP are located more than 20 km from the Project Area, in accordance with the referral under the EPBC Act and the Supplementary SEARs, an assessment of the Proposed Actions is required with reference to MNES Significant Impact Guidelines 1.1 (DoE, 2013).

There are no listed World Heritage properties or National Heritage Places located within or directly adjacent to the EPBC Referral Area, the impacts of the Proposed Actions upon MNES have been assessed as nil. As stated above, the WLWHA and WLRNHP are located approximately 25 km from the Proposed Action/Project Area. Consequently, there will be no direct or indirect impacts on these properties as a result of the Proposed Action.

Despite the Project's avoidance and minimisation strategy being applied, proposed works will impact 8 of the 32 identified Aboriginal sites within the Project Area. An evaluation of harm to the Aboriginal sites identified as part of the ACHA is summarised below:

Site name / AHIMS No.	Significance	Type of harm	Degree of harm	Consequence of harm
Mallee Windfarm AS1 / 46-3-0228	Low	None	None	No loss of value
Mallee Windfarm HR1 / 39-6-0101	Low	None	None	No loss of value

Site name / AHIMS No.	Significance	Type of harm	Degree of harm	Consequence of harm
Mallee Windfarm HR10 / 46-3-0241	Low	Direct	Total	Total loss of value
Mallee Windfarm HR11 / 46-3-0243	Low	None	None	No loss of value
Mallee Windfarm HR2 / 39-6-0103	Low	None	None	No loss of value
Mallee Windfarm HR3 / 39-6-0104	Low	None	None	No loss of value
Mallee Windfarm HR4 / 46-3-0237	Low	None	None	No loss of value
Mallee Windfarm HR5 / 46-3-0238	Low	Direct	Total	Total loss of value
Mallee Windfarm HR6 / 47-1-0072	Low	None	None	No loss of value
Mallee Windfarm HR7 / 46-3-0239	Low	Direct	Total	Total loss of value
Mallee Windfarm HR8 / 46-3-0240	Low	None	None	No loss of value
Mallee Windfarm HR9 / 46-3-0242	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO1 / 46-3-0229	Low	None	None	No loss of value
Mallee Windfarm ISO10 / 47-1-0069	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO11 / 47-1-0070	Low	None	None	No loss of value
Mallee Windfarm ISO12 / 47-1-0071	Low	None	None	No loss of value
Mallee Windfarm ISO13 / 46-3-0233	Low	None	None	No loss of value
Mallee Windfarm ISO14 / 46-3-0234	Low	None	None	No loss of value
Mallee Windfarm ISO15 / 46-3-0235	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO2 / 46-3-0230	Low	None	None	No loss of value
Mallee Windfarm ISO3 / 39-6-0102	Low	None	None	No loss of value
Mallee Windfarm ISO4 / 46-3-0232	Low	Direct	Total	Total loss of value

Site name / AHIMS No.	Significance	Type of harm	Degree of harm	Consequence of harm
Mallee Windfarm ISO5 / 47-1-0064	Low	None	None	No loss of value
Mallee Windfarm ISO6 / 47-1-0065	Low	None	None	No loss of value
Mallee Windfarm ISO7 / 47-1-0067	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO8 / 47-1-0066	Low	None	None	No loss of value
Mallee Windfarm ISO9 / 47-1-0068	Low	None	None	No loss of value
██████████ / 46-3-0227	High	None	None	No loss of value
Mallee Windfarm PAD / 46-3-0236	Unknown	None	None	No loss of value
Dansons Road CMT1 / 46-3-0250	Moderate	None	None	No loss of value
Dansons Road CMT2 / 46-3-0251	Moderate	None	None	No loss of value
Dansons Road CMT3 / 46-3-0254	Moderate	None	None	No loss of value

RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, the findings of the surveys and the predicted impact of the Project on archaeological resources.

It is recommended that:

1. Before any works occur, Spark Renewables should develop an Aboriginal Cultural Heritage Management Plan (ACHMP) to mitigate and manage impacts to all Aboriginal heritage sites within and directly adjacent to the Project Area. These sites are protected under Section 90 of the *NSW National Parks and Wildlife Act 1974*. The ACHMP should form part of the Project's construction environmental management plan (CEMP), and the strategies contained within it should apply to the construction, operational and decommissioning phases of the Project.
2. It is recommended that the ACHMP include the following general management and mitigation measures to ensure the protection of any sites that are located outside the proposed works area, including the sites of high, moderate or unknown (██████████ AHIMS #46-3-0227 and Mallee Windfarm PAD AHIMS #46-3-0236) significance. All sites that are protected under these general management strategies are listed in Table 11.3 of the ACHA. The ACHMP should include the following:

- Measures to ensure all vehicles, machinery and personnel associated with the Project remain within the Disturbance Footprint as defined in this ACHA, unless they are carrying out pedestrian monitoring or surveying work that does not involve ground breaking works. Vehicles are restricted to property tracks that are not associated with known sites, which is considered low impact. To ensure that people remain in designated areas:
 - Clear signage must be installed to ensure that all personnel remain within the Disturbance Footprint. Where access roads extend beyond the Disturbance Footprint, signage must explicitly state that personnel must remain confined to the designated road alignment at all times.
 - Provisions for monitoring potential impacts to ensure the protection of the World Heritage Values associated with any World Heritage and National Heritage properties located within the local area based on the mitigation measures listed in Table 10.5.
 - Provisions for protecting Aboriginal heritage items outside the Disturbance Footprint|
 - [REDACTED]
 - A contingency plan and reporting procedure if Aboriginal heritage items within or in close proximity to the Disturbance Footprint are incidentally damaged.
 - Protocols for conducting further archaeological and heritage assessment in disturbance areas where this assessment has not already been carried out.
 - Measures to ensure any workers on-site receive suitable heritage inductions prior to carrying out any work on site.
 - Measures to maintain and manage reasonable access for Aboriginal stakeholders to visit heritage items on site.
 - Provisions for ongoing consultation with Aboriginal stakeholders for the conservation and management of Aboriginal cultural heritage on site.
 - A program to monitor and report on the effectiveness of these measures and any heritage impacts of the Project.
3. It is recommended that the ACHMP also contain the following strategies to protect and reduce impacts to sites located within the proposed work area. These sites and their relevant management strategies are detailed in Table 11.3.
 - Sites that will be managed through exclusion zones are to be fenced off using star pickets and flags before any works occur.
 - Sites that will be managed through Community Collection are to be salvaged prior to any works taking place with the assistance of Registered Aboriginal Parties (RAPs). The Community Collection methodology is present in APPENDIX A.
 4. The ACHMP is to allow for the proposed works to impact sites listed as 'impacted' in Table 11.3 without any mitigation strategies.

5. In the event that unexpected finds occur during any activity within the Project Area, all works in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
 - If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible.
 - If human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted; they will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.
6. It is recommended that Spark Renewables continues to inform Aboriginal stakeholders about the management of Aboriginal cultural heritage within the Project Area throughout the life of the Project. The consultation outlined as part of this ACHA is valid for a period of 6 months and must be maintained after this by the Proponent for it to remain continuous and comply with Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a).
7. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the Project.

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1. INTRODUCTION

Spark Renewables Pty Limited (Spark Renewables) proposes to develop the Mallee Wind Farm (the Project) to provide a reliable and affordable source of energy for the people of New South Wales (NSW) and contribute to reducing greenhouse gas (GHG) emissions associated with energy generation.

The proposed works will include the installation, operation, maintenance and decommissioning of up to 76 wind turbine generators (WTGs), a single grid scale 100 megawatts (MW) /200-megawatt hour (MWh) Battery Energy Storage System (BESS), ancillary infrastructure and temporary facilities associated with the construction of the Project. The Project design incorporates up to 76 WTGs, with a maximum blade-tip height of 280 metres (m) above ground level and an installed capacity of up to 402 MW.

Austral Archaeology Pty Ltd (Austral) has been engaged to prepare this ACHA to support the Environmental Impact Statement (EIS) for the Project.

1.1.PROJECT OVERVIEW

1.1.1. PROJECT LOCATION AND CONTEXT

The Project is located in the Murray region of south-western NSW, within the South West Renewable Energy Zone (South West REZ). The Project is situated within the Wentworth Shire LGA. The Project is located approximately 16 km north-east of Buronga, NSW (population 6,511), 17 km north-east of Mildura, VIC (population 32,738) and 40 km east of Wentworth, NSW (population 1,305) (ABS, 2021). Smaller localities of Mallee, Red Cliffs and Trentham Cliffs are located to the south and south-west of the Project.

The Project Area encompasses approximately 57,335 hectares (ha) of predominantly cropping and grazing land and adjoins the Mallee Cliffs National Park, which is located directly south and south-east. The Project Area is zoned as RU1 Primary Production within the Wentworth Local Environment Plan (LEP) 2011.

The location of the Project Area is shown in Figure 1.1 and Figure 1.2.

The Project Area is located within the Parishes of Brewang, Cliffs, Gol Gol, Matong, Uki, Wambera and Winnegow in the County of Wentworth. It is also within the boundaries of the Dareton Local Aboriginal Land Council (DLALC). It is bounded to the north by Lot 6456 DP760676, Lot 1131 DP762466, and Lot 1132 DP762467, to the east by Paringi Well, Lot 1728 DP763589, Lot 2 and DP756991 and the Mallee Cliffs National Park, to the south by Lot 4486 and DP767533 and to the west by Lot 121 DP 760678 and Lot 11 DP1262716.

1.1.2. DISTURBANCE FOOTPRINT

Within the Project Area, a Disturbance Footprint has been determined which includes all Project elements and temporary disturbance areas. The Disturbance Footprint is approximately 444.69-ha and has been established in consideration of environmental, social and engineering constraints in the immediate vicinity of the Project, including:

- Proximity to Mallee Cliffs National Park
- Biodiversity impacts including threatened ecological communities (TECs) and areas of remnant woodland vegetation
- Heritage sites
- Waterways
- Potential visual impacts
- Slope and constructability constraints; and
- Landholders ongoing usage requirements.

1.2. KEY PROJECT FEATURES

The Project will include the installation, operation, maintenance and decommissioning of up to 76 WTGs, BESS facilities, ancillary infrastructure and temporary facilities associated with construction of the Project.

The key components of the Project include:

- Up to 76 (3 blade) WTGs, with a maximum blade-tip height of 280 m above ground. The hub height for each WTG is 180 m, and the blade diameter inclusive of the nacelle is 200 m.
- A single grid-scale 100 MW /200 megawatt hour (MWh) BESS.
- Permanent ancillary infrastructure including internal roads, hardstands, main and collector substations, switchyards, operations and maintenance facilities, underground and overhead electricity transmission lines and poles, telecommunications facilities and utility services, permanent meteorological masts and water storage tanks.
- Temporary facilities including temporary workforce accommodation (TWA) camp (if required), site offices, amenities, construction compounds and laydown areas, concrete or asphalt batching plants, minor 'work front' construction access roads, environmental management and monitoring and signage.
- Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points to facilitate delivery of wind turbine components to the Project Area as required (Figure 1.3).

The Project Area consists of the following Lots, and Deposited Plans (DP), of the South West REZ, NSW, as follows:

- | | |
|----------------------|----------------------|
| • Lot 3805, DP763156 | • Lot 1726, DP763664 |
| • Lot 1, DP756995 | • Lot 3, DP 1182353 |
| • Lot 3, DP756993 | • Lot 1, DP 1233260 |
| • Lot 1727, DP763667 | • Lot 7, DP1256363 |

1.3. PROJECT PHASING

The Project comprises 4 phases: pre-construction minor works, construction, operation and maintenance and decommissioning. The proposed activities for each phase of the Project are outlined in Table 1.1 below.

Table 1.1 Project phases and associated activities

Project phase	Proposed Activities
Pre-construction Minor Works	• Surveys. • Building/ road dilapidation surveys. • Geotechnical investigative drilling and excavation of test pits and bore holes. • Minor clearing of native vegetation. • Establishment of temporary site office and compounds. • Installation of environmental impact mitigation measures, fencing, enabling works, meteorological masts. • Heritage artefact salvage, biodiversity investigations and pre-clearing surveys, inspections, specific habitat feature removal, and relocation. • Modifications to the public road network from Euston to the Project Area. • Establishment of Project site access points, minor access roads and minor adjustments to services/ utilities signage, etc.
Construction Works	Includes all physical works within the Disturbance Footprint to enable the operation, including, but not limited to the construction and installation of: • WTGs • Compounds • TWA • Electrical network lines • Battery storage • Construction of ancillary infrastructure; and • Establishment or construction of any temporary facilities which are not already established as part of the pre-construction minor works.
Operation and Maintenance	• Ongoing operation, monitoring (on-site and remote monitoring) and maintenance of all Project infrastructure and land within the Disturbance Footprint during the operational lifespan of the Project. • Maintenance of land within the Disturbance Footprint. • Replacement of major components as required, such as WTG blades which may require the use of cranes and ancillary equipment.
Decommissioning	• Includes all physical works required for the dismantling and transportation of Project infrastructure and rehabilitation of the Project Site. • If not required for ongoing farming/ fire access purposes, internal roads would be removed.

1.4. WATER SUPPLY

Water supply during construction and operation will be sourced primarily from Wentworth Shire Council commercial water supply and trucked to the Project site. Potable and non-potable water supply would be sourced from existing water sources in Buronga and Wentworth that are also used to facilitate construction of Project EnergyConnect. Potable water would be primarily sourced from Modica Crescent Buronga and supplied via filling through a metered hydrant from the existing water main. An alternative potable water source is also proposed via Beverley Street Wentworth and would be supplied via an overhead fill point.

Non-potable water would be sourced via River Drive Buronga and would also be supplied via an overhead fill point.

In addition to the above, where feasible, water for construction purposes will also be opportunistically sourced from the following methods to minimise the need for imported water:

- Use from existing dams where harvestable rights apply
- Reuse from construction sediment basins; and
- Reuse from rainwater tanks collecting runoff from building roofs.

1.5. CONSTRUCTION WASTEWATER MANAGEMENT

Wastewater management for the TWA Facility and construction offices will be provided by an on-site treatment system. The proposed treatment system will be a contained system and is anticipated to include mechanical screening, biological and chemical treatment, filtration and disinfection. The waste solids produced by the treatment system will be emptied by a licensed contractor and disposed of at a nearby council operated wastewater treatment plant or other appropriately licensed facility.

Treated effluent suitable for reuse for construction purposes, which are anticipated to include dust suppression and earthworks conditioning, will be stored in sealed tanks or lined basins to avoid potential interaction with groundwater.

1.6. WORKING HOURS AND WORKFORCE

Standard working hours are proposed during construction and decommissioning between 7:00 am to 6:00 pm Monday to Friday, and 8:00 am to 1:00 pm Saturday. Works may be undertaken outside these hours where the activity is inaudible, for emergency works or time critical delivery of materials.

The Project will require a peak workforce of up to 400 full-time-equivalent (FTE) positions during construction and up to 30 (FTE) during operation.

1.7. PROPOSED TIMEFRAMES

It is anticipated that construction works will commence within one year of Project approval i.e. construction commencing in 2026. The timing of construction will be driven by additional permits and authorisations, contractor selection, detailed design and procurement processes, and a final investment decision. The construction phase of the Project is anticipated to be 3 years. The Project has an estimated operational life of 30 years after which it may be decommissioned or re-powered.

In summary the anticipated timeframes for the Project are:

- **Planning and approvals** (prior to commencement of construction): in progress and aiming to be completed in late 2024.
- **Construction and Commissioning**: planned to commence in 2026, for approximately 3 years.
- **Operation**: planned to commence in 2028, with an estimated operational life of 30 years.

1.8. MODIFICATIONS TO PUBLIC ROADS

Transportation of some Project components, such as wind turbine blades, nacelles and transformers, would require over-size, over-mass (OSOM) vehicles that exceed the regulatory limits of standard vehicle dimensions. Large components, such as wind turbine blades, would be shipped to Australia from overseas and transported from the Port of Newcastle. Any road upgrades and modifications required between Port of Newcastle and Sturt Highway/ Carey Street roundabout at Euston, NSW would be undertaken by separate planning assessment and approvals and have not been assessed as part of this ACHA. These are shown in Figure 1.3.

A 'Local Transport Route' has been established for targeted assessment in the EIS (and included in this ACHA) between Euston and the Arumpo Road site access points. This is required to facilitate discrete Project-related OSOM vehicle movement amendments to the road network. Offsite disturbance / road modifications are required at the following 3 locations on the local transport route as assessed in the EIS:

- Sturt Highway roundabout at intersection of Carey Street, Euston.
- Sturt Highway roundabout onto Silver City Highway, Buronga.
- Silver City Highway onto Arumpo Road.

The locations of these 3 off-site roadworks are provided in Figure 1.3.

The site access points on Arumpo Road are contained within the Project Area and Disturbance Footprint as follows:

- Arumpo Road into Site Entry #1.
- Arumpo Road into Site Entry #2.

These road works are modifications to the road network and can generally be classified as:

- **Traffic Management:** Activities related to optimising traffic flow, including roundabout adjustments, sign removal, and island modifications.
- **Infrastructure Installation/Modification:** Tasks involving the installation or modification of hardstands, gates, and fences.
- **Vegetation Management:** Activities related to clearing or trimming vegetation along the road corridor.
- **Signage and Lighting:** Adjustments to signage and lighting fixtures for improved visibility and safety.
- **Road Widening and Realignment:** Widening of the road and adjustment of the alignment to facilitate safe turning movements including installation of intersection treatments.

The works at the Sturt Highway roundabout at the intersection of Carey Street, Euston will involve road modifications, including making the islands on entry and exit of the roundabout trafficable, the installation of a hardstand, the removal or relocation of a light pole and the removal or relocation of multiple signs. The vegetation is also to be trimmed.

The works at the Sturt Highway roundabout onto Silver City Highway, Buronga will involve road modifications, including making the islands trafficable, multiple signs relocated and a power pole and light pole to be relocated out of a swept path.

The works at Silver City Highway onto Arumpo Road will involve road widening and signs to be relocated or made removable.

1.9. SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS) & EPBC ACT REFERRAL

The Project is a State Significant Development (SSD) as defined under *State Environmental Planning Policy* (Planning Systems) 2021 (Planning Systems SEPP) and requires development consent under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Under section 4.41 of the EP&A Act, approval for an Aboriginal heritage impact permit under Section 90A the *National Parks and Wildlife Act 1974* (NPW Act). However, it is necessary to adhere to the other provisions and requirements of the NPW Act.

Spark Renewables received the NSW Planning Secretary's Environmental Assessment Requirements (SEARs) in February 2023, and Supplementary SEARs (from Commonwealth DCCEEW) in June 2023. These SEARs required an Environmental Impact Assessment (EIS) for the proposed works.

This ACHA comprises part of the EIS, and the specific SEARs requirements related to Aboriginal cultural heritage are provided below.

1.9.1. ISSUED SEARs

The Issued SEARs require:

- *An assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010), including results of archaeological test excavations (if required);*
- *Provide evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010).*

1.9.2. EPBC REFERRAL

The Willandra Lakes World Heritage Area (WLWHA) and the Willandra Lakes Region National Heritage Property (WLRNHP) are located approximately 25 km from the Project Area. On 5 December 2022, Spark Renewables undertook a self-assessment under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), for Matters of National Environmental Significance (MNES) identified as occurring within or potentially in proximity to the Project Area. This resulted in the requirement for the project to be referred as a Proposed Action under the EPBC Act, with the potential to impact the following Outstanding Universal Values (OUV) which comprise a key part of the WLWHA and WLRNHP listings:

- *The authenticity of the natural and Aboriginal cultural heritage values of the Willandra has been established in the first instance, in a western or European cultural sense, by rigorous scientific investigation and research by leading experts in their fields. Researchers have established the great antiquity and the richness of Aboriginal cultural heritage at Willandra which brought about a reassessment of the prehistory of Australia and its place in the evolution and the dispersal of humans across the world.*
- *For the Traditional Tribal Groups (TTGs) that have an association with the area there has never been any doubt about the authenticity of the Willandra and any particular sites it contains. The TTGs have maintained their links with the land and continue to care for this important place and participate in its management as a World Heritage property. Aboriginal people of the Willandra take great pride in their cultural heritage and maintain their connection through modern day cultural, social and economic practices.*

On 21 March 2023, Spark Renewables prepared a referral under the MNES Significant Impact Guidelines 1.1 (DoE, 2013). The referral included potential impacts by the Proposed Actions to both ecological and Indigenous values of the WLWHA and WLRNHP.

1.9.3. ISSUED SUPPLEMENTARY SEARs

On 7 June 2023, a delegate of the Federal Minister for the Environment and Water (formerly Department of Agriculture, Water and the Environment) determined that Mallee Wind Farm was a controlled action under section 75 of the EPBC Act. As relevant to this ACHA, the EPBC Act controlling provisions for the Proposed Actions are:

- *i. World Heritage Properties (sections 12 and 12A)*
- *ii. National Heritage Places (sections 15B and 15C)*

Whilst the Supplementary SEARs address planning, biodiversity and heritage matters, it also requires consideration of relevant impacts of the Proposed Action on the matters protected by the controlling provisions of the EPBC Act, including:

- *i. a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long-term relevant impacts;*
- *ii. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;*
- *iii. analysis of the significance of the relevant impacts; and*
- *iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.*

Noting that relevant impacts are those impacts likely to significantly impact on any matter protected under the EPBC Act, the Supplementary SEARs states that the international conventions, management plans and principles that must be considered in relation to this proposal include:

- *The Willandra Lakes World Heritage Area:*
 - *Australia's obligations under the World Heritage Convention*
 - *The Australian World Heritage management principles*
 - *Any management plan that has been prepared for the property under section 316 of the EPBC Act or as described in section 321 of the EPBC Act.*
- *The Willandra Lakes National Heritage Property:*
 - *Any management plan that has been prepared for the place under section 324S of the EPBC Act or as described in section 324 of the EPBC Act*
 - *The National Heritage management principles*
 - *Any agreement to which the Commonwealth is a party in relation to a National Heritage place.*

Accordingly, consideration of the Protected Action upon these World Heritage Properties and National Heritage Places are provided within Section 4.2, Section 9 and Section 10.6 of this ACHA.

1.9.4. AGENCY ADVICE

Agency advice from NSW Government – Heritage NSW (HNSW) was also received in January 2023 which affirmed the above requirements. No additional requirements were included in HNSW's response.

1.10. AGENCY ADVICE ON THE EIS

During the exhibition of the EIS, a detailed submission was provided by HNSW (dated 11 November 2024). Table 1.2 outlines the issues raised in HNSW's submission and how these issues have been addressed within this updated ACHA.

Table 1.2 Responses to HNSW comments

HNSW Comment	Austral's Response
1. As standard practice, Heritage NSW requires the identification of Potential Archaeological Deposits (PADs) and subsurface testing of those deposits to establish their archaeological significance. Please provide clarification and detail of the assessment for PADs within the project area, for the survey units, the newly identified sites and the landforms surrounding the newly identified sites. Justification as to why test excavations should not occur prior to	Austral acknowledges that it is standard practice for the identification of PADs and subsurface testing of those deposits to establish their archaeological significance; however, this only occurs if the PADs are subject to being impacted. Otherwise, any site that is associated with the PAD (AHIMS #46-3-0236) identified through archaeological investigation would be unnecessarily harmed. This reasoning is outlined in

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HNSW Comment	Austral's Response
	Analysis with regard to environmental factors such as hydrology.
2. The scale of many of the maps of archaeological potential, recorded sites (including PAD), survey results and proposed impacts do not allow for an understanding of the archaeological potential of the project area, the sites or their potential interactions with the disturbance footprint. Please provide a map series of the project area, including those at a scale to allow the information to be understood and allow for the identification of the AHIMS sites. Due to the projects need for further detailed design throughout the assessment process please provide mapping including clear site and PAD boundaries, including the site distribution referred to in the survey results.	Relevant figures such as the archaeological sensitivity, survey results, and the proposed works have been updated to included multiple maps at a closer scale or contain insert maps to high light important information.
3. Please provide a copy of all responses provided by the Registered Aboriginal Parties regarding the draft ACHA within the 28-day statutory response timeframe (starting 19 July 2024). Heritage NSW acknowledges that Appendix A8 includes the automatic response message indicating inability to send the relevant email to pfyoung61@gmail.com. However, Heritage NSW notes that Section 2.5 of the ACHA refers to comments received by Cynthia Pappin on 21 July 2024 and this has not been provided with the finalised consultation documentation.	The missing copy of Cynthia Pappin's email has been added to Appendix A8, now Appendix B8, in Volume 2.
4. Please provide an updated assessment of social and spiritual significance values. Section 9.3.4 of the ACHA includes a placeholder indicating that information is to be updated at the conclusion of Stage 4 consultation.	Section 9.3.4 has been updated with the relevant information based on the results of the Stage 4 consultation.
5. Heritage NSW agrees that preparation of an Aboriginal Cultural Heritage Management Plan (ACHMP) should be developed in accordance with the recommendations in Section 12 of the ACHA prior to undertaking any works related to the proposal. However, Heritage NSW requires further articulation be made in the ACHA for each individual AHIMS site identified within the disturbance footprint regarding proposed conservation/mitigation in the event that they would be impacted by the final design. Please identify management strategies should test excavation, salvage, community collection, etc be carried out and how these may change or be otherwise impacted by the final design.	Chapter 10: Impact Assessment and Chapter 11: Avoiding and Minimising Harm have been updated, along with recommendations in Chapter 12, to include all sites within the Project Area, and to clearly outline which sites will be impacted and how impacted sites will be managed. This includes a comprehensive table (Table 11.3) listing all the sites, their type, their significance, how they are being impacted and their relevant mitigation strategy.

HNSW Comment	Austral's Response
6. Heritage NSW acknowledges that the disturbance footprint associated with the proposed Wind Farm works has formed the basis of the survey transect lines in both the June 2023 and March 2024 archaeological surveys. Please provide further clarification that the disturbance footprint is inclusive of all construction works associated with the proposed Wind Farm including all vehicle access, temporary offices, amenities, transport route upgrades and other operational facilities.	Figure 10.1 to Figure 10.4 have been updated to include all construction work associated with the Project, including temporary and permanent structures.

1.11. PURPOSE OF THE ACHA

The ACHA was undertaken to assess the potential harm that may occur to Aboriginal cultural heritage values as part of the EIS under Part 4 of the EP&A Act. Additionally, the ACHA assesses the impacts of the Proposed Actions to the OUV of the WLWHA and WLRNHP as required under the EPBC Act and the MNES Significant Impact Guidelines 1.1 (DoE, 2013).

1.11.1. ASSESSMENT OBJECTIVES

The scope of this ACHA report is based on the legal requirements, guidelines and policies of Heritage NSW, formerly the Office of Environment and Heritage (OEH), and prior to that, the Department of Environment, Climate Change and Water (DECCW), Department of Environment and Climate Change (DECC) and Department of Environment and Climate (DEC). Note that applicable documents have been published under the name of all these Government departments.

The ACHA has been undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), the *Guide to Investigating, assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment, Climate Change and Water NSW 2010a) (Consultation Requirements).

Information provided in this assessment includes, but is not limited to:

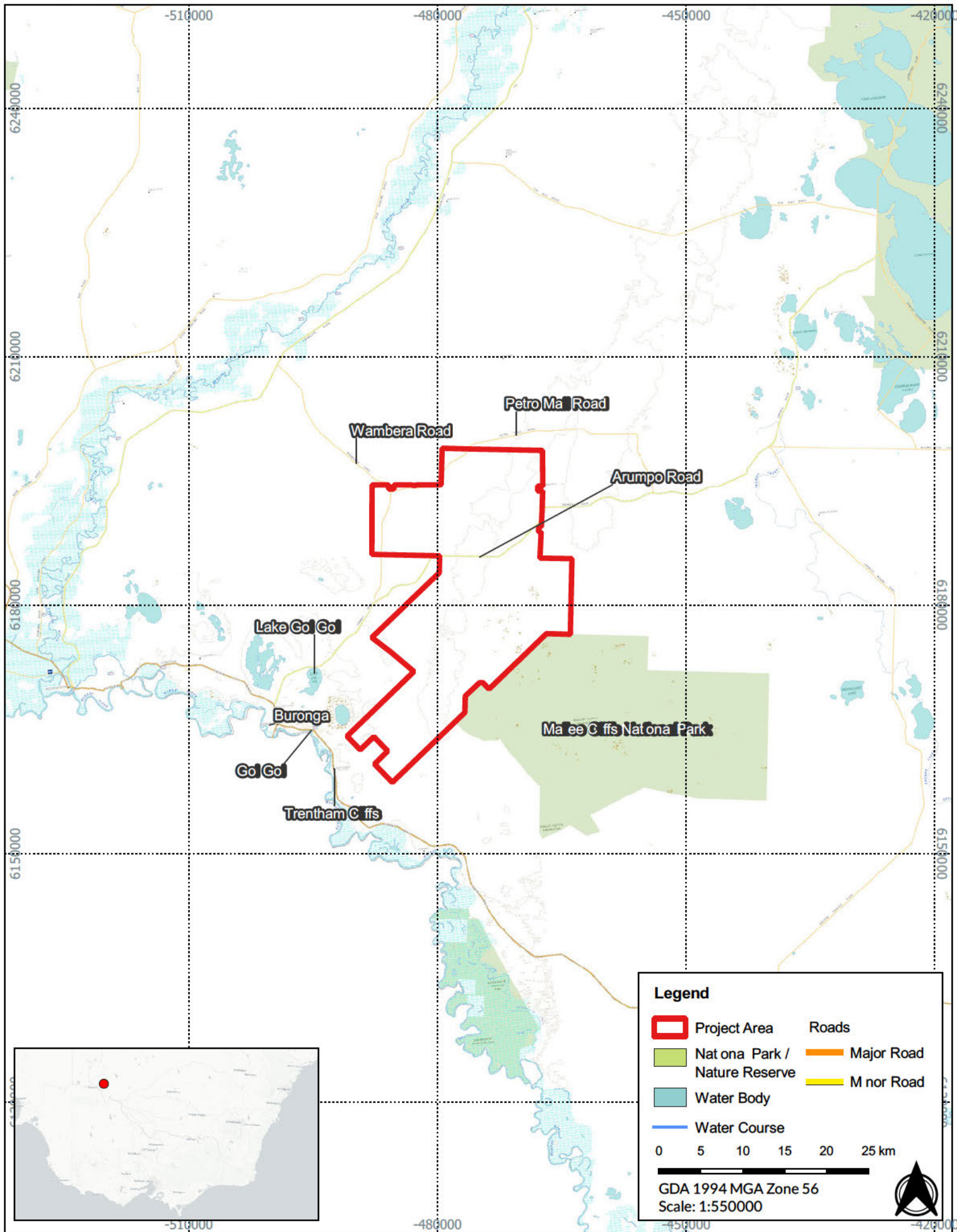
- A literary review of available data, including previous studies/investigations from within and adjacent to the Project Area
- The results of archaeological fieldwork including a survey of the Project Area
- A description of the Aboriginal cultural heritage values identified as being within the Project Area and its significance
- An assessment of harm posed to Aboriginal objects, places or values as part of the Project
- A description of practical measures that have been used to protect, conserve, avoid or mitigate harm to Aboriginal objects, places and values.
- Documentation of how the Consultation Requirements have been met (specifically Section 80C of the *National Parks and Wildlife Regulation 2009* (NPW Regulations))
- The views of Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage, including evidence of their submissions and how these have been addressed

Additionally, the ACHA assesses the impacts of the Proposed Actions to the OUV of the WLWHA and WLRNHP as required under the EPBC Act and the MNES Significant Impact Guidelines 1.1 (DoE, 2013). These include:

- A description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long-term relevant impacts;
- A statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- Analysis of the significance of the relevant impacts; and
- Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

1.12. REPORT STRUCTURE

The ACHA describes the process undertaken to assess the Aboriginal cultural heritage values within the Project Area, in accordance with the Code. Section 1 contains an introduction to the Project and describes the Project locality, scope of works and legislative context. Section 2 describes the consultation process undertaken for the assessment. The landscape context, World Heritage and National Heritage values, and archaeological context are assessed in Sections 3 and 4, respectively. Section 5 provides, and Section 6 describes the archaeological field methods undertaken. Section 7 describes the archaeological results, and Section 8 analyses and discusses these results. Section 9 assesses the cultural heritage values, and Section 10 provides an impact assessment for the proposed works. Strategies to avoid and minimise harm to heritage values are provided in Section 11, and recommendations based on the findings of the assessment are provided in Section 12.



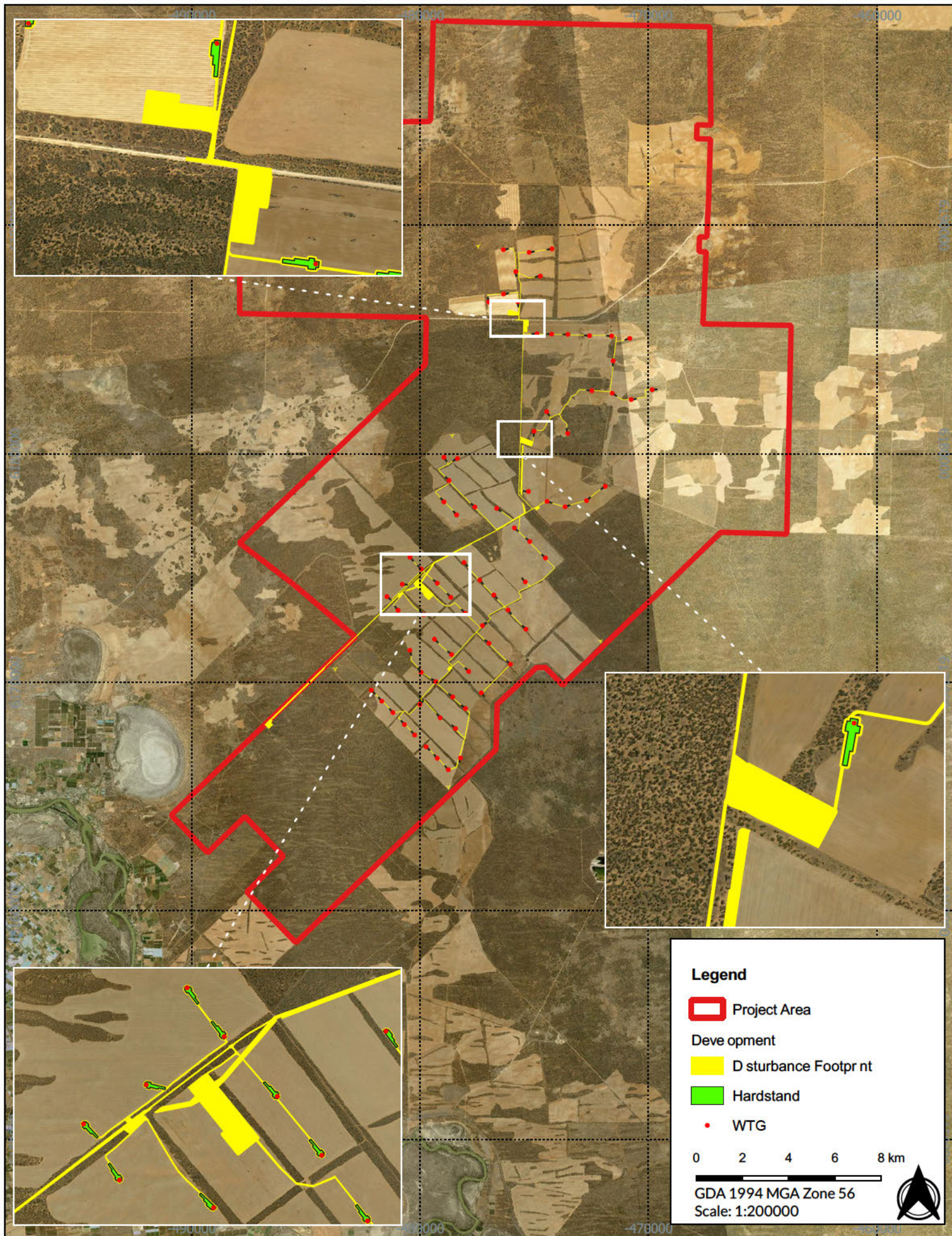


Figure 1.2 - Detailed aerial imagery of the Project Area

22078 - Mallee Wind Farm - ACHA

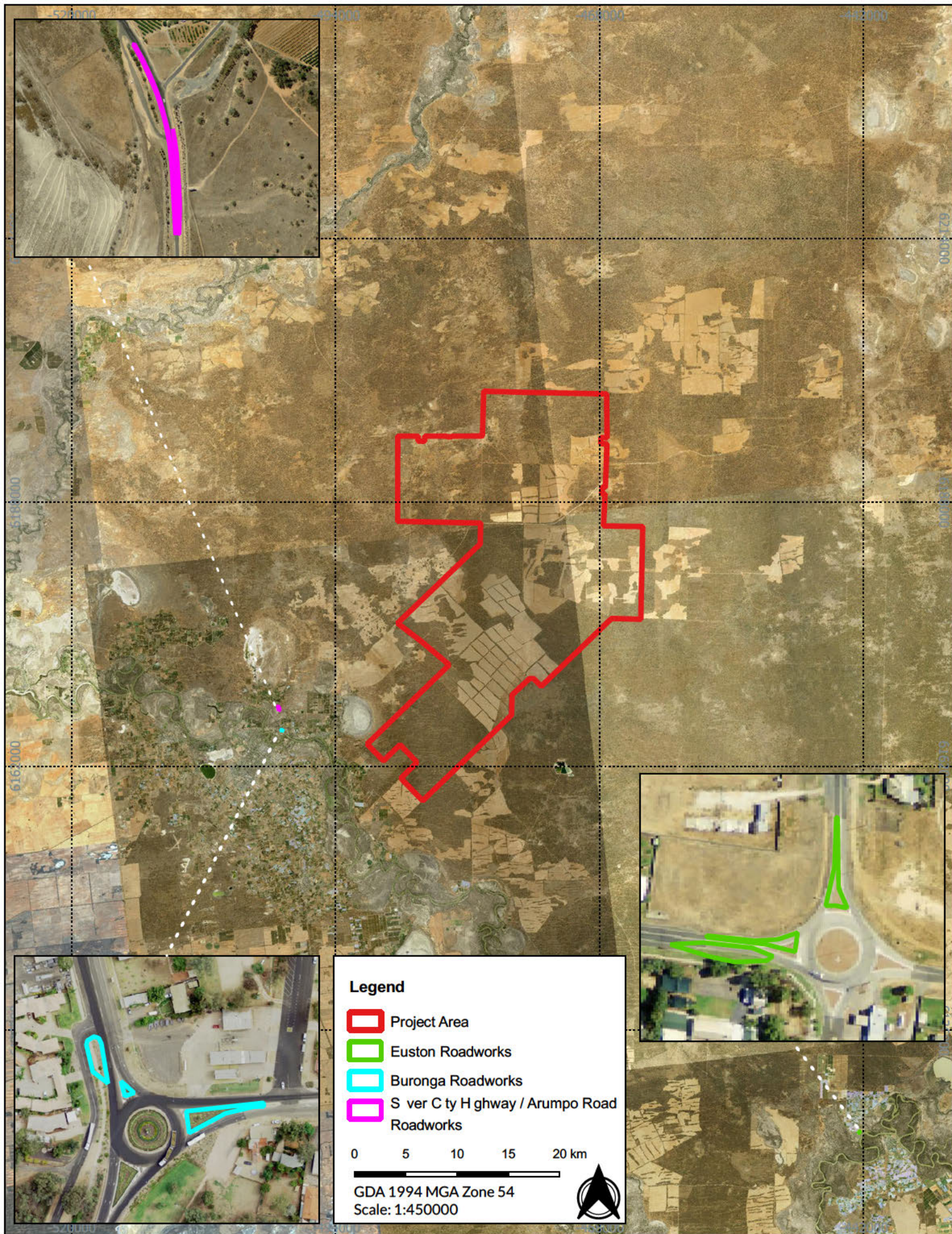


Figure 1.3 - Detailed aerial imagery of 3 offsite roadworks locations

22078 - Mallee Windfarm - ACHA

Source: NSW LPI Basemap

Drawn by: FOT Date: 2024-08-23

1.13. SUMMARY OF LEGISLATIVE PROCESS

Aboriginal archaeological and cultural heritage assessments in NSW are carried out in accordance with a range of State and Federal acts, regulations and guidelines. The acts and regulations allow for the management and protection of Aboriginal places and objects, and the guidelines set out best practice for community consultation in accordance with the requirements of the acts.

This section outlines the acts and guidelines that are applicable or have the potential to be triggered with regard to the proposed development, and are detailed in Table 1.2 to Table 1.3. The Barkandji Native Title Claim No. 8 determined that native title had not been extinguished within a number of areas in western NSW; however, native title was found to be extinguished within the Project Area.

Table 1.3 Federal acts.

Federal Acts	Applicability and Implications
<i>Environment Protection & Biodiversity Conservation Act 1999</i>	This Act has been triggered and applies on the basis that: - The Willandra Lakes World Heritage Area and is in proximity to the Project Area. The proposed works may have a direct impact on this World Heritage listing. - The Willandra Lakes Property is listed on the National Heritage List and is in proximity to the Project Area. The proposed works may have a direct impact on this National Heritage listing.
<i>Aboriginal & Torres Strait Islander Heritage Protection Amendment Act 1987</i>	Applies. This Act provides blanket protection for Aboriginal heritage in circumstances where such protection is not available at the State level. This Act may also override State legislation.
<i>Commonwealth Native Title Act 1993</i>	Does not apply. No Native Title Determinations, Registered Claims or Indigenous Land Use Agreements are recorded within the Project Area.

Table 1.4 State Legislation.

State Acts	Applicability and Implications
<i>National Parks and Wildlife Act 1974 (NPW Act)</i>	The Act is triggered by the potential presence of Aboriginal cultural material and offers the following protection: - Section 86 – Prohibits both knowingly and unknowingly, causing harm or desecration to any Aboriginal object or place without either an Aboriginal Heritage Impact Permit (AHIP) or other suitable defence from the Act. - Section 87 – Allows for activities carried out under an AHIP or following due diligence to be a defence against the harm of an Aboriginal object. - Section 89A – Requires that Heritage NSW must be notified of any Aboriginal objects discovered, within a reasonable time. - Section 90A – An AHIP is not required as the Project is being assessed under Part 4 of the EP&A Act (Section 4.41).

State Acts	Applicability and Implications
<i>National Parks and Wildlife Regulation 2019</i> (NPW Regulations)	The Regulation serves to support the implementation of the NPW Act in the following ways: • Section 57 – States minimum standards for due diligence to have been carried out. • Section 60 – Requires documented Aboriginal community consultation to be undertaken before applying for an AHIP. • Section 61 – Requires production of a cultural heritage assessment report to accompany AHIP applications.
<i>Environmental Planning and Assessment Act 1979</i> (EP&A Act)	Applies to the wider Project and governs the approval pathway required: • The Project is being assessed as a State Significant Development under Part 4 of the EP&A Act; consequently, section 90A of the NPW Act does not apply. • In accordance with the SEARs issued for the project, an assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the <i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW</i> (OEH, 2011) and the <i>Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010), including results of archaeological test excavations (if required). • To comply with the SEARs, an ACHA must form part of the EIS required to support the Project's assessment as a State Significant Development. • A Supplementary SEARs issued in June 2023 determined that Mallee Wind Farm was a controlled action under section 75 of the EPBC Act. • The Supplementary SEARs requests consideration of relevant impacts of the Proposed Action on the matters protected by the controlling provisions of the EPBC Act: ○ A description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short-term and long-term relevant impacts; ○ A statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; ○ Analysis of the significance of the relevant impacts; and ○ Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.
<i>NSW Heritage Act 1977</i>	There are no sites listed on the State Heritage Inventory associated with the Project Area, and therefore this Act does not apply.

Table 1.5 State and local planning instruments.

State Acts	Applicability and Implications
<i>Local Environmental Plan (LEP)</i>	The following LEP is applicable to the Project Area: • Wentworth Local Environmental Plan 2011 Aboriginal cultural material is discussed in Part 5, Section 5.10 of the LEP, which requires consent be granted for any works that may impact on Aboriginal cultural material.

State Acts	Applicability and Implications
<i>Development Control Plan (DCP)</i>	The following DCP is applicable to the Project Area: Wentworth Development Control Plan 2011 Aboriginal cultural material is discussed in Chapter 3, Section 1.2 of the DCP, which requires an Aboriginal heritage assessment to be conducted as part of the development application. Section 2.10 of the Planning Systems SEPP provides that DCPs do not apply to SSD.

Table 1.6 Aboriginal community consultation requirements.

State Acts	Applicability and Implications
Consultation Requirements	The development is to proceed in accordance with Part 4.41 of the EP&A Act. In accordance with the SEARs issued for the Project, the EIS must demonstrate compliance with the following guidelines: Provide evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (DECCW, 2010).

The Supplementary SEARS highlighted key risks associated with the proposed project, comprising both direct impacts to a World Heritage Area and direct impacts to a National Heritage Property. These are outlined below.

Direct impacts to a World Heritage Area:

- The proposed action may have a direct impact on the outstanding universal values (OUV) of the Willandra Lakes Region World Heritage Area (WLRWHA). Within the Statement of OUV, cultural practices are included as part of the authenticity of the site, stating that “Aboriginal people of the Willandra take great pride in their cultural heritage and maintain their connection through modern-day cultural, social and economic practices.”
- Due to the proximity of the proposed action site and the height of wind turbines, the proposed action may be visible from multiple locations within the WLRWHA. The proposed action may impact the WLRWHA by obstructing/modifying/diminishing the important associated historical views of the landscape, impacting the current and ongoing cultural practices that occur there by First Nations peoples.
- The impacts to the WLRWHA would not only apply during the day but also of a night. Several of the dreaming stories that belong to the Barkandji/Paakantyi, Mutthi Mutthi and Ngiyampaa peoples are linked to the night sky. The light pollution created by the continuous blinking lights on the 150 wind turbines may obstruct/modify/diminish the skies and views of the stars at night, impacting the current and ongoing cultural practices that occur there by these First Nations peoples.

Direct impacts to a National Heritage Property:

- The proposed action may have a direct impact on the National Heritage Listed Values of the Willandra Lakes Region National Heritage Property (WLRNHP). These are largely the same values and impacts as described above with the World Heritage OUV.

- The proposed action has the potential to seriously degrade / disrupt / obstruct / modify / diminish several National Heritage Listed Values of the WLRNHP, primarily because it is an area that has a “strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.” All 3 of these reasons apply to the Barkandji/Paakantyi, Mutthi Mutthi and Ngaympaa First Nations peoples both historically and currently, as they “maintain their connection through modern day cultural, social and economic practices” in the WLRNHP.
- As described above with the World Heritage OUV, the daylight visibility and night-time light pollution from the proposed action may seriously disturb the historical connection to, and contemporary practice of, the social, cultural, and economic traditions of First Nations peoples.

Spark Renewables consulted with a representative from NPWS and the Willandra Lakes Regional World Heritage Area Aboriginal Advisory Group. A site visit was completed with these representatives and Commonwealth DCCEEW in June 2023. This consultation identified that the primary concern regarding impacts on Willandra Lakes World Heritage Area was the potential for visual impacts.

Spark Renewables presented a briefing on the Project and the outcomes of a preliminary visual impact assessment to the Willandra Lakes World Heritage Area Committee in October 2023. A detailed Landscape and Visual Impact Assessment (LVIA) has been prepared as part of the EIS and provides a detailed analysis of potential visual impacts to the Willandra Lakes World Heritage Area. The LVIA found that the large distance to the Project and intervening vegetation means that the Project would not result in any significant visual impacts to the Willandra Lakes area.

No sites listed on the Commonwealth Heritage List are present or in close proximity to the Project Area.

1.14. PROJECT TEAM AND QUALIFICATIONS

The following personnel have been involved in the preparation of this Aboriginal Cultural Heritage Assessment.

DR AMANDA MARKHAM (BA ARTS [HONS. FIRST CLASS] IN ANTHRO, PHD ANTHRO AND GRAD. CERT ARCH)

Amanda is the Principal Anthropologist/Archaeologist at Austral. She has 25 years' experience as both an anthropologist and archaeologist working on major infrastructure projects across NSW, Vic, the NT, SA and WA. Amanda has acted as project manager on projects of national importance, including the primary NBN cable between the SA border and Darwin, the Katherine to Gove Natural Gas Pipeline, and the INPEX LNG facility in Darwin. In addition, Amanda has considerable experience working on mining, transport, energy, and water infrastructure projects throughout western NSW. Amanda specialises in Aboriginal anthropology and archaeology, with a focus on arid region archaeology and skeletal remains. She has conducted hundreds of heritage assessments under state and territory legislation, NSW Due Diligence Code, the NSW Code of Practice, the NT Sacred Sites Act, as well as the SA and WA Heritage Act, successfully obtaining AHIPs and Permits to Disturb/Impact.

Amanda is the project manager and has reviewed this report for quality assurance and technical adequacy and had input into the recommendations.

TAYLOR FOSTER (BA ARCH, HONS)

Taylor was a Senior Archaeologist at Austral and has experience in the completion of cultural heritage management and archaeology across New South Wales. Taylor has over 5 years' experience working on a broad range of projects requiring approvals under the NSW *Heritage Act 1977*, *National Parks and Wildlife Act 1974* and State Significant approvals (SSIs and SSDs). She has prepared technical reports for a number of archaeological surveys and excavations and has worked extensively undertaking community consultation. Taylor has acted as project manager and site supervisor on a number of REF, SSD, and SSI projects and has extensive experience in the assessment of Aboriginal heritage and non-Aboriginal heritage. Taylor has worked on a number of Aboriginal projects for local regulators, councils, and Aboriginal stakeholders. Her technical skillset includes managing and completing archaeological surveys and excavations, site planning and mapping, artefact and site identification and recording, archaeological reporting and preparation of permit applications for Aboriginal Heritage Impact Permits. Taylor also has experience working on historic archaeological projects including site surveys and the preparation of historic reports such as Statement of Heritage Impact, Heritage Interpretation Plans, Conservation Management Plans and Historic Heritage Assessments.

Taylor conducted the original field survey and has assisted in aspects of the writing of this report.

TELEEHA THOMAS (BA HISTORY)

Teleeha Thomas was a Graduate Archaeologist at Austral and has 6 months of experience in the completion of Aboriginal projects. Teeleha has been a research assistant for a heritage study conducted in Tasmania. She understands the historical, archaeological, and Aboriginal cultural heritage resources. Teeleha has knowledge and experience working within Commonwealth and Victorian heritage legislations, including the *Environment Protection and Biodiversity Act 1999*, *Aboriginal Heritage Act 2006*, and Aboriginal Heritage Regulations 2018. Teeleha has the ability to archaeologically excavate, record, and photograph sites during historical salvage excavations.

Teleeha conducted the original field survey and has assisted in the background research and writing of this report.

CRYSTAL WOODING (BA ARCH, AND GRAD DIP. ARCH)

Crystal is an archaeologist at Austral with 2 years of experience in the completion of both Aboriginal and historical projects. Crystal has been involved with several projects across New South Wales and Victoria including working in remote isolated locations. Crystal has worked on large-scale government projects such as water infrastructure in NSW and NBN in Victoria. Crystal also has experience in preparing and writing Aboriginal Heritage Due Diligence, Aboriginal Cultural Heritage Assessments, Cultural Heritage Management Plans and Historical Heritage Assessments. Crystal has experience in excavation, Aboriginal and historical surveys, cataloguing and sorting historical artefacts, and Aboriginal lithic analysis.

Crystal conducted the additional field survey and has assisted in all aspects of the writing of this report.

CARMEN BAULCH (BA ARTS/SCIENCE ARCH AND ZOOLOGY AND GRAD. CERT ARCH)

Carmen is an archaeologist at Austral and has 2 and a half years' experience in the completion of both Aboriginal and Historical projects. Carmen has experience in project management for CHMPs and ACHAs. Carmen also has experience in completing background research for Aboriginal Heritage Due Diligence, Aboriginal Cultural Heritage Assessment, Cultural Heritage Management Plans and Historical Heritage Assessments, and has experience consulting with Aboriginal communities for many Aboriginal Cultural Heritage Assessment and Cultural Heritage Management Plan projects. Carmen also has experience in excavation, Aboriginal and historical surveys, cataloguing and sorting historical artefacts, and Aboriginal lithic analysis.

Carmen conducted the additional field survey and has assisted in all aspects of the writing of this report.

1.15. ABBREVIATIONS

The following are common abbreviations that are used within this report:

ACHA	Aboriginal Cultural Heritage Assessment
ACHDDA	Aboriginal Cultural Heritage Due Diligence Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASIRF	Aboriginal Site Impact Recording Form
Austral	Austral Archaeology Pty Ltd
BESS	Battery Energy Storage System
BP	Before Present
Burra Charter	<i>Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013</i>
CHL	Commonwealth Heritage List
Client	Umwelt (Australia) Pty Ltd
Commonwealth DECCW	Australian Government Department of Environment, Climate Change and Water
NSW DECCW	NSW Department of Environment, Climate Change and Water
DCP	Development Control Plan
DLALC	Dareton Local Aboriginal Land Council
EMP	Environmental Management Plan
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Act 1999</i>
EIS	Environmental Impact Statement
GSV	Ground Surface Visibility
Ha	Hectares
Heritage Act	<i>New South Wales Heritage Act 1977</i>
ICOMOS	International Council on Monuments and Sites
km	Kilometre
LDAD	Low Density Artefact Distributions
LEP	Local Environmental Plan
LGA	Local Government Area
LVIA	Landscape and Visual Impact Assessment
m	Metre
mm	Millimetre
NEM	National Energy Market

NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2009</i>
NPWS	National Parks and Wildlife Services
OUV	Outstanding Universal Values
PAD	Potential Archaeological Deposit
POM	Plan of Management
Project Area	Lot 3805, DP763156, Lot 1, DP756995, Lot 3, DP756993, Lot 1727, DP763667, Lot 1726, DP763664, Lot 3 DP 1182353. Lot 1 DP 1233260 and Lot 7, DP1256363.
REZ	Renewable Energy Zone
SEARs	Secretary s Environmental Assessment Requirements
South West REZ	South West Renewable Energy Zone
Spark Renewables	Spark Renewables Pty Ltd
SSD	State Significant Development
The Proponent	Spark Renewables Pty Ltd
TWA	Temporary Workforce Accommodation
Umwelt	Umwelt (Australia) Pty Ltd
WLRWHA	Willandra Lakes Region World Heritage Area
WTG	Wind Turbine Generators

2. CONSULTATION PROCESS

This section outlines the consultation process that has been followed as part of the preparation of this ACHA.

2.1. INTRODUCTION

Stakeholder consultation for this Project commenced in line with the Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a). Heritage NSW recognises that (Department of Environment, Climate Change and Water NSW 2010a:iii):

- Aboriginal people should have the right to maintain their culture.
- Aboriginal people should have the right to participate in matters that may affect their heritage directly.
- Aboriginal people are the primary determinants of the cultural significance of their heritage.

The Consultation Requirements outline a 4-stage consultation process which includes:

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

A copy of the consultation log and evidence of all correspondences that were sent and received as part of the consultation process is included in Volume 2, APPENDIX B.

2.2. STAGE 1: NOTIFICATION AND REGISTRATION OF INTEREST

The following section outlines the tasks that were undertaken as part of Stage 1 of the Consultation Requirements.

2.2.1. IDENTIFICATION OF RELEVANT ABORIGINAL STAKEHOLDERS

In accordance with the Consultation Requirements, Austral notified the bodies and organisations listed in Section 4.1.2 (Department of Environment, Climate Change and Water NSW 2010a:10) with the following responses:

- Heritage NSW – responded with a list of stakeholders who may have an interest in the proposed development.
- DLALC – responded that they were interested in participating in the ACHA.
- Office of the Registrar, *Aboriginal Land Rights Act 1983* – A response was not received.
- National Native Title Tribunal – responded with a list of stakeholders who may have an interest in the proposed development. A search of their registries was also undertaken.
- Native Title Services Corporation Limited – A response was not received.
- Wentworth Shire Council – responded with a list of stakeholders who may have an interest in the proposed development.
- The Buronga Local Land Services – A response was not received. Due to an administrative error, the Buronga LLS was not contacted as part of the initial consultation process. This was rectified on 16 April 2024.

A copy of these letters, searches and responses is included in Volume 2, APPENDIX B.

2.2.2. INVITATION TO REGISTER

Letters were written to the Aboriginal stakeholders identified as a result of notification outlined in Section 2.2.1 and in accordance with Section 4.12 of the Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a:10). Aboriginal stakeholders were provided with a 14-day period to register an interest in the Project.

A copy of outgoing letters and responses are included in Volume 2, APPENDIX B.

As a result of the consultation procedure, the groups shown in Table 2.1 registered as Aboriginal stakeholders with an interest in this Project.

The invitation to register was complemented by stakeholder mapping completed as part of Spark Renewables direct engagement to promote Aboriginal participation in the Project's employment and benefit sharing. An additional contact list was provided to Austral by Spark Renewables, which is shown in Table 2.2.

Table 2.1 List of Registered Aboriginal stakeholders.

Organisation	Contact Person
Dareton LALC	Pam Handy
Koori Digs Services	Korri Currell
Independent Barkindji Native Title Holder	Derek Hardman
Barkindji Maraura Elders Environment Team - Dareton	Angelica Kirby
Ngumbaay	Robert Kennedy

Table 2.2 Contact list provided to Austral by Spark Renewables

Organisation	Contact Person
Dareton LALC	Pam Handy
Koori Digs Services	Korri Currell
Independent Barkindji Native Title Holder	Derek Hardman
Barkindji Maraura Elders Environment Team - Dareton	Angelica Kirby
Barkandji Native Title Group	Luke Driscoll, Kathy Potter, Warren Clark, Michael Young
Individual Registered Party / Mutthi Mutthi	Verna Pappin
Individual Registered Party / Mutthi Mutthi	Gary Pappin
Individual Registered Party / Mutthi Mutthi	John Thomas
Individual Registered Party / Mutthi Mutthi	Patty Winch
Individual Registered Party / Mutthi Mutthi	Mary Pappin

2.2.3. PUBLIC NOTICE

An advertisement was placed in the *Sunraysia Daily* to run on 10 February 2023, requesting the registration of individuals or organisations who hold cultural knowledge relevant to the Project Area. A copy of this advertisement is included in Volume 2, APPENDIX B.

2.2.4. SUBMISSION OF RECORDED STAKEHOLDERS

In accordance with Section 4.1.6 of the Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a:11), Austral provided details of all registered Aboriginal stakeholders to Heritage NSW and DLALC on 4 June 2024.

A copy of this letter is included in Volume 2, APPENDIX B.

2.2.5. ADDITIONAL STAKEHOLDERS & CONSULTATIONS

Additional stakeholders were identified by Spark Renewables as part of their larger community consultation program.

Spark Renewables engaged with First Nations community groups and businesses in discussions around opportunities for employment and how to access the Project's community benefit sharing fund. To support the Project's First Nations engagement, Spark Renewables has employed an Aboriginal Community Engagement Coordinator as a part of the Project team whose role is to champion opportunities for First Nations people on the Project.

Several additional stakeholders were identified following a presentation to the Willandra Lakes World Heritage Area Committee in October 2023. This meeting led to several valuable discussions with traditional owner representatives who expressed interest in participating in the Project's cultural heritage assessment. These conversations were followed up with a program of First Nations stakeholder mapping where Spark Renewables Aboriginal Engagement Coordinator spoke with and visited stakeholders over several months to better understand the local community.

The additional stakeholders are:

- Barkandji Native Title Group
- Verna Pappin
- Gary Pappin
- John Thomas
- Patricia Winch
- Mary Pappin

Spark Renewables provided a list of the additional stakeholders to Austral on 5 February 2024. All of these additional stakeholders were provided with the Project information, as well as an opportunity to participate in the field survey.

Following site surveys undertaken between 18-28 March 2024, Verna Pappin and John Winch expressed concerns surrounding the survey methodology. Verna Pappin held concerns regarding the survey methodology involving driving, and John Winch felt that more surveys should be undertaken. John Winch stated he would notify Heritage New South Wales if additional surveys were not authorised. Proceeding this conversation, John Winch emailed Heritage NSW and expressed his concerns. A face-to-face meeting was held between Spark Renewables' Aboriginal Engagement coordinator and John Winch where John again, provided feedback regarding the need for additional surveys, but no specific cultural heritage concerns were identified.

2.3. STAGE 2: PRESENTATION OF INFORMATION

All registered Aboriginal stakeholders were provided with information outlining the proposed works, including information relating to proposed impacts on 9 May 2023 and again prior to the additional field survey on 5 March 2024.

Copies of all correspondence relating to the provision of Project information are included in Volume 2, APPENDIX B.

2.4. STAGE 3: GATHERING INFORMATION ABOUT CULTURAL SIGNIFICANCE

This section details information relating to cultural significance provided by Aboriginal stakeholders through the formalised process of Stage 3 of the Consultation Requirements and any additional information which may have been provided during fieldwork.

2.4.1. REVIEW OF PROJECT METHODOLOGY

Austral provided each Aboriginal stakeholder with a copy of the Project methodology on 9 May 2023. The methodology outlined the proposed assessment process that would be used in the completion of the ACHA. Aboriginal stakeholders were provided with 28 days to review and provide feedback on the methodology.

No comments from Aboriginal stakeholders were received at this stage of consultation.

Copies of all correspondence relating to the draft methodology is included in Volume 2, .

2.4.2. INFORMATION GATHERED DURING FIELDWORK

The following information was provided by Aboriginal stakeholders during the fieldwork component for this Project:

- *Due to the proximity of the Willandra Lakes, the whole area is considered to be significant* – John Winch.
- *Artefacts were traded across the landscape and occurred from quarries near Lake Victoria to Lake Mungo* – Mary Pappin.

2.5. STAGE 4: REVIEW OF DRAFT ACHA

A copy of the draft ACHA was sent to all RAPs on 19 July 2024. Only one response was received from Cynthja Pappin on 21 July 2024:

Why is the Muthi Muthi listed twice in the document? This is wrong. You have the Muthi Muthi tribe listed as well as one of the clans (Yitha Yitha). You need to remove the paragraphs about the Yitha Yitha on pages 35-36 and page 42 as they are one and the same as the Muthi Muthi. Please follow Howitt's 1877 identification procedure (see attached) for 'Nation' (Kulin), 'Tribe' (Muthi Muthi), 'Clan' (Yitha Yitha). This substantially preceded Tindale by over 100 years and has been accepted as correct by the Federal Court of Australia. Yitha Yitha are not a 'nation' as you purport. There is also quite a lot known about the Yitha Yitha, which is contrary to your claim in the document. For further reference you may wish to refer to the Native Title (NSD1248/2014 and NCD2015/001) which clearly enunciate the Traditional Owners for the Project Area. For clarification it the Kureinji clan of the Muthi Muthi tribe of the Kulin nation who are the custodians of the Project Area.

Furthermore, the Latji Latji tribe are a Victorian tribe and never extended north into New South Wales. Please also remove the words "Much like the Latji Latji..." from the sentence on page 42 as it is insulting to the Muthi Muthi people.

These corrections have been applied within the document.

This updated ACHA addresses matters raised by NSW Heritage and does not include any substantive changes to the assessment findings or recommended management strategies. As result, a further formal review period was not required in accordance with the Consultation Requirements. However, Spark Renewables briefed stakeholders on the updated ACHA as part of a Project update in early 2026, and the revised ACHA was submitted to RAPs for consideration between 16 February 2023 and 16 March 2026, providing 28 days to respond. No comments were received as part of this second review.

2.6. PROVISION OF FINAL ACHA

To comply with Section 4.4.5 of the Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a:14), a copy of the final ACHA is to be provided to all registered Aboriginal stakeholders and DLALC following its completion.

2.7. EVIDENCE OF CONTINUAL CONSULTATION

As part of the application process, it is necessary to demonstrate that consultation with Aboriginal stakeholders has remained continuous from Project commencement through to the finalisation of the ACHA. Heritage NSW guidelines state that, as a general rule, gaps in the consultation process of 6 months or more will not constitute a continuous consultation process (Office of Environment and Heritage, Department of Premier and Cabinet 2011:11). Updates were sent to the Aboriginal stakeholders on the dates listed in Table 2.3.

Table 2.3 Dates that updates were sent to Aboriginal stakeholders.

Date	Consultation
10 February 2023	Invitation to register and public advertisement.
9 May 2023	Consultation on the cultural heritage assessment methodology.
13 – 17 June 2023	Round 1 archaeological survey.
29 June 2023	Site visit with representatives from the Willandra Lakes World Heritage Aboriginal Advisory Group.
4 October 2023	Presentation to the Willandra Lakes World Heritage Committee.
4-5 October 2023	Aboriginal engagement coordinator stakeholder mapping and RAP Project updates - In person meetings with RAPs and additional stakeholders
23-25 October 2023	Aboriginal engagement coordinator stakeholder mapping and RAP Project updates – Follow -up in-person meetings.
20-22 November 2023	Aboriginal engagement coordinator stakeholder mapping and RAP Project updates – Follow -up in-person meetings.
18 December 2023	Cultural heritage assessment focus group meeting
18-28 March 2024	Round 2 archaeological site surveys.
30 May 2024	First Nations Update Meetings held in Buronga provided a project update and consulted on the Community Stakeholder Engagement Plan and Industry & Aboriginal Participation Plan.
19 February 2025	Project update sent to RAPs via email.

Date	Consultation
20 June 2025	Project update sent to RAPs via email.
23 January 2026	Project update sent to RAPs via email.
16 February 2026	Additional review of Stage 4 due to changes.
11 March 2026	Project update sent to Heritage NSW

Copies of all correspondence relating to the review of the draft ACHA are included in Volume 2, APPENDIX B.

3. LANDSCAPE CONTEXT

The following section defines the Project Area, its environmental and cultural context.

3.1. ENVIRONMENTAL CONTEXT

The following section discusses the Project Area in relation to its landscape, environmental and Aboriginal landscape resources. This environmental context has been prepared in accordance with Requirement 2 of The Code (Department of Environment, Climate Change and Water NSW 2010b:8–9).

The Project Area is located within the Murray Darling Depression Bioregion. The area is a part of the Far West region of NSW, characterised by landforms such as lunettes, sand dunes, rivers, lakes and floodplains. It is a region where the Darling River and the Murray River converge and also has expansive Mallee Dunefields. The Project Area is part of the semi-arid, dry environment known for harsh summers and higher temperatures.

3.1.1. TOPOGRAPHY AND HYDROLOGY

The Project Area is part of the Murray Darling Depression Bioregion which extends across NSW, South Australia and Victoria with a total area of 19,717,651 hectares (NSW National Parks and Wildlife Service et al. 2003:79). Described as being a 'shallow crustal depression', the bioregion is filled with Tertiary and Quaternary aged marine and terrestrial sediments with little to no rock outcrops (Condon 2002:6; NSW National Parks and Wildlife Service et al. 2003:80). The landscape of the Murray Darling Depression Bioregion is characterised by a gently undulating plain with linear dunes, dune swales and sandplains and minor drainage lines and claypans also present (Condon 2002:6). The soils in the Willandra Lakes region are highly alkaline and are rapidly deposited, resulting in highly preserved archaeological material (NSW National Parks and Wildlife Service et al. 2003:80).

Within the Project Area, the landforms vary in elevation with a large portion flat, but dunes and depressions noted throughout. The dunes, with a maximum elevation of 30 m Australian Height Datum (AHD), are situated throughout the Project Area and tend to extend in an east-west direction, a common geological trait in the Murray Basin (Condon 2002:6). As the bioregion is prone to frequent flooding historically and currently, these higher landforms would have been utilised as occupation areas, and in areas adjacent to the lakes and where lunettes have formed, there is often 'abundant' archaeology (NSW National Parks and Wildlife Service et al. 2003).

In comparison, depressions are mostly confined to the north-western and south-western portions of the Project Area, although in some central areas, they are present. The south-western depressions and valleys are likely associated with the water sources, including the Murray River, the Gol Gol Swamp and Lake Gol Gol, but the north-western depressions do not appear to have any association with any extant water sources (Condon 2002:6). Areas within 200 m of a water source are more likely to have cultural heritage, however, in this region these areas are also frequently flooded so were likely only utilised in drier months (NSW National Parks and Wildlife Service et al. 2003:80).

The landform units identified within the Project Area are identified in Figure 3.1.

The major hydrological system associated with the Project Area is the Murray River, which is located in the south-eastern portion of the Murray Darling Basin and approximately is 3 km west of the Project Area. The Murray River has its major headwaters in the Australian Alps and runs approximately 3,750 km to where it flows into the Southern Ocean at Goolwa, South Australia. This permanent water source has many tributaries including streams, paleo-channels, creeks, billabongs, and swamps that feed into the main river as well as many distributaries flowing out.

The Murray River has undergone numerous alterations following its formation over 60,000,000 years ago (Page et al. 2009:20). During the Pliocene, the sea made its final retreat from the region, resulting in the formation of Lake Bungunnia (which later formed smaller lakes), before the diversion of its current cause at the Cadell Block, near Moama (Stone 2006:772; Page et al. 2009:21). Unlike the modern Murray River, the ancestral river was wider and had a faster flow, carrying larger amounts of water and sediments (Aboriginal Affairs Victoria 1995:4). Following the climatic shift in the Holocene, the resources available changed leading to demographic and occupation changes, however, due to the permanency of the river, the occupation of these areas would have continued with the use of water sources. This is verified by cultural heritage often identified in close proximity to the Murray River (Coutts et al. 1979:86; Pardoe 2014:114).

Following European settlement in the region and the subsequent water infrastructure developments, including locks, dams, levee banks and weirs, the flow of the river has been altered. This, along with widespread land clearing, has led to an increase in the river's salinity, impacting the overall bioregion, but also impacting cultural material.

Closer to the Project Area there is a channel from the Murray River that feeds a lake and a swamp. Although the channel is located 1.4 km south-west of the Project Area, Lake Gol Gol, and Gol Gol Swamp are closer, approximately 400 m west and 500 m south, respectively. Prior to the 1960s, both Gol Gol Swamp and Lake Gol Gol received unregulated water through Gol Gol Creek from the Murray River, but following river regulation activities, the flow into the lake and swamp has been reduced from 40,000 megalitres a day to only filling during 'unregulated flow events' (WSP Australia Pty Ltd 2020:19; NSW Government Environment and Heritage 2022).

The Project Area itself does not have any natural permanent water, but there are several minor and randomised ephemeral drainage lines present. These drainage lines are extremely unreliable for occupation due to the high sand content in the soil, resulting in poor water retention. Soaks, which are low depressions that have higher clay content and often fed by the ephemeral drainage lines, would hold water for longer periods of time (Knapp 1979:51); enabling them to be used by Aboriginal people as they travelled into the back plains during winter months (Martin 1997:8). The larger of these have geology associated with lakes as these would have been able to hold a higher volume of water over a longer period of time allowing lunettes and lake deposits to form. These soaks have been altered by European use so that they now hold more water for longer periods of time. Apart from these modifications, the sources of surface water within the Project Area has not changed.

The hydrological systems identified within and in the locality of the Project Area are identified in Figure 3.2.

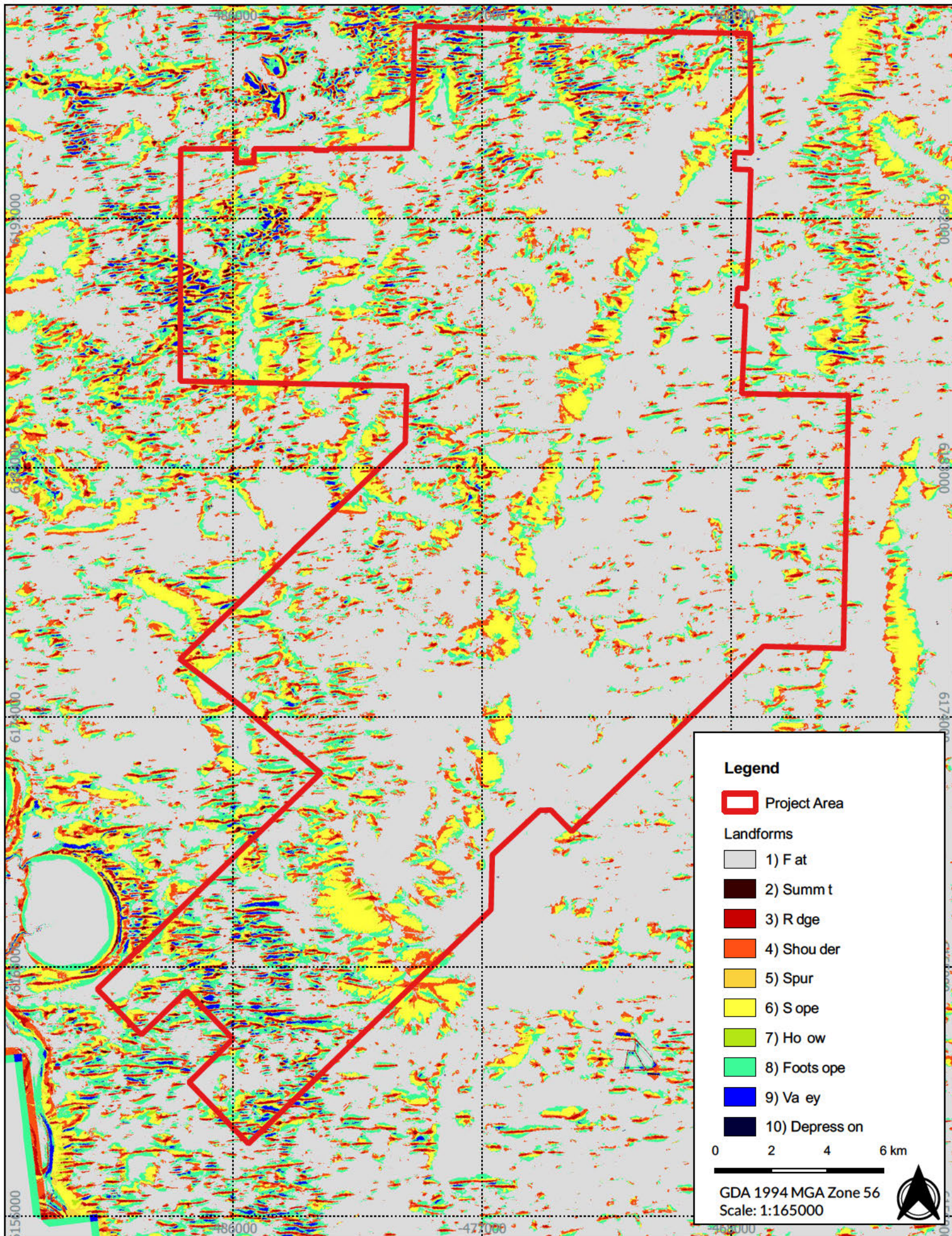


Figure 3.1 - Landform units identified within the Project Area

22078 - Mallee Wind Farm - ACHA

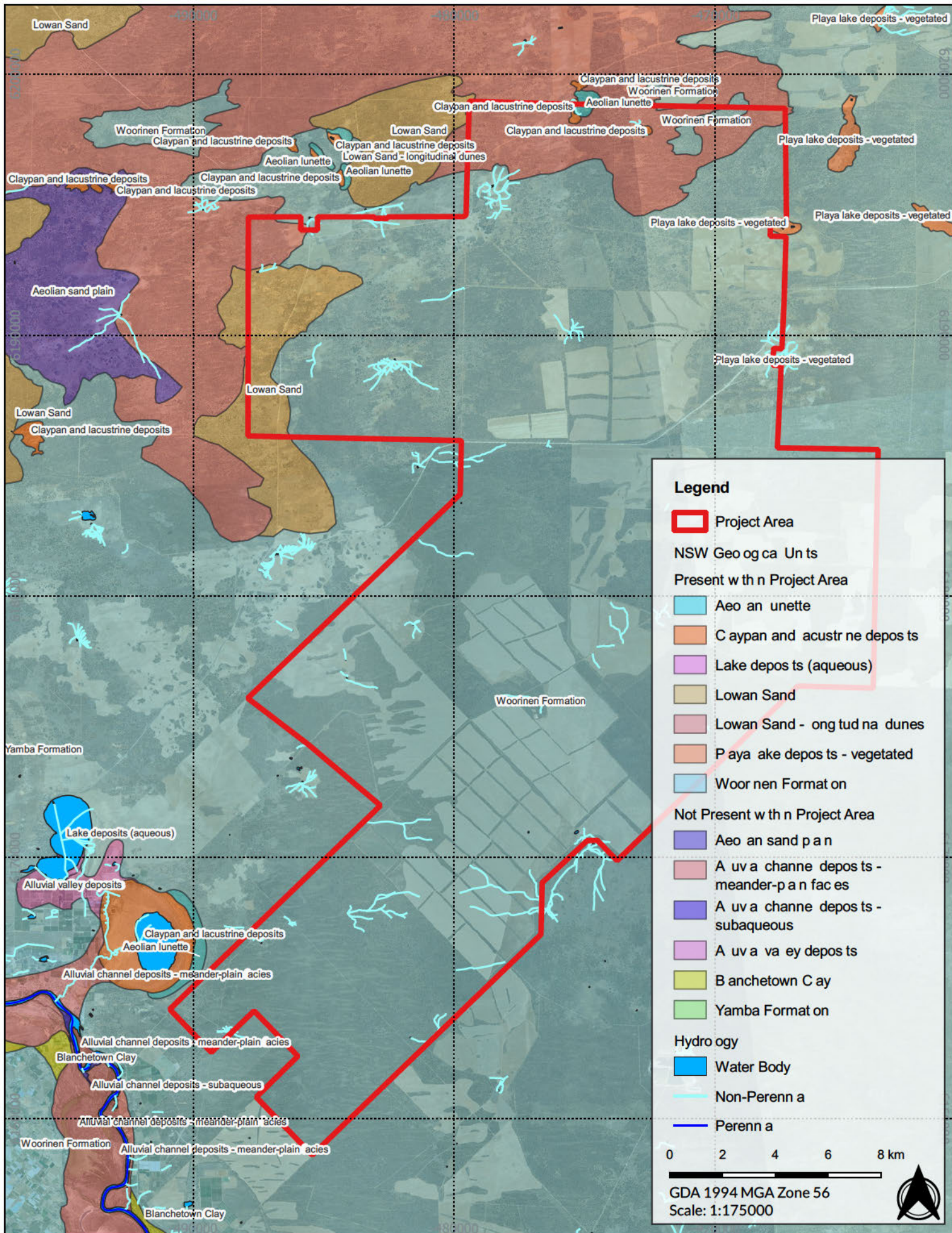


Figure 3.2 - Geology and hydrology of the study area and surrounding landscape

22078 - Mallee Wind Farm - ACHA

Source: NSW LPI Aerial, NSW Seamless Geology Drawn by: FOT Date: 2024-07-17

3.1.2. GEOLOGY AND SOILS

Geological units are used to predict the presence and/or absence of certain Aboriginal site types including rock shelters, grinding grooves or quarries in addition to providing an insight into the range of raw material types that may have been available to past Aboriginal groups for tool making.

The Project Area is located within 7 different geological units, including:

- Woorinen Formation
- Lowan Sand
- Alluvial Valley Deposits
- Claypan and Lacustrine Deposits
- Lowan Sand Longitudinal Dunes
- Playa deposits - vegetated
- Aeolian Lunette.

Table 3.1 shows the geological units present within the Project Area.

Table 3.1 Description of geological units within the Project Area

Geological Formation	Description
Woorinen Formation	Most of the Project Area, and the entirety of the Disturbance Footprint, is associated with the Woorinen Formation, which comprises extensive, closely spaced, east-west longitudinal dunes containing high proportions of clay and calcium carbonate. Described as having subdued crests and flakes separated by swales and sand plains, the dunes range from 0.5 to 3 km in length and are typically 2.6 m high (Bowler and J. W. Magee 1978:10). Soils in the Woorinen Formation commonly consist of unconsolidated red-brown medium to fine silty sand, red calcareous silty clay, sandy clay and clay pellet aggregates. (Bowler and J. W. Magee 1978:10). Although the formation has a low salinity rating, and a low surface alkalinity, as the formation extends into the subsoils the alkalinity increases, suggesting that organic material would be less common as the depth increases (Lawrence 1966:543). Archaeological sites are commonly found in the Woorinen Formation where permanent or semi-permanent water occurs; however, because these types of water sources are rare within the formation, sites are less likely to be present.
Lowan Sand	Located on the western border of the Project Area, outside of the Disturbance Footprint, Lowan Sands are Pleistocene Aeolian-formed fine-grade sand dunes that extend eastward from South Australia (Gill 1973:21). Described as having dunes that are east trending and sharp-crested, irregular to subparabolic, this formation has sodic yellow grey textured sodosols with deep sandy topsoils with sandy variants (Agriculture Victoria n.d.). The Lowan Sand formation often has 'blowouts' or dune deflations due to the instability of the soil (Lawrence 1966:540). Due to the lack of water and the desert climate, Lowan Sand dune fields were rarely populated, suggesting that there would only be limited archaeological potential, and likely associated with short term occupation (Ecological Associates Pty Ltd 2018).

Geological Formation	Description
Alluvial Valley Deposits	Situated on the south-western side of the Project Area, outside the Disturbance Footprint, and making up only 2.5 hectares of the Project Area. Alluvial Valley Deposits are Quaternary-aged and formed from the movement of soils from rivers and lakes. Consisting of silt, sand, clay and gravel, there are no outcrops or rockshelters, and if cultural material is identified, it has likely been transported into the Project Area from elsewhere (Colquhoun et al. 2020).
Claypan and Lacustrine Deposits	Claypan and Lacustrine Deposits are Quaternary-aged friable to plastic, finely laminated grey, silty and humic clays (Colquhoun et al. 2020). There are no outcrops or rockshelters associated with this geological formation, and if cultural material is identified, it has likely been transported into the Project Area from elsewhere. This geological formation is located near the northern border of the Project Area and is not located within the Disturbance Footprint.
Lowan Sand Longitudinal Dunes	Confined to the northern portion of the Project Area, outside the Disturbance Footprint, Lowan Sand Longitudinal deposits are similar to Lowan Sand deposits (Colquhoun et al. 2020). They are also Pleistocene-aged Aeolian sand dunes. The formation is described as an easterly trending dunefield of sharp-crested linear dunes with minor irregularities and sub parabolic dunes. There are no outcrops or rockshelters associated with this geological formation, and if cultural material is identified, it has likely been transported into the Project Area from elsewhere.
Playa deposits - vegetated	Consisting of clastic sediment, the Playa Deposits-vegetated formation is Quaternary-aged and is located on the eastern boundary of the Project Area and is not located within the Disturbance Footprint (Colquhoun et al. 2020). There are no outcrops or rockshelters associated with this geological formation, and if cultural material is identified, it has likely been transported into the Project Area from elsewhere.
Aeolian Lunette.	The Aeolian Lunette geological formation is a Quaternary-aged alluvial deposit consisting of red-brown to light brown, silty bi-modal quartz sand that can be sporadically clayey (Colquhoun et al. 2020). This geological formation is located near the northern border of the Project Area and is not located within the Disturbance Footprint (Colquhoun et al. 2020). There are no outcrops or rockshelters associated with this geological formation, and if cultural material is identified, it has likely been transported into the Project Area from elsewhere.

The geological units identified within the Project Area are identified in Figure 3.2.

The Project Area is associated with 3 different landscapes, including the Mallee Cliffs Dunes, Mallee Cliffs Linear Dunes and the Mallee Cliffs Sandplains (Mitchell 2002:63). Although all of the landscapes are slightly different, they all consist of Quaternary-aged dunes (Mitchell 2002:63).

The majority of the Disturbance Footprint is located within the Mallee Cliffs Sandplains landscape. This landscape consists of an extensive slightly undulating sandplain of Quaternary-aged Aeolian sands that form east-west trending dunes, with blowouts, broad swales and small depressions (Mitchell 2002:64). With a relief between 6 and 10 m, the landscape has solonised brown soils, calcareous loamy sand and texture-contrast soils on the plain, red and brown soils on the dunes and non-cracking grey or brown clays in depressions (Mitchell 2002:64). The Project Area also contains calcarosols and rudosols, according to the *Australian Soil Classification Third Edition* (Isbell 2021).

Also commonly found throughout the Project Area, but with only a small portion in the area where the development is proposed, the Mallee Cliffs Linear Dunes soil landscape comprises extensive Quaternary dunefields and sandplains with relief to 7 m (Mitchell 2002:63). The soils in this landscape consist of deep brownish soils and swales of calcareous sandy loamy red earths (Mitchell 2002:63).

Located near the boundary of the Project Area, but not in the Disturbance Footprint is the Mallee Cliffs Dunes landscape. This landscape is characterised by parabolic and unaligned dunes with relief up to 7 m. The dunes and swales consist of deep-brown reddish earthy sands and isolated flats of solonised brown soils, which increase in alkalinity with depth (Condon 2002:10; Mitchell 2002:63).

The soil landscapes identified within the Project Area are identified in Figure 3.3

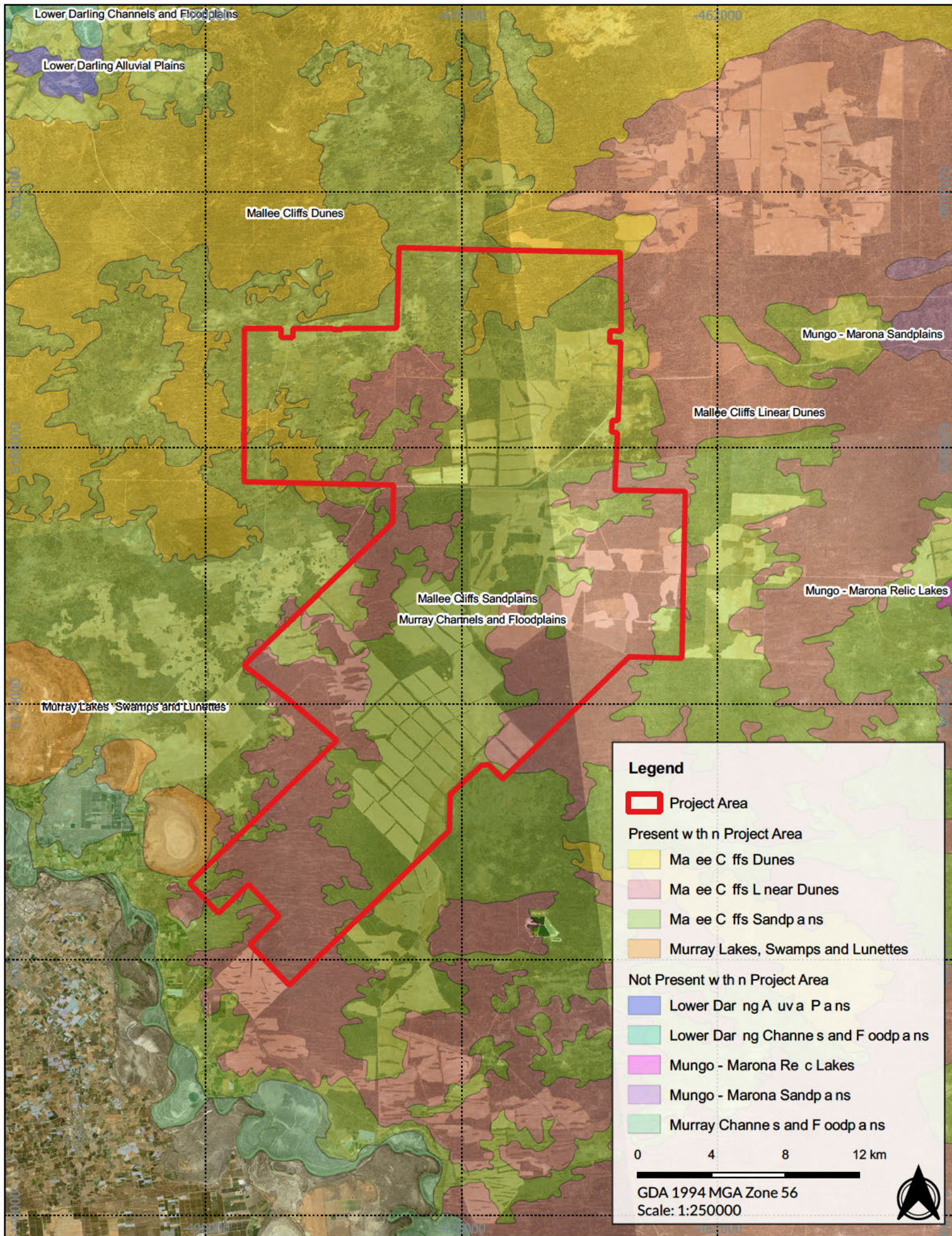


Figure 3.3 - Mitchell Landscapes identified within the study area and surrounding landscape

22078 - Mallee Wind Farm - ACHA

Source: NSW LPI Aerial, Mitchell Landscapes v3.1 Drawn by: FOT Date: 2024-07-19

3.1.3. CLIMATE

The climate of the geographic region of the Project Area can be classified as a semi-arid to arid climate with hot, dry summers and cooler winter months. The Bureau of Meteorology gives the climatic details for the Project Area between 1946 to 2022 (Bureau of Meteorology 2025). The mean summer temperatures for January within the region range from 29 to 32.3 degrees Celsius, while in July, the average temperature ranges from 13.8 to 15 degrees Celsius. The highest rainfall recorded in the region was in 2011 at 657.4 millimetres (mm) for the year. The mean annual rainfall is 285.4 mm between the years 1946 to 2022.

The Project Area is now located within a semi-arid region, but during previous climatic phases, such as the Pleistocene, the region would have had a higher rate of rain (Gingele et al. 2007). During the Pleistocene, water would have been more prevalent allowing for human occupation to venture further away from the larger and more permanent water sources. The climate would also have contributed to the availability of resources, with flora and fauna likely to have also been more common and with a wider variety in the region. The slow climate shift to the current Holocene, would have provided more challenging conditions and required people to utilise well-watered riparian resources associated with rivers and lakes (Williams et al. 2015:20–21).

3.1.4. LANDSCAPE RESOURCES

The Project Area is currently vegetated with mallee eucalypt (*Eucalyptus stricta*), river cooba (*Acacia stenophylla*), common reed (*Phragmites australis*), yellow box (*Eucalyptus melliodora*), lignum (*Muehlenbeckia cunninghamii*), cane grass (*Eragrostis australasica*), black box (*E. largiflorens*) and cumbungi (*Typha orientalis*) (Mitchell 2002). Although chenopod varieties are present in the Project Area, they would have been even more prevalent in the past (Clark 1983).

The Project Area's proximity to the Murray River would have provided Aboriginal people with additional water, food, game and plant resources in addition to those described above. For example, trees such as river red gum (*E. camaldulensis*), were utilised for the production of canoes, shields and coolamon, as well as providing lerps (sugarbag) and several kinds of witchetty grubs. Additionally, river red gums provide shelter for bird and mammal species used by Aboriginal people as food, skins, tool production (bones, tendons and other fibres), and in ceremonial decoration. The Kurrajong (*Brachychiton populneus*) for fibres to make nets whilst other trees would be used for their leaves, seed pods or roots. Timber would have also been used for campfires and as an implement for other daily activities.

In addition, the smaller, shrub-like plant species would have made a valuable contribution to the diet of the local Aboriginal community, these include fruit-bearing shrubs like ruby (*Enchylaena tomentosa*) and old man saltbush (*Atriplex nummularia*) which can be eaten directly or used to season food. Other plants that were exploited along the river but are no longer in abundance in the Project Area were midge orchid (*Genoplesium nigricans*), river mint (*Mentha australis*), and reeds (Family: *Poaceae*), which contributed to the diet or were used as materials (Atkinson and Berryman 1983; Craib 1991). Typha (*Typha spp.*), for example, were collected and used to create nets which would then be used to catch fish or birds (Beveridge 1889:70–71).

Spears were made from strong reeds and wood, and scrapers and stone tools were made from quartz. Shell was used for activities such as cutting animal skin and sharpening materials such as wood for boomerangs and spears (Kirby 1896; Coutts 1977).

According to Humphries (2007), Aboriginal people have exploited aquatic resources from watercourses in the Murray-Darling Basin for thousands of years. The Barkindji, Latji Latji, Muthi Muthi and Yitha Yitha people of the Mallee Cliffs area would have used mussels (*Velesunio ambiguus*), freshwater fish (Class: *Actinopterygii*) and crayfish (Superfamily: *Astacoidea*) for subsistence as well as for other purposes, such as personal adornment (Humphries 2007). There is also evidence of environmental modification in the Murray-Darling Basin, such as the fabrication of complex fish traps (Humphries (2007).

According to literature, the most common terrestrial faunal species within the Mallee landscape are the eastern grey kangaroo (*Macropus giganteus*), the emu (*Dromaius novaehollandiae*), the swamp wallaby (*Wallabia bicolor*), the sulphur-crested cockatoo (*Cacatua galerita*), along with many species of reptile, including the striped legless lizard (*Delma impar*), the mallee slender blue-tongue lizard (*Cyclodomorphus melanops elongatus*) and the eastern brown snake (*Pseudonaja textilis*) (Hassell Planning Consultants Pty Ltd 1989; Office of Environment & Heritage 2023).

These species would have been exploited by the Barkindji, Latji Latji, Muthi Muthi and Yitha Yitha people as a source of food and raw material.

3.2. PAST LAND USE PRACTICES

The Project Area was originally part of the Mallee Cliffs and Tapio Stations which were both expansive grazing properties.

Vegetation clearance has occurred throughout most of the Project Area, which has resulted in erosion along the slopes within the Project Area. Since the late 1800s, the Project Area was used for grazing and other relatively low-impact agricultural activity, with little development beyond access tracks, bores, dams and roads.

These activities would have contributed to the removal of the original native vegetation as the Project Area is now covered in dense native and introduced grasses and agricultural crops, with regrowth of native vegetation and intrusive weeds along tracks and roads. Agricultural crops make up the majority of the Disturbance Footprint.

Land clearance and agricultural activities, including ploughing, cropping and livestock grazing, have resulted in soil disturbance and topsoil movement and loss, which accounts for widespread artefact displacement rather than the complete destruction of Aboriginal sites. The biggest cause of disturbance within the Project Area is wind erosion, which has been exacerbated by the introduction of European agricultural practices. Since the advent of cropping in the region at the end of the 19th century, there has been evidence that the region lost over a metre of soil. There are some places such as water bodies, trees and fence lines, that have the ability to catch dust, which would have seen a build-up of sand, over 1.5 m (Figure 3.4) [Cattle 2016].

Historic-period aerals from 1964 and 1965 indicate that the Project Area was relatively undisturbed, with natural vegetation occurring over most of the Project Area, and the main disturbances being the access tracks (Figure 3.5).

From the 1980s onwards, significant disturbances across the Project Area occurred, with more extensive land-clearing and agricultural cropping taking place (Figure 3.6). This agricultural disturbance is still evident in current aerial imagery (Figure 1.2). These activities have the potential to destroy, move or alter Aboriginal cultural heritage items within the Project Area.

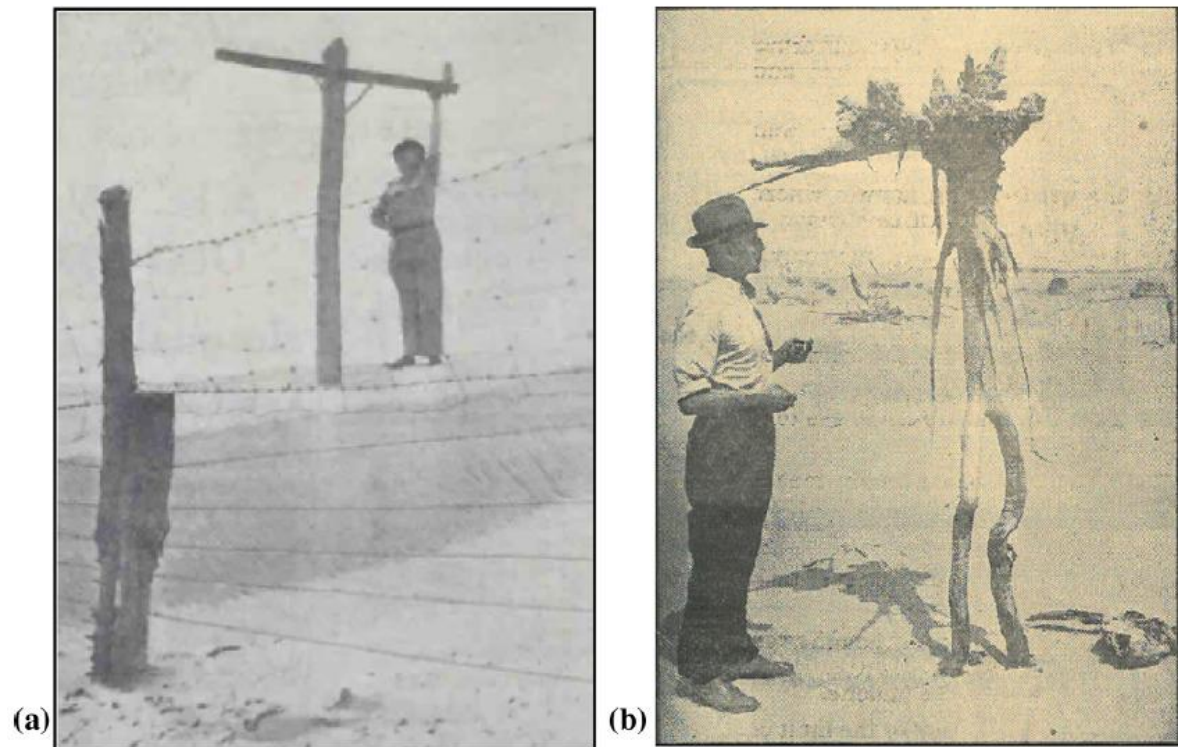
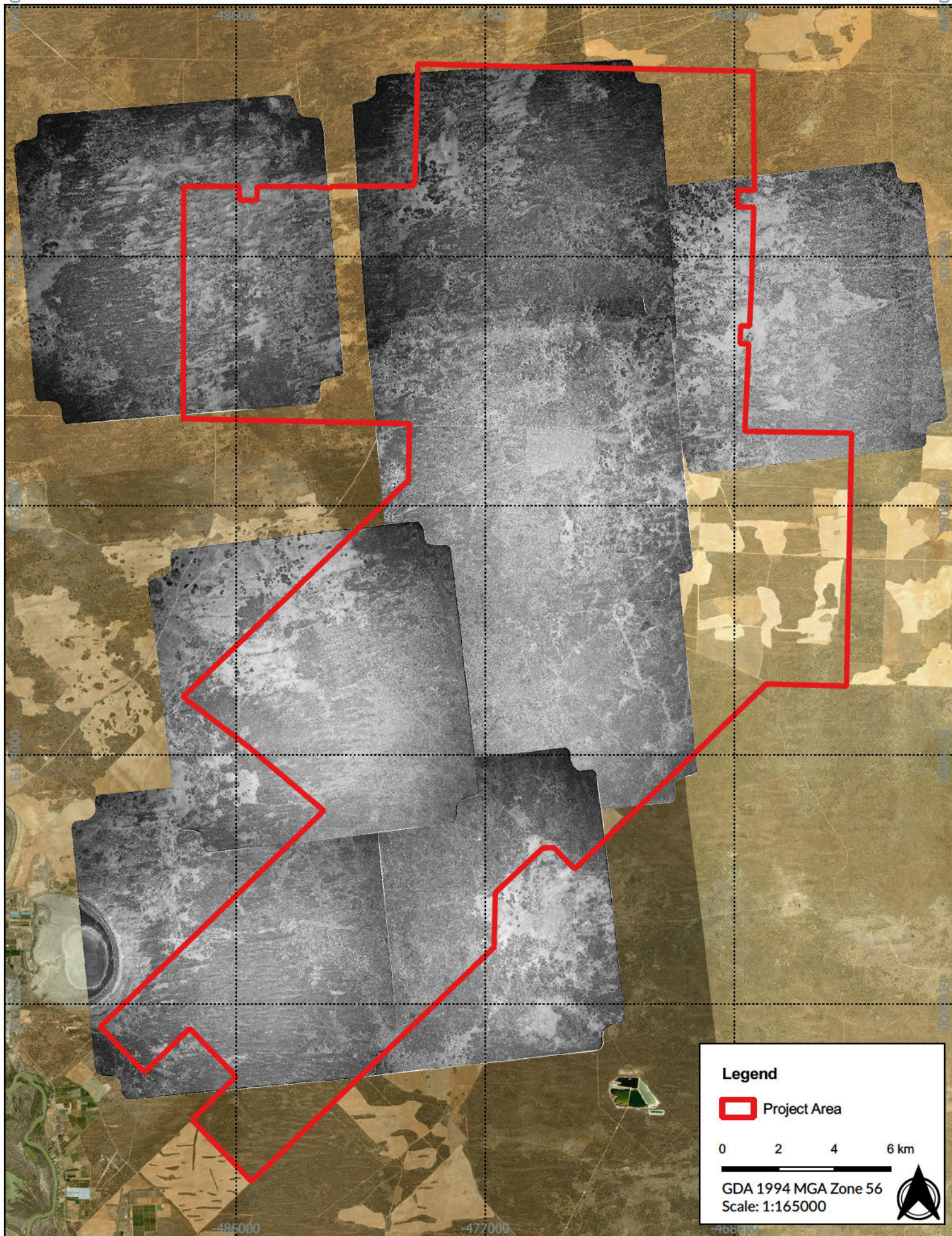


Figure 3.4 Northern Mallee images published by the Sunraysia Daily on December 20, 1944.

Note: (a) a telephone pole more than half buried in drifting sand, and (b) the root system of a mallee tree exposed by wind erosion to a depth of about 1.8 m. Images taken from Cattle (2016:17).



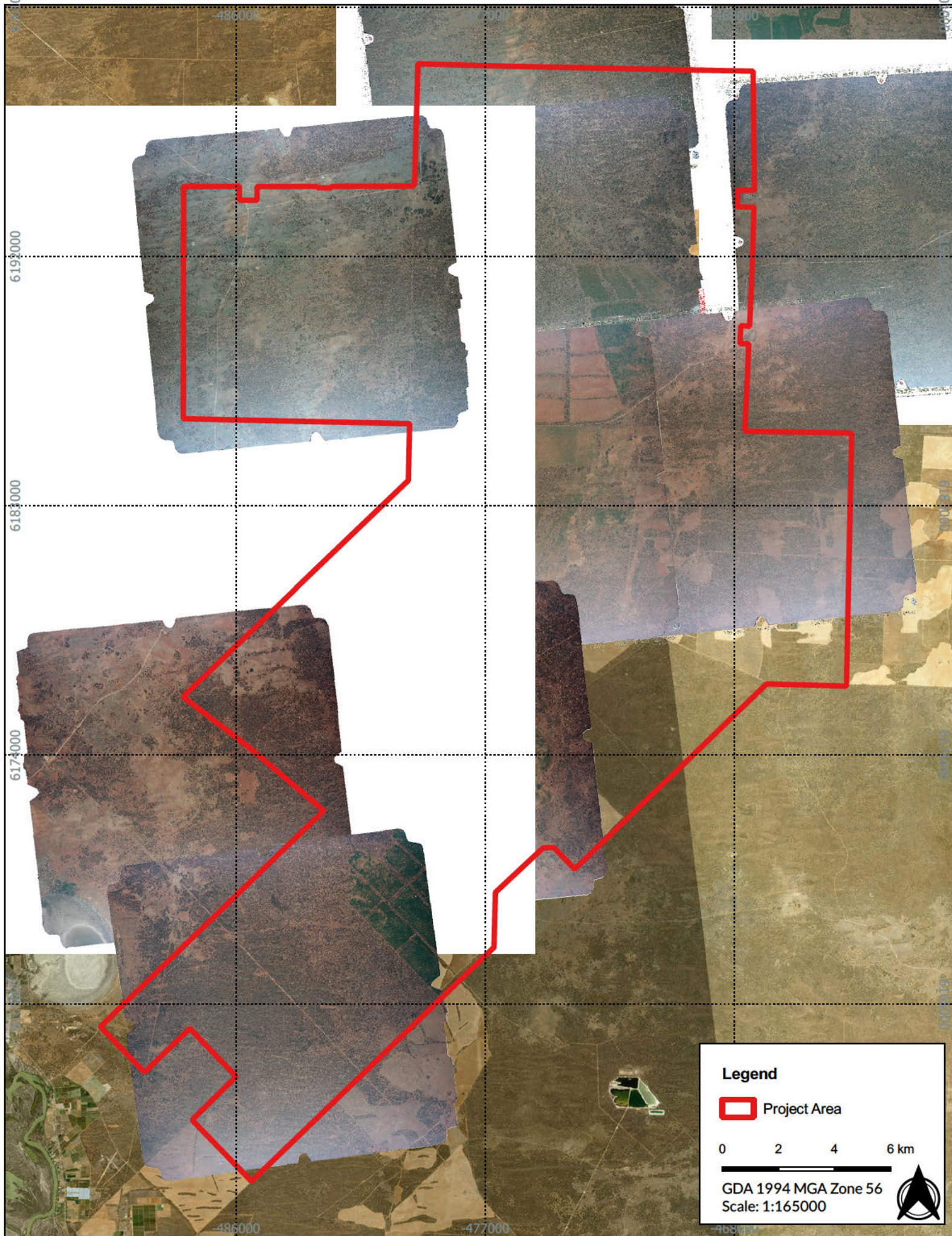


Figure 3.6 - 1993 Historical aerial of the Project Area

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4. ARCHAEOLOGICAL CONTEXT

The range of environments and landscapes within the Mallee region had a profound influence on the lives of the Aboriginal people who lived there. As hunters and gatherers, Aboriginal people were reliant on their surroundings to provide food. Their transitory lifestyle affected population size, social interactions and degree of mobility, which can be confirmed in the archaeological record.

4.1. POPULATION AND CONTACT HISTORY

At the time of European contact, Australian Aboriginal people had a rich array of languages and abstract symbology to convey meaning, but this did not include the writing of individual words or names. As a result of this, there are many different orthographic determinations of how Aboriginal words are recorded using a European alphabet, this in itself is a complex issue that can cause division across different individuals and groups, both historically, culturally and politically. Aboriginal societies are often complex with similarities throughout different nations, this can be seen through trading knowledge, interconnecting kinship between nations as well as sharing language. Although there are stark differences across all nations throughout Australia.

Initial dates for occupation for Aboriginal populations along the Murray River and surrounds are difficult to establish as post-European disturbances, including deliberate looting of Aboriginal cultural remains, have removed significant quantities of archaeological evidence. Currently, archaeological excavations along the Murray River and its surrounds, including the Mallee, have dated Aboriginal activity at Box Gully, Lake Tyrrell to 32,000 - 26,000 years Before Present (BP), Karadoc Swamp at 25,000 - 22,800 years BP (Richards et al. 2007:1,8) and Kow Swamp, at 15,000 - 9,000 years BP (Stone and Cupper 2003:99).

The Project Area is located in the traditional lands of the broader Kulin-speaking nations, consisting of the Barkindji, Latji Latji and Muthi Muthi/Mutthi Mutthi/Yitha Yitha people. It should be noted that the term 'Yitha Yitha' has been used to describe the Muthi Muthi people. This is incorrect, as the Yitha Yitha comprise a clan within the Muthi Muthi nation (Howitt 1904). Tindale describes the traditional lands of the Barkindji as extending from the Darling River at Wilcannia downstream nearly to Avoca and extending 30 to 50 km on each side of the river (Tindale 1974:192). The Barkandji No.8 Native Title determination (2015) and the Mallee Cliffs Draft Plan Of Management (POM) (2017) recognise the Barkandji (Paakantji/Barkindji) People as the traditional owners of the country which encompasses the neighbouring Mallee Cliffs National Park and the surrounding areas.

The Australian Heritage Database / Register of the National Estate (RNE) listing for Mallee Cliffs listed the Traditional Owners of the Mallee Cliffs area (or Mallee country) as the Paakantji, Latji Latji and Muthi Muthi people. The nation of Latji Latji is recognised by Tindale, with their occupation ranging from Chalka Creek to Mildura on the southern bank of Murray River; at Kulkyne; ranging about 50 miles (80 km) south from the river to near Murrayville and Pine Plains, covering approximately 3,500 m², (Tindale 1974, p. 206). The Latji Latji nation bordered the Jari Jari nation to the west and the Dadi Dadi and Weki Weki nations to the east. The Latji Latji language name derives from the word 'no' repeated and is placed under the vocabulary group of Boraipar. The Latji Latji language group shared a common vocabulary with Muthi Muthi, Wadi Wadi, Wergaia, Wemba Wemba and Djadjawurrung, for example; the Latji Latji shared 83% with Wadi Wadi and 77% with the Wergaia (Clark 2005:15).

The traditional lands of the Muthi Muthi nation extend from the Murrumbidgee River at Balranald, southwest to the Murray, and west to Lake Benanee near Euston. The Muthi Muthi language is a part of the 'Kulin languages' and the Muthi Muthi share over 80% of their vocabulary with the Latji Latji and Wati Wati nations, although the Wati Wati nation shares 81% with the Wimmera language. Wemba-Beraba also shares 75% of their vocabulary with the Muthi Muthi nation (Blake et al. 2011:6).

4.1.1. BARKINDJI

Barkindji people share a linguistic and cultural heritage that encompasses a majority of the Darling River from Wilcannia to Avoca (Tindale 1974; Hardy 1976; Martin 2001). Throughout this region, the Barkindji language is spoken in different dialects by individual clans, or sub-groups (Tindale 1974, Hardy 1976, Martin 2001, Pardoe 2003, Mathews 2007). These different dialects were often indistinguishable to the European ear which caused problems when identifying who spoke which languages within the Aboriginal population. Curr described this challenge by writing:

That speech varies so little amongst the several tribes that some of my correspondents are under the impression that there is but one language on the Darling (Curr 1886, p. 167).

Barkindji people who travelled further away from the river, when the season allowed for it, were characterised by small and thinly-spread populations, although at times these numbers increased, depending on the season and food availability (Pardoe 2003). An example of this is when Sturt visited Lake Victoria where he saw a gathering of 600 Barkindji people (Sturt 1833). It is argued that 25,000 to 30,000 years ago, the Barkindji people gathered in large groups, possibly of 100 or more, however when drought occurred and food was scarce, groups would separate and relocate to different areas of the Darling-Barka River (Balme 1995b; Hiscock 2008).

Pre-contact, the Barkindji people were seasonal hunters and gatherers who would utilise the arid and riverine environments depending on whether there were drought or floods but they were considered less nomadic than tribes that relied solely on one form of sustenance (Mitchell 1839:307; Pardoe 2003). Over time, Barkindji people would have experienced alternating cycles of water fluctuations and droughts which would require their movement from riverine to arid environments (Bowler et al. 1970; Balme and Hope 1990; Pardoe 2003; Weston et al. 2017).

When ecological fluctuations in the environment required movement further inland, Barkindji people would carry water in a kangaroo or wallaby skin bag and rely on bark trough carriers to travel and would feed on a diet of kangaroos and wallabies (Lawrence 1967:86; Allen 1974; Hardy 1976). During this time away from water, Barkindji people would locate potable water supplies, such as claypans or swamps, dig wells, and would collect water from tree roots (Paakantji People and Western Region Heritage Working Group 1990:7). It is also believed that the people would dam the water, or redirect it, to maintain supplies when water was less abundant (Paakantji People and Western Region Heritage Working Group 1990, p. 7, Appleton 1996, p.12).

Aside from animals, Barkindji people would also collect seeds, fruits and tubers (Allen 1974). Seeds were often ground, made into dough and baked, while leaves and fruits were eaten raw (Lawrence 1967:83). An example of a seed that was utilised was the nardoo (*Marsilea drummondii*). This seed was ground up, using grinding dishes, to create a dough that would have been used for baking (Martin 2001, p. 24, New South Wales Archaeology Pty Limited 2007, p.32).

Women would often use the digging stick to help in their collection of vegetables, such as yams and gum (Krefft 1856, p.371 Smyth 1878, p.216, Lawrence 1967, p.86 Paakantji People and Western Region Heritage Working Group 1990, p.7, Martin 2001, p.24, New South Wales Archaeology Pty Limited 2007, p.31). Health was also important to Barkindji people, who would collect medicinal products.

Some of these health items include lignum, tumbling weed, and nardoo, although Newland mentions that it was only used in emergencies (Newland 1888:21), wild carrot, clover, white and mauve mustard flowers, quandong, pigface duckweed (for cuts and sores) and lettuce thistle (for constipation) (Creamer 1975:4).

As well as for food and medicine, Barkindji people would use resources such as porcupine grass, sticks and branches to build huts and other structures (Paakantji People and Western Region Heritage Working Group 1990:7). Although Barkindji people would commonly sleep under the night sky during dry summers, they also constructed 2 to 3-person shelters which women would construct from sticks and large tree limbs for use when the weather was not as pleasant during colder periods (Hardy 1976). Huts would be constructed to protect those who planned to stay in an area long-term from the elements, Sturt witnessed these:

The huts were large and long, all facing the same point of the compass, and in every way resembling the huts occupied by the natives of the Darling (Sturt 1833)

During those colder periods, Barkindji people would wear clothing made of fur and skins to protect against the cold and provide warmth. Men would wear possum or kangaroo skins (that could be as long as 2 m), thrown over the left shoulder and back and fastened with a wooden peg. Women would carry their children on their backs with a cloak that was drawn under the child's bottom and the mother's shoulders and chin (Hardy 1976).

An important part of any culture is their mortuary practices and treatment of the dead, which reflect a combination of traditional beliefs, local customs and practices (Binford 1971, Littleton 1999, p.1).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

4.1.2. LATJI LATJI

The Riverine country and surrounding hinterlands would have provided a sustainable landscape for the Latji Latji people. Prior to European contact, Aboriginal people along the Murray River lived a semi-sedentary, hunter-gatherer lifestyle and utilised the environment to their advantage (Beveridge 1889, p.32, Mulvaney and Kamminga 1999, p.303). Due to the proximity of the Murray River and the Mallee region, the Latji Latji people would move from the rivers to plains depending on the season and seasonal events, such as floods or droughts (Pardoe 2014, p.114, Benchmark Heritage Management 2018, p.20).

It is believed that the Murray River would have been utilised for at least 8 months of the year and would have been a rich supply of food resources high in proteins, fats and carbohydrates (Allen 1980, p.51-54, Pardoe 2014, p.114).

The Latji Latji people supplemented fish with freshwater crustaceans such as yabbies, mussels and large crayfish. During the remaining time, Aboriginal people would have travelled into the interior of the Mallee region and would have relied on land animals such as kangaroos, reptiles and possums (Beveridge and Royal Society of N.S.W. 1883, p18, Beveridge 1889, pp.18-21).

When hunting ducks, the people would use nets to catch the birds (Beveridge 1889:19). The duck nets were between 300 feet long to at least 7 feet wide, with a 4-inch mesh size and were made from cumbungi, fibre rush and giant mallow (Broome 2017:160). Broome (2017) states that duck netting was ingenious and cooperative. Women would herd the ducks down the river, whilst the men waited in the trees, throwing wooden discs into the air to force the ducks down into the suspended nets. However, the Latji Latji also had gendered roles, such as women gathering the crustaceans, and mussels and foraging for plant foods and fibres, whilst the men hunted fish with spears and larger game such as kangaroos, emus and possums.

Aboriginal people in the Murray and Mallee region also had a diet rich in fruit, vegetables and herbs. Seeds, such as nardoo, were a staple food source with grinding stones used for their production (Beveridge 1889:139–165). Other documented accounts included kampung shoots being used to make a salad and the roots being steamed like potatoes. The highly varied diet for people on the Murray River and Mallee Plains allowed for larger populations than would have been possible away from the river corridor (Beveridge 1889:9–35, 71).

As well as for changes in the diet, Latji Latji people would utilise the different environs to locate different materials and construct new equipment. Examples of this include using canoes, nets and weirs in the river and spears, coolamons and bird nets in the plains (Beveridge 1889:20; Coutts et al. 1979:10). James Kirby, an early settler, noted the process of creating twine (for nets, dillybags, etc.) from cumbungi:

... rolling a long root of it up together so that they could put it into the mouth and chew it until they got all the nutrient out, and then take the fibres from the mouth in a sort of a ground ball. These balls they would take great care of, and when they had sufficient number for making a fishing line, or fishing net, they would begin operations by holding a ball in one hand, pulling some fibres partly from it for a start, and with the other hand twist it by rubbing it between the palm of the hand and the thigh. They were quite adepts (sic) at this work, and in a surprisingly short time would make a string long and strong enough for a fishing line. With this kind of cord they made fishing nets, and also smaller nets which the lubras used to sling behind their shoulders for the purpose of carrying therein babies and other articles (Kirby 1896:34).

Other resources that would be used in both the Murray and Mallee, include stone tools, such as quartz (often traded in), and shells which were used for activities like cutting the skin of animals, cutting hair and sharpening materials such as wood for boomerangs and spears (Kirby 1896:46; Coutts 1977:10). Greenstone axes from Mount William near Daylesford, have been found in Hattah-Kulkyne National Park and were often traded between the Latji Latji and other Aboriginal groups (Bullers et al. 2014:266).

The biggest challenge that would have been faced when travelling away from the Murray River and the floodplain was that of water. Limited water was a constant challenge in the interior of the Mallee with Aboriginal people utilising bugs, plants and roots as supplemental water sources (Beveridge and Royal Society of N.S.W. 1883:46). One example of accessing water in the Mallee was to use trees such as banksia, oil mallee, hooked mallee, blue and green mallee (Coutts 1977:8). This was seen by Mr Cairns, who travelled to the region:

During a recent visit to the Murray... my friend, Mr. Peter Beveridge, rode with me into the Mallee, accompanied by one of his native stockmen; who... pointed out the tree. It grows upwards of twenty feet high, and scarcely differs in appearance from those around, to the eye of a stranger, but easily to be detected on the brownish tinge of its leaves being pointed out. Our black immediately proceeded to cut a yam-stick, about five or six feet long, which he pointed with his tomahawk, and then, tracing the roots by a slight crack discernible on the surface of the ground, he dug underneath it, till, obtaining space enough for the point of his stick, he pushed it under and then prized up the root... He now broke up the roots into lengths of three to four feet, and, stripping off the bark from the lower end of each piece, he reared them against the tree, leaving their liquid contents to drop into a pannikin. On holding a piece of root horizontally, no water is to be seen, but the moment it is placed in an upright position a moisture comes over the peeled part, until the pores fill with water, which drops rapidly. The natives, when travelling in search of water, on finding the tree, usually cut off a large piece of the bark to serve as a dish, which they place at the foot of the tree, leaving the broken roots to drain into it, whilst they smoke a pipe or light a fire (Smyth 1878:221).

Flora and fauna were used for creating clothing and ornamental accessories. Possum skins were scraped with shell scrapers and stone axes, tanned and then prepared meticulously before being sewn into fur cloaks (Broome 2017:159). Possum fur was worn by Aboriginal people for keeping warm, as well as turned into belts around the groin for men and bands for women. Men and women were also noted to wear a possum band on the upper arm that was coloured with red ochre and fat (Beveridge 1889:29). Beveridge (ibid) also recorded that strings made from reeds and necklets made from crayfish antennae were worn around the neck of either gender. Kangaroo teeth were also used for hair decoration and often bone, or reeds were pierced through the middle cartilage of the nose (Beveridge 1889:29). Quartz flakes were used for cutting hair (Coutts 1977:10). As previously noted, cumbungi root was multi-functional and twine from its fibre was used for armbands and waist-belts as well as bags to carry items from one camp to another. The fibre rush from cumbungi was also harvested for flax which could be used making nets (Beveridge 1889:68–73).

Food and resources would likely have been cooked over open fires and in earthen ovens (Coutts 1977:3–4). Ovens were situated near creeks, rivers, lakes, lagoons and other waterways, on both high and low ground. May and Fullagar (Coutts 1977:169) contended that earth mounds were unusual in the Mallee. This has been disputed since the 1980s when subsequent research has shown that mound sites in the Mallee region were not as uncommon as May and Fullagar once concluded. Clay balls are mostly found near waterways or ploughed up in paddocks that were once near ephemeral waterways, as the water was an essential component to making an earth oven.

Beveridge discussed the development of mounds, noting that:

As long as the camp remains in one place, the same hole is used for baking their food in... bones, too, of the animals which they use for food, beside charcoal tend materially to hasten their growth (Beveridge 1889:34).

During wetter periods, crabholes and small depressions on the ground surface were filled with water for weeks on end after rains, enabling oven mounds to be situated further away from permanent water sources. In the Mallee, clay and sand were mixed to form clay balls which were baked and used as heat retainers. Macropods, emus, eggs, fish, reptiles, birds, possums, yams and shellfish were all cooked in oven mounds. Stanbridge noted that in some parts of Victoria where fuel was very scarce, the re-use of earthen ovens increased their size, sometimes up to 18.2 m across and 1.5 m high, which he contended ‘... must have been many centuries in accumulating’ (Stanbridge 1861:295).

The most documented practice of Aboriginal people across the Mallee Region

The Aboriginal people who lived in the Mallee region (and across all of Australia) have strong spiritual links to their landscape, the creation and ordering of which was described in the 'Dreaming' (Hamacher II 2011:99). According to the Dreaming, the land, animals, and people were created by ancestral beings who also put forth rules which people must follow to maintain order within society. These rules were passed from one generation to the next through the enactment of rituals and the relaying of these stories (Smyth 1878:423–424). As Clarke (2009, p. 39) noted, the 'regular movement of celestial bodies was [also] used to measure time, whilst sudden changes in the sky were treated as omens'.

4.1.3. MUTHI MUTHI

The Muthi Muthi people are recognised as being some of the Traditional Owners of the Willandra Lakes Region which are one of the most significant archaeological regions in Australia as well as the Mallee Cliffs National Park which is adjacent to the Project Area. The region is an ancient landscape and is now a part of the World Heritage List (listed in 1981). The Willandra Lakes Region includes Mungo National Park (30%) and pastoral leases and grazing properties (70%) (NSW Department of Planning and Environment 2019). A series of archaeological sites provide evidence for occupation before 32,000 years ago. [REDACTED]

The importance of the Willandra Lakes region is reflected in the EPBC Act, which controls provisions for the proposed works. The EPBC Act requires impacts to be assessed for both World Heritage Properties (Sections 12 and 12A of the EPBC Act) and National Heritage Places (Sections 15B and 15C of the EPBC Act). In this instance, the Willandra Lakes World Heritage Area and the Willandra Lakes National Heritage Property are applicable.

Much of the archaeological record in the Willandra Lakes consists of small shell middens (Allen et al. 2015:14). Through examining archaeological evidence, traditional foods, cooking methods, stone tools [REDACTED] have been examined from which we are able to draw conclusions about everyday life before European contact. Due to the shell middens, evidence suggests that the Muthi Muthi people had ‘...highly organised food collecting strategies which at times allowed large gathering of people’ (Balme 1995a:19; Allen et al. 2015:14). The Muthi Muthi people would have practised a semi-sedated hunting and gathering lifestyle. The Muthi Muthi people would have harvested Golden Perch, Murray Cod, yabbies, and freshwater mussels from the Murray River as well as other freshwater sources like Lake Mungo.

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, II: 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 (Eyre 1845, p.267).

The Muthi Muthi people would have used seeds, such as nardoo, which were a stable food source with grinding stones used for their production (Beveridge 1889:139–165). Other plants utilised by the Muthi Muthi people include the Belah or Ngarringi tree, which was used for ceremonies, and medicine and the branches were made into tools. Water Ribbons or Ngarrilli which was used as a food resource and weaving material for baskets and other implements (Local Land Services Western Region 2016).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Stone tools have been recorded in abundance consisting of silcrete, which occurs in ridges on the backshore margins of certain lakes in the Willandra region. Given the sandy nature of the surrounding countryside and the paucity of stone sources within it, the presence of accessible stone raw materials has drawn Aboriginal people to the area throughout its history (Allen 1998:209).

4.2. WORLD HERITAGE AND NATIONAL HERITAGE PROPERTIES

The WLWHA and WLRNHP are located within the Murray Mallee region, approximately 25 km from the Project Area. The Willandra Lakes Region was originally listed on the World Heritage List as a ‘mixed site’ in 1981 for outstanding ecological and cultural values. The boundary of the original listing was modified in 1995 to better define the area containing World Heritage values. In 2007, the WLWHA was added to the National Heritage List in recognition of its national heritage significance. Aboriginal cultural heritage values comprise a significant part of the overall OUV for which WLWHA and WLRNHP are listed on both the World Heritage and National Heritage listings (UNESCO World Heritage Convention n.d.):

- *The authenticity of the natural and Aboriginal cultural heritage values of the Willandra has been established in the first instance, in a western or European cultural sense, by rigorous scientific investigation and research by leading experts in their fields. Researchers have established the great antiquity and the richness of Aboriginal cultural heritage at Willandra which brought about a reassessment of the prehistory of Australia and its place in the evolution and the dispersal of humans across the world.*
- *For the Traditional Tribal Groups (TTGs) that have an association with the area there has never been any doubt about the authenticity of the Willandra and any particular sites it contains. The TTGs have maintained their links with the land and continue to care for this important place and participate in its management as a World Heritage property. Aboriginal people of the Willandra take great pride in their cultural heritage and maintain their connection through modern day cultural, social and economic practices.*

Additionally, the WLWHA and WLRNHP possess outstanding scientific and archaeological values, including the evidence of human occupation of Australia dating to 42000 years before the present (BP) years ago. [REDACTED]

Aboriginal people living in the area today affirm and continue their connection to their ancestors, culture and Country, through both ongoing traditions and the management of WLWHA and WLRNHP properties via the Community Management Council, Technical and Scientific Advisory Committee, Elders Council of Traditional Tribal Groups and Landholders Protection Group to input advice on the management of the World Heritage Area (UNESCO World Heritage Convention n.d.).

4.3. PREVIOUS ARCHAEOLOGICAL WORK

The material evidence of Aboriginal land-use has been compiled based upon a review of previous archaeological studies at a regional and local level, heritage database searches and field investigations.

4.3.1. REGIONAL ARCHAEOLOGICAL CONTEXT

REPORT ON AN ARCHAEOLOGICAL SURVEY IN THE MURRAY VALLEY, NEW SOUTH WALES – 1973-1974

The overall purpose of this study was to record as many Aboriginal sites as possible so that they could be added to the NPWS Register of Aboriginal Sites and ensure that those requiring protection were protected. The survey conducted covered a 30-mile (48.28 km) length of the northern bank of the Murray River between Albury and Mildura and sampling of an area of 16,000 square miles (4,143,981 ha) (Buchan 1974:1).

The survey was conducted on selected sites, as the whole area could not be subjected to a full archaeological survey. The 5 areas chosen covered approximately 300 square miles (77,699.6 ha). These sites were centred on Deniliquin, Swan Hill, Corowa, Wentworth, and Hay. Some sites outside these study areas were made known to the survey team by local landowners. The survey located 198 sites, which included ovens, scarred trees, shell middens, surface campsites, [REDACTED] ceremonial sites, and archaeological deposits. Most of the sites were located in the Deniliquin survey area (86 sites). Twenty-five sites were recorded within the Wentworth area, 18 at Swan Hill, 6 at Hay, and only 4 around Corowa. Fifty-eight sites were recorded outside these areas (Buchan 1974:39).

Throughout this study, it was observed that:

- Nearly half of the sites (n=94) located during the survey were oven mounds identified in association with water sources. Oven sizes ranged from 1 m in diameter to 100 mm high to as large as 120 m in diameter and 2 m high. Oven mound sites commonly consisted of multiple oven features ranging from 2 or 3 mounds up to 50 or 60. Oven mounds contain baked clay, shell fragments, charcoal, stone artefacts, and animal and/or human bone with the possibility of a [REDACTED].
- Scarred trees (n=76) were the second most common site recorded.
- All 8 middens contained stratified deposits of freshwater mussels with small amounts of freshwater deposits. Charcoal was located throughout the extent of the middens, and other materials such as animal and human bone were found within the middens. The length of midden sites ranged from 15 to 650 m with widths ranging from 2 to 60 m. The thickness of midden deposits averaged between 200 and 300 mm.

- Two suspected ceremonial sites were located during the survey: one within the Corowa survey area, on Goombargana Hill, and the other, Buronga, which had been destroyed before the survey.
- One archaeological deposit could not be identified as any particular site type. The site is a stratified deposit containing burnt clay, charcoal, bone, and worked stone.

These sites were located across 10 landforms that are summarised in Table 4.1 (Buchan 1974:48).

Table 4.1 Topographic locations of sites

Site Type	Creek	River	Lake	Lagoon	Swamp	Dune	Hi top	Rock Outcrop	Stream	Open	Total
Oven	68	10	-	-	11	-	-	-	-	5	94
Scarred Tree	25	18	17	3	2	-	-	-	-	11	76
Shell Midden	1	6	-	1	-	-	-	-	-	-	8
Surface Campsite	3	-	-	-	-	6	-	1	2	-	12
██████	█	█	█	█	█	█	█	█	█	█	█
Ceremonial Site	1	-	-	-	-	-	1	-	-	-	2
Archaeological Deposit	-	-	-	-	-	-	-	-	1	-	1
Total	99	34	17	4	13	9	1	1	4	17	198

NSW NATIONAL ESTATE GRANTS PROGRAM 1987/88 (STATE FORESTS OF NSW): MURRAY-MURRUMBIDGEE ABORIGINAL SURVEY – LAKE VICTORIA AND KOONDROOK STATE FORESTS

This project aimed to provide a complete record of Aboriginal sites and develop a predictive model for the areas around Koondrook and Lake Victoria state forests. This was achieved through an assessment of available data from previously recorded sites and the results of a survey that was conducted. The paper recognises that the courses of regional waterways have extensively changed since the region was first inhabited. The desktop analysis and survey identified 6 archaeologically sensitive landforms including floodplains, levees/point bars, ephemeral creeks, lagoons, river margins, and sand dunes. It was identified that certain site types were associated with particular landforms as shown in Table 4.2 (Bonhomme 1993:12).

Table 4.2 Archaeological sensitivity of Lake Victoria Study Area

Landform	Site Type	Sensitivity
Floodplain	Scarred Trees	Low
Levees/Point Bar	None	Low
Ephemeral Creeks	Mounds, Scarred Trees	Medium
██████	████████████████████ ████████████	██████████
River Margins	No Sites	Medium/High
██████████	████████████████████ ██████████	████

The study describes the types of Aboriginal archaeological sites located within the Riverine Plains. The sites that have been identified as being a part of this archaeological landscape are described as:

- Surface artefact scatter: these sites are habitation areas or special activity areas that could have been used over short or long periods of time. The difference between the 2 surface artefact scatters is the type of material identified at the site, with habitation areas containing a variety of materials, whereas special activity areas only contain material relating to one activity. Usually, only lithic artefacts are present due to poor preservation of organic material. Usually found on level ground close to freshwater sources.
- Shell middens: are usually found close to sources of freshwater shellfish and are usually formed from the deposition of freshwater mussels. Bones of fish and terrestrial animals can also be identified with middens. They are commonly around the margins of lakes and swamps and along river and creek banks.
- Fish weirs: on the Murray River floodplain, they are recorded as being made of earth by Curr (Curr 1886 in Bonhomme 1993, p. 21).
- Mounds (oven mounds): common throughout the Murray River Valley, formed by use as an oven, and identifiable through the presence of clay heat retainers. They may also be the location of a structure or [REDACTED] They can be found across multiple types of landforms and may include small quantities of shell, bone, and stone artefacts. There are 2 described types of mounds: Mound A, which is compact with dark silty soil matrices that contain additional cultural material, and Mound B, a soft mound that contains large amounts of other cultural material in a dispersed silty matrix. Both types of mounds contain clay heat retainers.
- Scarred trees: trees that have had their bark used as a material to create canoes, shields, or different types of containers. The process of harvesting the bark causes a scar as the tree heals. The number of scarred trees would have been associated with areas with dense populations, though many have been removed by logging activities.
- Pathways (native tracks): described by early European explorers but are no longer observable.
- [REDACTED]
- Ceremonial grounds: locations used as meeting places or ceremonial grounds for initiations and other sacred practices. Knowledge about these places and their purpose is kept within the Aboriginal community.
- Natural sacred sites: landforms that hold great importance to the Aboriginal people and often do not contain any material evidence.
- Contact and historical sites: locations, such as mission sites, cemeteries, and fringe camps, were the result of Aboriginal people's contact with Europeans.

The above site types may all be found in the Riverine Plains region. [REDACTED]

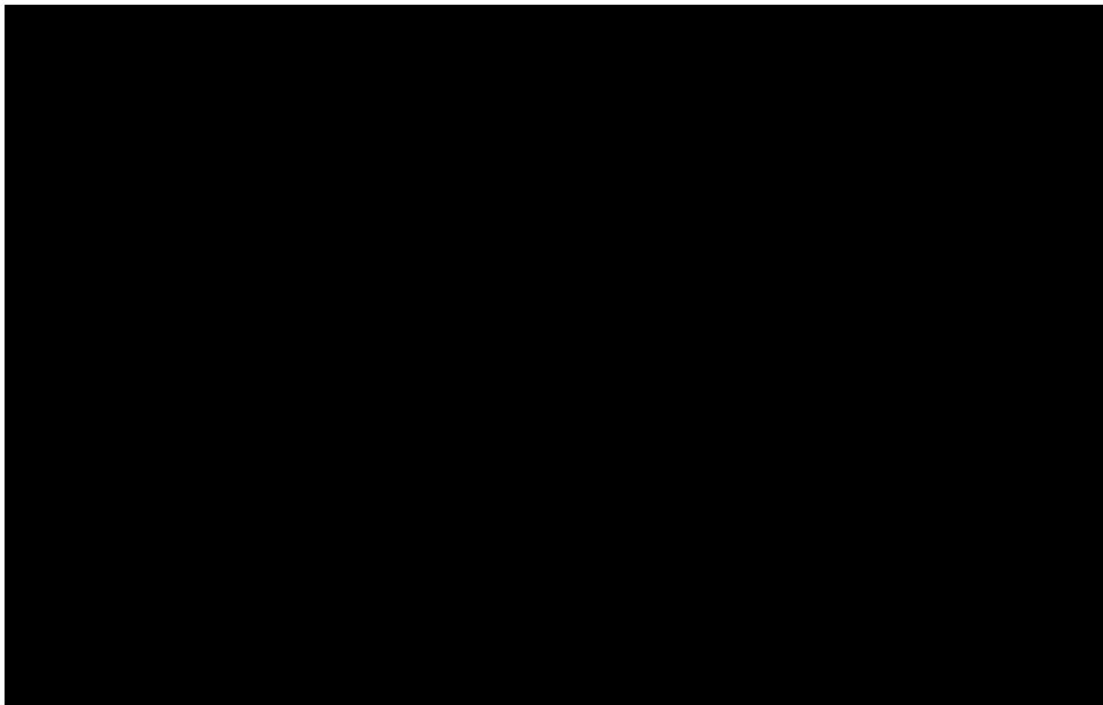
EAST AND WEST: [REDACTED] ALONG MURRAY RIVER

In 1999 Littleton examined the variation of [REDACTED] along the Murray River using data from a variety of sources such as the NSW NPWS Register of Aboriginal Sites, analysis of Victorian [REDACTED] by Russell in 1990, surveys conducted by Pardoe, and the author's own fieldwork and published sources. The

[REDACTED] [REDACTED]
[REDACTED] [Littleton 1999, p.2]. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]
[REDACTED]
[REDACTED]
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[REDACTED]
[REDACTED]
[REDACTED]



Regional Variation of the Archaeology in Western New South Wales

This report focused on the variation in Aboriginal archaeology of Western New South Wales and demonstrated by the differences in stone artefacts that are found in open campsites. The report focuses on the following regions: Southwestern Slopes Region, Barwon Basin Region, Cobar Plateau Region, Riverine Plain Region, Darling Plains Region, Northwestern Plains and Ranges Region, Barrier Ranges Region and Strzelecki Dune Field Region. Witter (2004, p. 131), states that 'a major source of variation is the type and abundance of stone materials'. Silcrete was noted to be the most common material with quartz being the second most common.

Witter (2004) concluded that every region can be characterised by certain features that are linked to the condition of the landscapes. Certain regions such as North-Western Plains and Ranges region and the Strzelecki Dune Field Regions had flaked stone artefacts that would present with resharpening due to the materials not being present within the region. Barwon Basin Region is characterised by a small adze-type tool that is made entirely from a pebble that is distinct to the region and open campsites are usually away from stream channels. The Riverine Plain and Darling Plains regions both lack raw materials therefore the stone artefacts found are generally small and sacred, [REDACTED]

[REDACTED]. Both regions are characterised by having hearths with fired clay balls which indicates open campsites.

Southwestern Slopes Region is characterised by quartz artefacts and are extremely common which indicates that occupation occurred over the entire region. The Cobar Plateau Region is remarkable compared to the other regions due to its abundance of grinding gear, hearths and a wide variety of flaked stone implements. Barrier Ranges region campsites are characterised as having artefacts made predominately of quartz and have engraved rock art sites with a large number of motifs.

Witter argues that the degree to which artefacts remain in the soil is directly related to the stability of the land. If hearths are discovered still buried this indicates that little or no land disturbance has occurred, whereas if a hearth is spread or scattered this indicates highly disturbed and the land surface has been lowered 30cm or more below the original ground level (Witter 2004:146).

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT: GINKGO MINERAL SANDS MODIFICATION PROJECT “CRAYFISH DEPOSIT,” NEAR POONCARIE, N.S.W

In 2012, Niche Environment and Heritage was engaged by Cristal Mining Australia Limited to undertake an ACHA and examined an 850 ha study area on Lot 4735 DP 767963, approximately 77.78 km north of the current study area. The study area was located in the South Olary Plain, Murray Basin Sands subregion of the Murray Darling Depression IBRA bioregion. Four land systems were identified: Arumpo, Bulgamura, Overnewtyn and Trelega land systems. Landforms included dune fields and sandplains.

An AHIMS search was conducted on 2 December 2011 (AHIMS search ID #57952) that covered an area of 32 km by 56 km to cover the study area. This search revealed that there were no previously recorded sites within the study area. However, AHIMS searches of the wider landscape surrounding the proposed Ginkgo Modification Mine show that there are 102 sites recorded surrounding the area. Thirty-three of these sites are located within the existing Ginkgo mine, with isolated artefacts being the most common site (n=20, 73.17%). These sites were located on dunes (n=10, 24.39%) and plains (n=9, 21.95%).

Niche Environment and Heritage (2012) discovered 7 archaeological sites during field surveys undertaken between 10th April to the 14th April 2012 and 20th June to the 21st June 2012. The survey identified 7 new Aboriginal sites within the study area. The Aboriginal sites that were identified during the field surveys are shown below in Table 4.3.

Table 4.3 Archaeological sites and their features and landforms

Site name	Features	Landform
Crayfish 1	Artefact (Isolated find)	Depression
Crayfish 2	Artefact (Scatter)	Depression
Crayfish 3	Artefact (Isolated find)	Depression
Crayfish 4	Artefact (Isolated find)	Depression
Crayfish 5	Artefact (Isolated find)	Depression
Crayfish 6	Artefact (Scatter)	Depression
Crayfish 7	Scar Tree	Depression

The artefacts included sandstone mullers, silcrete medial flakes and silcrete core tools.

The authors concluded that the Ginkgo area has some social significance as the area is within proximity to the Pooncarie Mission and to the rivers and lake systems of the Darling River. It was recommended that an Aboriginal Cultural Heritage Management Plan (ACHMP) be developed in order to formally protect the Aboriginal sites identified during the field surveys.

4.3.2. HERITAGE DATABASE SEARCH

A search of the Heritage NSW AHIMS database was undertaken on 12 March 2024 (Client Service ID 872664). The results from the AHIMS search identified 93 previously recorded sites within a 25-km radius of the Project Area. An updated search was undertaken on 13 January 2026 (Client Service IDs 1081468 and 1081469), which identified 131 previously recorded sites within a 25-km radius of the middle of the Project Area. These updated search results are reflected in Table 4.4, Figure 4.5 and Figure 4.6.

The search indicates that modified trees are the predominant site type, with over 49.46% of known sites belonging to this category. As this AHIMS search was undertaken following the first archaeological survey, the archaeological sites that were identified during the first survey are included in this search. A summary of Aboriginal heritage sites within 25 km of the Project Area is included in Table 4.4.

Table 4.4 Summary of sites recorded within a 25 km radius of the Project Area

Site type	Occurrence	Frequency (%)
Modified Tree	50	38.17%
Artefact	44	33.59%
Hearth	14	10.69%
Shell	8	6.11%
Artefact, Shell	3	2.29%
PAD	2	1.53%
██████	█	██████
Earth Mound	1	0.76%
Artefact, Hearth	1	0.76%
██████████	█	██████
Artefact, PAD, Shell	1	0.76%
██████████	█	██████
Artefact, Hearth, Modified Tree, Shell	1	0.76%
Artefact, Hearth, Shell	1	0.76%
██████████	█	██████
Grand Total	131	100.00%

Modified trees are the most prominent feature located within the vicinity of the Project Area. They comprise 50 (38.17%) of the 131 sites. Sites that only contain artefacts from just over 33.59% (n=44) of the recorded sites within the area. Sites containing hearths only comprise 10.69% (n=14) while shell represent 6.11% (n=8) of sites. Shell, artefact sites represent 2.29% (n=3), PAD and ██████ only sites each represent 1.53% (n=2) of the registered sites. The rest of the sites, earth mound, artefact with hearth, artefact with hearth and shell, artefact with hearth, shell and modified tree, ██████ with artefact and shell, ██████ with shell, ██████ with artefact and hearth, and artefacts with PAD and shell all occur once throughout the 25-km search, representing a total of 6.08% (n=1, 0.76% ea.) of the total registered sites. Most of these sites are located to the southwest of the Project Area toward the Murray River and in areas where residential development has occurred, including near the townships of Gol Gol and Buronga.

A review of the AHIMS listings indicates that there are no duplicated records but it should be noted that a site that was identified to be in the Project Area has been incorrectly mapped. The site card for C1 River Margin (AHIMS# 46-1-0105) places the site 100 km to the west of its location provided by AHIMS. For the purpose of Figure 4.5 and Table 4.5, it is assumed that the correct coordinate system has been registered for the remaining sites. Table 4.6 shows the disparity of the GPS coordinates provided by AHIMS and the correctly identified locations. The site cards for these sites will be updated to provide the correct locations.

Table 4.5 Summary of sites recorded within the Project Area and adjacent

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
PED-W-135	46-3-0206	Artefact	Sandplain	Lot 2, DP 1233260
PEC-W-217	46-3-0221	Hearth	Sandplain	Lot 2, DP 1233260
PEC-W-216	46-3-0222	Hearth	Sandplain	Lot 2, DP 1233260
C1 River Margin*	46-1-0105	Artefact, Shell	Sandplain	Lot 7, DP 1256363
Mallee Windfarm ISO2**	46-3-0230	Artefact	Sandplain	Within Project Area Lot, 1726 DP 763664
Mallee Windfarm ISO1**	46-3-0229	Artefact	Sandplain	Within Project Area Lot, 1726 DP 763664
██████████**	46-3-0227	██████████	██████████	██████████
Mallee Windfarm AS1**	46-3-0228	Artefact	Sandplain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm HR1**	39-6-0101	Hearth	Sandplain	Within Project Area Lot, 3805 DP 763156
Mallee Windfarm HR10**	46-3-0241	Hearth	Dune	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm HR11**	46-3-0243	Hearth	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm HR2**	39-6-0103	Hearth	Dune	Within Project Area Lot, 3805 DP 763156
Mallee Windfarm HR3**	39-6-0104	Hearth	Dune	Within Project Area Lot, 3805 DP 763156
Mallee Windfarm HR4**	46-3-0237	Hearth	Dune	Within Project Area Lot, 3805 DP 763156
Mallee Windfarm HR5**	46-3-0238	Hearth	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm HR6**	47-1-0072	Hearth	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm HR7**	46-3-0239	Hearth	Plain	Within Project Area Lot, 1726 DP 763664

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
Mallee Windfarm HR8**	46-3-0240	Hearth	Plain	Within Project Area Lot, 1726 DP763664
Mallee Windfarm HR9**	46-3-0242	Hearth	Dune	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO10**	47-1-0069	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO11**	47-1-0070	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO12**	47-1-0071	Artefact	Dune	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO13**	46-3-0233	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO14**	46-3-0234	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO15**	46-3-0235	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO10**	47-1-0069	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO11**	47-1-0070	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO12**	47-1-0071	Artefact	Dune	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO13**	46-3-0233	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO14**	46-3-0234	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO15**	46-3-0235	Artefact	Plain	Within Project Area Lot, 1726 DP763664
Mallee Windfarm ISO3**	39-6-0102	Artefact	Flat	Within Project Area Lot, 3805 DP 763156
Mallee Windfarm ISO4**	46-3-0232	Artefact	Flat	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO5**	47-1-0064	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO6**	47-1-0065	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO7**	47-1-0067	Artefact	Plain	Within Project Area

Name	AHIMS No.	Type	Location Landform	Cadastral Boundary
				Lot, 1727 DP 763667
Mallee Windfarm ISO8**	47-1-0066	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm ISO9**	47-1-0068	Artefact	Plain	Within Project Area Lot, 1727 DP 763667
Mallee Windfarm PAD**	46-3-0236	PAD	Dune	Within Project Area Lot, 1727 DP 763667
Dansons Road CMT1	46-3-0250	Modified tree	Sandplain	Within Project Area Lot 7, DP125636
Dansons Road CMT2	46-3-0251	Modified tree	Sandplain	Within Project Area Lot 7, DP125636
Dansons Road CMT3	46-3-0254	Modified tree	Sandplain	Within Project Area Lot 7, DP125636

**Incorrect coordinates provided; Cadastral boundary incorrect **Recorded during project Survey*

Table 4.6 Disparity in AHIMS location data

Name/AHIMS No.	AHIMS GPS Coordinate	Correctly Identified Coordinate	Disparity
C1 River Margin (46-1-0105)	AGD Zone 54 Easting 629460 6225232 Northing	GDA Zone 54 Easting 529400 6225200 Northing	Approximately 100 km to the west

4.3.3. LOCAL ARCHAEOLOGICAL CONTEXT

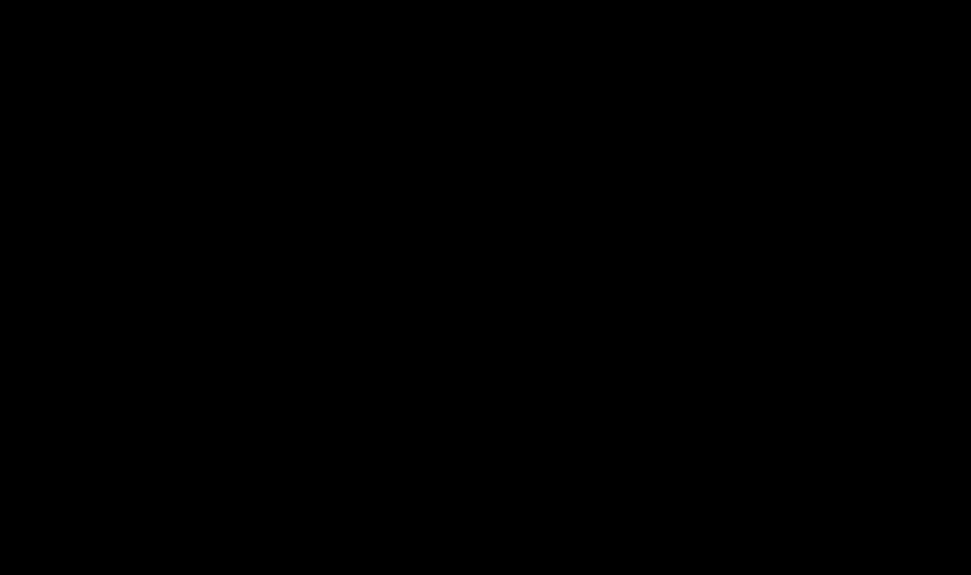
The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry. However, with the recent development within the area, archaeological investigations have increased accordingly.

A large volume of studies has been completed in the region, as such, this section presents a synopsis of selected archaeological investigations of direct relevance to the Project Area. These reports have been selected based on their landform context, proximity, and particularly the locality. The reports that have been reviewed are detailed in Table 4.7 and their location in relation to the Project Area is provided in Figure 4.8.

Table 4.7 Reports selected for review as part of local archaeological context

Author	Date	Relevance to Project Area	Type of assessment	Distance to Project Area
Clark	1983	<u>The Snaggy Bend</u> [REDACTED] [REDACTED] [REDACTED] <u>Wentworth, NSW</u> – [REDACTED] [REDACTED]	Investigation	[REDACTED] [REDACTED]
Pardoe	1988	<u>The Mallee Cliffs</u> [REDACTED] (Central River Murray) and <u>Population Based Archaeology</u> – This report was conducted approximately [REDACTED] [REDACTED]	Survey	[REDACTED] [REDACTED]
Bonhomme	1990	<u>Aboriginal Burials and Sand Mining on</u> [REDACTED] [REDACTED] [REDACTED]	Archaeological report	[REDACTED] [REDACTED]
Archaeological Consulting Services	2000	<u>Wentworth Levees Heritage Assessment Supplementary Report</u> – A heritage assessment was conducted approximately 37 km to the west of the Project Area.	Survey	37 km to the west
Navin Officer Heritage Consultant	2008	<u>Buronga Peaking Power Plant Project: Cultural Heritage Assessment</u> – A cultural heritage assessment was conducted approximately 25 km to the west of the current Project Area.	Survey	25 km to the west
OnSite Cultural Heritage	2017	<u>Due Diligence for the Protection of Aboriginal Objects: Proposed Construction of Conservation Fencing and Associated Infrastructure, Mallee Cliffs National Park</u> – A Due Diligence assessment was conducted approximately 41.9 km east of the Project Area.	Survey	41.9 km to the east
JACOBS	2019	<u>Environmental Scoping Report Energy Connect (NSW-Western Section): Appendix B Preliminary Archaeological Assessment</u> – This assessment passed 10 km north of the Project Area.	Desktop Assessment	10 km to the north
Landskape	2021	<u>Aboriginal Cultural Heritage Assessment: Buronga Landfill Expansion</u> – This study was conducted 16.4 km south west of the Project Area.	Survey	16.4 km to the south-west
Everick Heritage	2022	<u>Aboriginal Cultural Heritage Strategy: EnergyConnect (NSW – Western Section)</u> – This study passed through the south-west corner of the current Project Area.	Survey	Within the Project Area

Country	Year	Population (millions)	Urban population (millions)	Urban population (% of total)
Algeria	2000	24.1	10.1	41.9
Algeria	2001	24.3	10.3	42.4
Algeria	2002	24.5	10.5	42.9
Algeria	2003	24.7	10.7	43.3
Algeria	2004	24.9	10.9	43.8
Algeria	2005	25.1	11.1	44.2
Algeria	2006	25.3	11.3	44.7
Algeria	2007	25.5	11.5	45.1
Algeria	2008	25.7	11.7	45.5
Algeria	2009	25.9	11.9	45.9
Algeria	2010	26.1	12.1	46.3
Algeria	2011	26.3	12.3	46.8
Algeria	2012	26.5	12.5	47.2
Algeria	2013	26.7	12.7	47.6
Algeria	2014	26.9	12.9	47.9
Algeria	2015	27.1	13.1	48.3
Algeria	2016	27.3	13.3	48.7
Algeria	2017	27.5	13.5	49.1
Algeria	2018	27.7	13.7	49.5
Algeria	2019	27.9	13.9	49.8
Algeria	2020	28.1	14.1	50.2
Algeria	2021	28.3	14.3	50.5
Algeria	2022	28.5	14.5	50.9
Algeria	2023	28.7	14.7	51.2
Algeria	2024	28.9	14.9	51.5
Algeria	2025	29.1	15.1	51.9
Algeria	2026	29.3	15.3	52.2
Algeria	2027	29.5	15.5	52.6
Algeria	2028	29.7	15.7	52.9
Algeria	2029	29.9	15.9	53.2
Algeria	2030	30.1	16.1	53.5
Algeria	2031	30.3	16.3	53.8
Algeria	2032	30.5	16.5	54.1
Algeria	2033	30.7	16.7	54.4
Algeria	2034	30.9	16.9	54.7
Algeria	2035	31.1	17.1	55.0
Algeria	2036	31.3	17.3	55.3
Algeria	2037	31.5	17.5	55.6
Algeria	2038	31.7	17.7	55.9
Algeria	2039	31.9	17.9	56.2
Algeria	2040	32.1	18.1	56.5
Algeria	2041	32.3	18.3	56.8
Algeria	2042	32.5	18.5	57.1
Algeria	2043	32.7	18.7	57.4
Algeria	2044	32.9	18.9	57.7
Algeria	2045	33.1	19.1	58.0
Algeria	2046	33.3	19.3	58.3
Algeria	2047	33.5	19.5	58.6
Algeria	2048	33.7	19.7	58.9
Algeria	2049	33.9	19.9	59.2
Algeria	2050	34.1	20.1	59.5
Algeria	2051	34.3	20.3	59.8
Algeria	2052	34.5	20.5	60.1
Algeria	2053	34.7	20.7	60.4
Algeria	2054	34.9	20.9	60.7
Algeria	2055	35.1	21.1	61.0
Algeria	2056	35.3	21.3	61.3
Algeria	2057	35.5	21.5	61.6
Algeria	2058	35.7	21.7	61.9
Algeria	2059	35.9	21.9	62.2
Algeria	2060	36.1	22.1	62.5
Algeria	2061	36.3	22.3	62.8
Algeria	2062	36.5	22.5	63.1
Algeria	2063	36.7	22.7	63.4
Algeria	2064	36.9	22.9	63.7
Algeria	2065	37.1	23.1	64.0
Algeria	2066	37.3	23.3	64.3
Algeria	2067	37.5	23.5	64.6
Algeria	2068	37.7	23.7	64.9
Algeria	2069	37.9	23.9	65.2
Algeria	2070	38.1	24.1	65.5
Algeria	2071	38.3	24.3	65.8
Algeria	2072	38.5	24.5	66.1
Algeria	2073	38.7	24.7	66.4
Algeria	2074	38.9	24.9	66.7
Algeria	2075	39.1	25.1	67.0
Algeria	2076	39.3	25.3	67.3
Algeria	2077	39.5	25.5	67.6
Algeria	2078	39.7	25.7	67.9
Algeria	2079	39.9	25.9	68.2
Algeria	2080	40.1	26	



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

THE MALLEE CLIFFS [REDACTED] (CENTRAL RIVER MURRAY) AND POPULATION BASED ARCHAEOLOGY

[REDACTED]

[REDACTED]

[REDACTED]

ABORIGINAL [REDACTED] AND SAND MINING ON THE RIVERINE PLAIN NSW

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

WENTWORTH LEVEES HERITAGE ASSESSMENT SUPPLEMENTARY REPORT

Archaeological Consulting Services (2000) was engaged by Wentworth Shire Council to prepare a heritage assessment supplementary report for the upgrade of a levee system around the township of Wentworth in 2000. A new borrow area was proposed for the construction of this levee system.

Archaeological Consulting Services conducted a pedestrian survey of the proposed borrow area and identified the main landform to be an open floodplain with a slightly elevated box plain in the northern sector. The survey identified one isolated silcrete flake on the box plain landform.

The site, named Wentworth Levee 9, was determined to have low scientific significance, and it was recommended that a 20-m buffer zone be placed between the artefact and any borrowing activity to occur within the study area.

BURONGA PEAKING POWER PLANT PROJECT, BURONGA, NSW

International Power (Australia) engaged Navin Officer Heritage Consultants Pty Ltd (2008) to conduct a Cultural Heritage Assessment located in Buronga. This CHA includes both Aboriginal Cultural Heritage and Non-Aboriginal Heritage and was prepared for the construction of the proposed Peaking Power Plant. The Peaking Power Plant is located in the Murray Darling Basin.

The 4-hectare area of the proposed peaking plant is characterised by a small sand dune on the western side and a higher, more substantial dune on the eastern side.

A pedestrian survey was conducted, which covered approximately 10ha of the proposed development area. The study area consists of high and low dunes as well as flat landforms. The survey identified no Aboriginal sites or European sites.

DUE DILIGENCE ASSESSMENT FOR THE PROTECTION OF ABORIGINAL OBJECTS – PROPOSED CONSTRUCTION OF CONSERVATION FENCING AND ASSOCIATED INFRASTRUCTURE, MALLEE CLIFFS NATIONAL PARK, NSW

On Site Cultural Heritage Management Pty Ltd (2017) was engaged by the NSW Government and Australian Wildlife Conservancy to undertake a due diligence assessment for the proposed construction and operation of the conservation fencing and associated infrastructure. A pedestrian survey was conducted and a total of 41.9 km was surveyed along the proposed fence line.

The survey identified no Aboriginal Sites or PADS. The authors noted that there was an absence of stone across the study area. They concluded that due to the lack of permanent water sources, the occupation level for the study area was slim and that there was a low archaeological potential for the study area.

PRELIMINARY ARCHAEOLOGICAL ASSESSMENT REPORT: PROJECT ENERGYCONNECT

Jacobs Group (Australia) Pty Ltd (2019) was engaged by TransGrid to prepare a preliminary archaeological assessment for the proposed Project EnergyConnect. The proposed development includes 160 km of cable to connect the NSW – South Australian border at Red Cliffs substation (Victoria), structure pads, access tracks, laydown areas, borrow pits and camps associated with the construction. This preliminary archaeological assessment consists of a desktop assessment and predictive modelling.

An extensive search of AHIMS was undertaken on 9 November 2018 and 25 January 2019, which identified the following 489 previously recorded Aboriginal sites along the study area Table 4.8.

Table 4.8 Registered AHIMS identified by Jacobs

Site type	Occurrence	Frequency
Multiple Artefacts	77	15.75%
Modified Trees	73	14.93%
Middens	54	11.04%
Isolated Artefacts	52	10.63%
Undefined Entries	31	6.34%
Hearths	26	5.32%
Site Complexes	13	2.66%
Artefact, Midden,	10	2.04%
Hearth, Artefacts	10	2.04%
Hearth, Midden	7	1.43%
Open Camp Site	6	1.23%
Midden, Artefacts	5	1.02%
Campsite,	3	0.61%

Site type	Occurrence	Frequency
Earth Mound	3	0.61%
Potential Archaeological Deposit (PAD)	3	0.61%
Ceremonial Site	1	0.20%
Midden, [REDACTED]	1	0.20%
PAD, Artefact, Hearth and Midden	1	0.20%
Quarry	1	0.20%
Resource and Gathering Site	1	0.20%
Grand Total	489	100%

The most common site identified through AHIMS along the study area was [REDACTED]. The second most common site is artefacts (n=77) followed closely by culturally modified trees (n=72). Undefined entries and hearths represent 31 and 26 sites respectively, Artefact, Midden, [REDACTED] and Hearth, Artefact account for 10 sites. Campsites with [REDACTED], earth mounds and PADs represent 0.61% (n=3) of the total sites. Ceremonial sites, resource and gathering sites, midden with [REDACTED] and PAD, artefact hearth and midden only account for 0.20% of the total sites recorded.

A search of the Aboriginal Cultural Heritage Register and Information System (ACHRIS), the Victorian equivalent of AHIMS, was conducted on 24 April 2019 based within Red Cliffs and its vicinity. This search identified 55 previously recorded sites in the Red Cliffs region (Table 4.9).

Table 4.9 Registered ACHRIS sites identified by Jacobs

Site features	Occurrence	Frequency
Earth Features	19	34.55%
Midden	15	27.27%
Low Density Artefact Distributions (LDAD)	10	18.18%
Artefact Scatter	7	12.73%
Scarred Trees	2	3.64%
[REDACTED]	1	1.82%
Object Collection	1	1.82%
Grand Total	55	100%

The search of ACHRIS shows that the most common site found within Red Cliffs and the Victorian portion of the study area is earth features (n=19, 34.55%). Middens represent 27.27% (n=15) of the total sites recorded, followed by LDADs at 18.18% (n=10). Artefact Scatters represent a total of 7 sites recorded. Scar trees represent 3.64% (n=2) of the total sites and [REDACTED] as well as Object Collection both equal 1 site each (1.82%). This information indicates that earth features have a high potential of occurring in the study area.

Jacobs identified that the study area covered 14 land systems and predicted that 6 of those landforms have low potential, 5 landforms have a moderate potential to contain archaeological deposits, and 3 landforms have high potential. The high potential landforms are Canally, which is characterised by sandplains and channels, Darling which is characterised as river/creek margins and floodplains and Roo Roo is characterised as sandy depressions. All landforms include permanent water sources and have sandy dunes or floodplains that were optimal resource and living conditions.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT: BURONGA LANDFILL EXPANSION

Landscape (2021) was engaged by the Wentworth Shire Council in 2021 to undertake an ACHA at 258 Arumpo Road, Buronga, NSW (Lot 197/DP756946 and Lot1/DP1037845). The ACHA was required to expand the municipal landfill within the 2 lots. Works included the development of new landfill cells, modified internal infrastructure and hardstands, and drainage works.

An archaeological survey was conducted, and 2 landforms were identified within the study area: sandplain and swale. Landscape identified that the surface visibility was excellent. Three previously unidentified isolated finds were discovered. These finds were isolated stone artefacts (Buronga Landfill Artefact 1-3; AHIMS site numbers 46-3-0203, 46-3-0204 and 46-3-0205). These stone artefacts were a silcrete flake, a broken sandstone muller and a silcrete angular fragment. The survey also identified one previously recorded archaeological site, Buronga Landfill Artefact Scatter (AHIMS # 46-3-0192). It was concluded that this site was at risk of a total loss of value if works were to continue and that Buronga Landfill Artefacts 1-3 were at no risk of harm, as they were located outside of the disturbance area.

ABORIGINAL CULTURAL HERITAGE STRATEGY: ENERGYCONNECT (NSW – WESTERN SECTION)

Everick Heritage (Pty Ltd) (2022) was engaged by SecureEnergy to conduct an Aboriginal Cultural Heritage Strategy for the western section of the EnergyConnect project in NSW in 2022. The Aboriginal Cultural Heritage Strategy was conducted to adhere to the Infrastructure Approval requirements put forward by the Minister for Planning and Public Spaces.

The report addressed the requirement to:

“Identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in condition D29 b) and surveys in condition D29 c) are complete” (Everick Heritage 2022:iii).

Everick Heritage provided methodologies for condition D29 b) and D29 c). These involved survey strategies, RAP communications, test excavation strategies, sampling strategies and post-excavation strategies.

ENERGYCONNECT (NSW – WESTERN SECTION): CULTURAL HERITAGE ASSESSMENT

Navin Officer Heritage Consultants (Pty Ltd) (2021) was engaged by WSP Australia (Pty Ltd) on behalf of TransGrid to prepare a Cultural Heritage Assessment Report for the construction and operation of Project EnergyConnect from SA, to NSW and Victoria. This report was part of the Environmental Impact Statement (EIS) for the proposed works.

Navin Officer conducted a field survey that identified 131 new Aboriginal archaeological sites and 28 PADs. A summary of the number and types of sites identified by Navin Officer in this field survey is included in Table 4.10.

Table 4.10 The site types and totals identified by Navin Officer (2021)

Type of sites	Frequency
Stone artefact scatters	34
Scarred trees	30
Isolated finds	29
PADs	28
Hearths	12
Artefact scatters/hearths	8
Shell middens	6
Artefact scatters/middens	6
Artefact scatters/middens/hearths	2
Isolated finds/middens	2
Post-contact artefact	1
Isolated find with hearth	1
Total	159

Ground surface visibility was noted to be average, and the landforms included alluvial flats, backflow/paleo flood channels, depressions, dry lake/basin, dune, dune/lunette (lake adjacent), floodplain, high bank (floodplain adjacent), low dune, river bank, undulating sandplain, and undulating sandplain north of Lake Victoria.

Navin Officer concluded that the study area had moderate to high local scientific significance. Mitigation measures were proposed for the protection of both Aboriginal and non-Aboriginal archaeological sites within the study area. These included consultation with the local Aboriginal community, pre-construction surveys with RAPs, test excavations in areas of moderate to high archaeological potential, surface collection of artefact scatters that will be directly impacted by the proposed works, examination of scarred trees by a qualified arborist, and the establishment of exclusion zones.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT: LOG BRIDGE ROAD WENTWORTH

Austral (2022) was engaged by GreenEdge Environmental on behalf of Wentworth Shire Council to undertake an ACHA at Log Bridge Road, Wentworth (Lot 7323/DP1174216) in 2022. The project works involved the grading of the existing dirt road, and the compaction and sealing of it with asphalt.

Austral conducted an archaeological survey that did not identify any new Aboriginal archaeological sites, however, 2 previously registered AHIMS sites were encountered; Thegoa 31 (AHIMS #46-2-0064) and Thegoa 41 (AHIMS #46-2-74). A significant level of disturbance was identified along Log Bridge Road, and the study area encompassed one landform unit: Murray Channels and Floodplains.

It was concluded that the study area had low archaeological potential due to the high levels of disturbance observed.

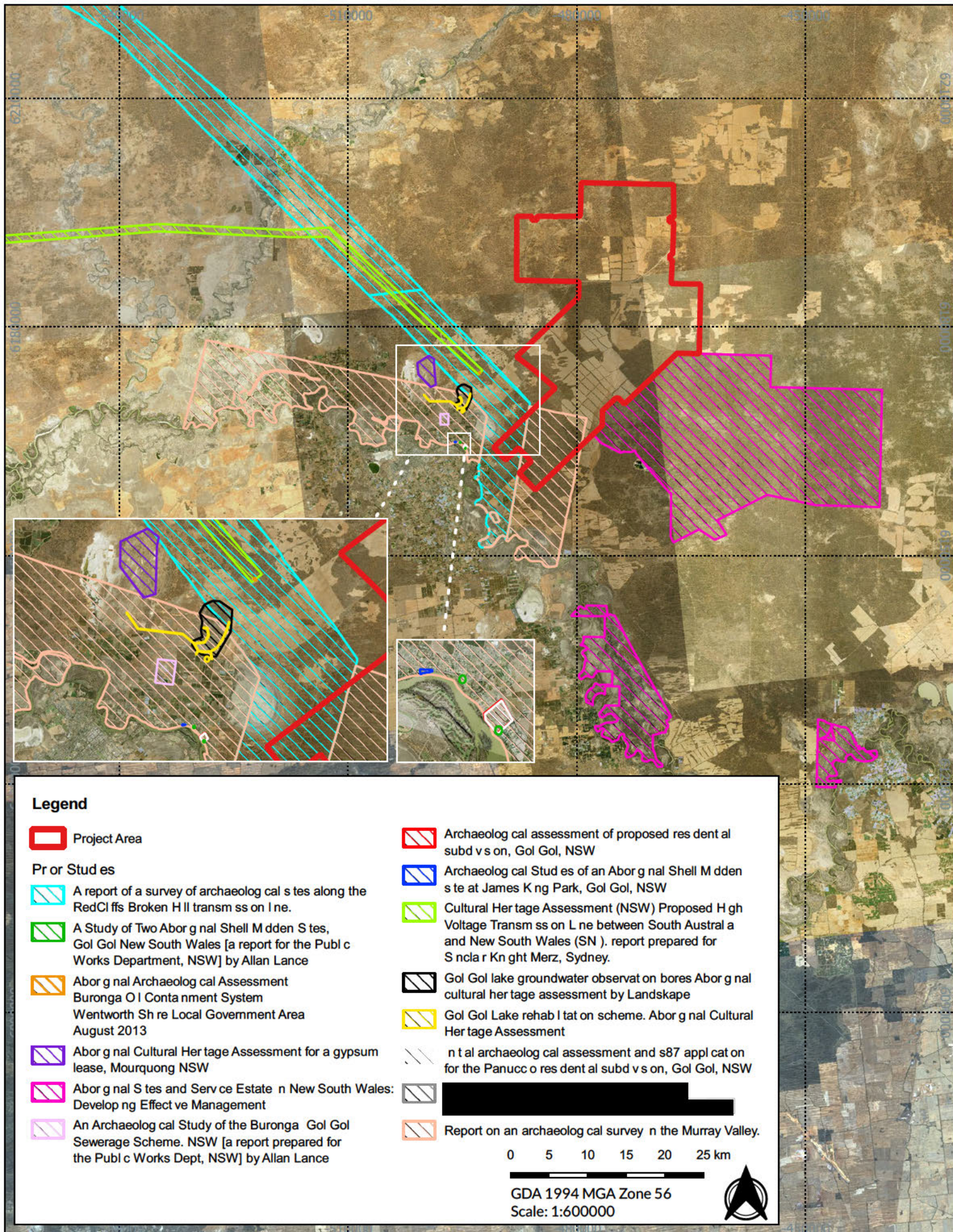


Figure 4.8 - Location of prior studies undertaken within 5 kilometres of the Project Area
22078 - Mallee Wind Farm - ACHA

5. PREDICTIVE MODEL

Austral has used the information produced as part of the archaeological and environmental context sections to formulate a broad predictive model that identifies the type and character of Aboriginal cultural heritage sites that may be present within the Project Area.

The predictive model is based upon the analysis of the following key variables:

- Relationship between site types and their spatial distribution within the landscape.
- Raw site types, raw material types and site densities and their relationship to salient environmental features.
- Information in ethnohistorical sources that may indicate important natural resources or landscape features that may have been exploited.
- Potential chronological and spatial relationships between sites

A predictive model has been developed based on the consideration of the variables outlined above that indicates the likely site types that will be encountered during the archaeological survey and archaeological testing.

5.1. ANALYSIS OF KEY VARIABLES

The AHIMS search that was completed for this Project on 12 March 2024 (Client Service ID 872664) has identified trends in Aboriginal site types and features within the region. As discussed in Section 4.3.2, a total of 93 Aboriginal archaeological sites were identified within a 25-km radius of the Project Area. The following analysis focuses on the individual archaeological site features from this AHIMS search.

Sites mostly only contain one cultural feature, with the highest number of features recorded at a site being 4. There is only 1 (1.1%) site that contains 4 features, which includes artefact hearth, shell and modified tree features. Most sites only contain 1 feature (n=85, 91.4%), with only 4 (0.43%) sites containing 2 features and 3 (3.2%) sites containing 3. The most recorded feature is modified trees (n=47, 44.3%) followed by artefacts (n=30, 28.3%). The artefact feature is mostly found in isolation but is also the most often identified with other features. Only one site that has multiple features has been identified without artefacts being identified. Other features that have also been identified in the region are shell deposits (n=15, 14.2%), hearths (n=7, 6.6%) and [REDACTED] earth mound and a PAD have been identified in the region and are the only features that have been found in isolation.

It should be noted that any analysis using AHIMS data will be prone to biases as it relates to sites that have been recorded over the past 40 years. During this time, varying methodologies have been used to identify sites and a large portion of the surrounding landscape may have been subject to limited or no assessment. Therefore, site distribution is likely to be reflective of survey methods and patterns and should not be considered a comprehensive list of all Aboriginal sites within a given region.

A summary of individual Aboriginal heritage site features within 25 km of the Project Area is included in Table 5.1.

Table 5.1 Summary of site features recorded within a 25 km radius of the Project Area.

Site features	Occurrence	Frequency
Modified Tree	47	44.3
Artefact	30	28.3
Shell	15	14.2
Hearth	7	6.6
█	█	█
Earth Mound	1	0.9
PAD	1	0.9
Total	106	100.0

5.1.1. SOIL LANDSCAPE

There are 9 Mitchell's landscapes located in the region surrounding the Project Area; however, only 4 landscapes contain sites. Sites are mainly located on the Murray channels and floodplains landscape (n=58, 62.4%), which is not the dominant landscape in the region. Only 2 of the 3 dominant landscapes in the region contain sites, which include the Mallee cliff sand plains (n=25, 26.9%) and Mallee Cliffs linear dunes (n=2, 2.2%). The other landscape that contains sites is the Murray lakes, swamps and lunettes (n=8, 8.6%), which is also located across a small section of the region. There is an obvious absence of sites within the dominant landscapes, especially considering the low number of sites in the Mallee Cliffs linear dunes landscapes. The Project Area also contains calcarosols and rudosols, according to the *Australian Soil Classification Third Edition* (Isbell 2021).

The 2 sites that are located on the Mallee Cliff linear dunes are both artefacts. The features that have been recorded on the Murray lakes, swamps and lunettes included artefacts, (n=4, 3.8%), shell deposits (n=2, 1.9%) and █ all of which are recorded as their own sites.

Figure 5.1 displays the distribution of sites across soil landscapes where they were located.

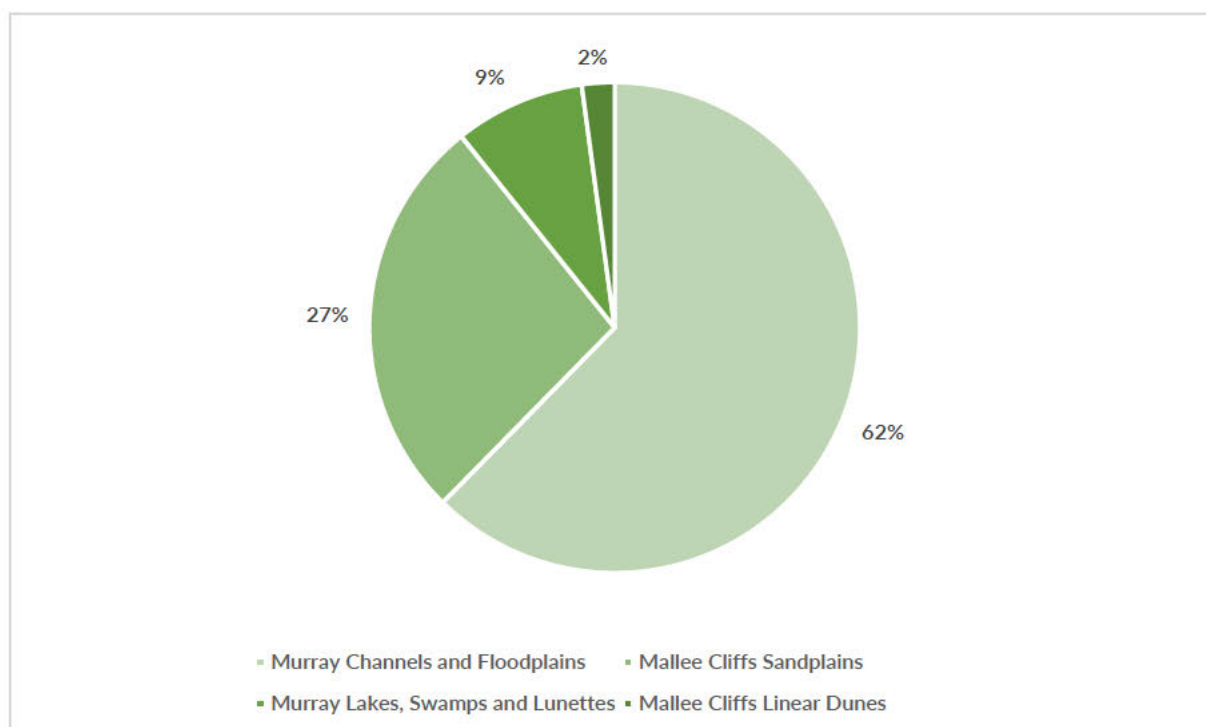


Figure 5.1 Distribution of sites across soil landscapes

MURRAY CHANNELS AND FLOODPLAINS

Despite having the highest number of sites and features, only 4 types of features have been recorded in the Murray channels and floodplains landscape. Modified trees (n=46, 43.5%) are the most common feature that is recorded in the landscape, with all but one modified tree recorded in this landscape. This high number of modified trees is most likely due to the landscape's association with the Murray River and its vegetation groups that contains tree species that are known to have been favoured for cultural modification. Artefact features are the second most common with there being 10 (9.4%) recorded in the region. The other features that have been identified in the Project Area are shell deposits (n=5, 4.7%) and hearths (n=3, 2.8%)

MALLEE CLIFFS SANDPLAINS

The Mallee Cliffs sandplains contain the greatest variety of features within the region. It includes the only recorded earth mound (n=1, 0.9%) and PAD (n=1, 0.9%) in the region. There is also 1 (0.9%) modified tree recorded within the landscape. The Mallee cliffs sand plains contain the highest recording of sites containing artefacts with there being 14 (13.2%) sites that contain artefacts as a feature. Similarly, the number of shell deposits (n=8, 7.5%), hearths (n=4, 3.8%) and [REDACTED] recorded in the landscape are the highest in the region.

Figure 5.2 displays the variations between the features that have been recorded on the Murray channels and floodplains and the Mallee Cliffs sandplains landscapes.

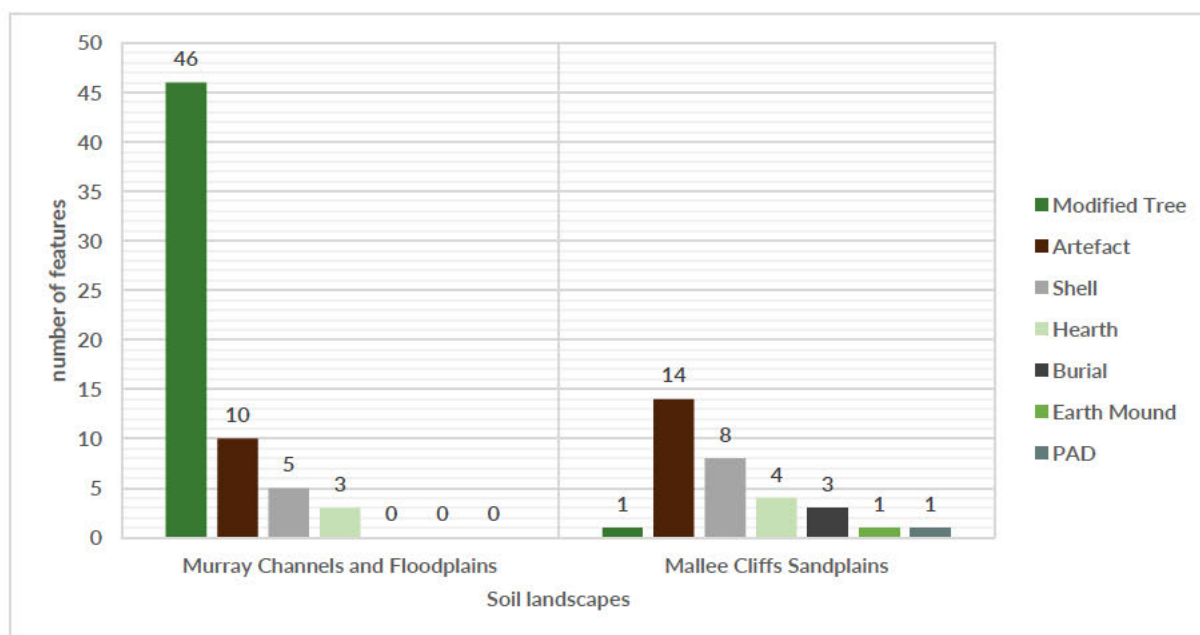


Figure 5.2 Distribution of cultural features across soil landscapes

5.1.2. GEOLOGY

The geological unit that dominates the region is the Woorinen formation, with there being a number of smaller geological units that are associated with the floodplains and lakes of the Murray and Darling rivers. As such most of the sites are recorded as being located on the Woorinen formation (n=75, 80.6%) followed by there being 10 (10.8%) sites located on Alluvial channel deposits - meander-plain facies. Sites are also located on Lake deposits (n=3, 3.2%), Alluvial valley deposits (n=2, 2.2%), Claypan and lacustrine deposits (n=2, 2.2%), and Alluvial channel deposits – subaqueous (n=1, 1.1%).

The site located on the Alluvial channel deposits – subaqueous contains both artefact and shell deposits. Of the 2 sites located on the Alluvial valley deposits, one contains shell deposits, and the other is a hearth. Each of the sites located on Claypan and lacustrine deposits contain 2 features, with one containing an artefact and a [REDACTED] and the other containing a [REDACTED] and shell deposits. The site in the lake deposits each contain one feature, with a modified tree, a shell deposit, and a [REDACTED].

Figure 5.3 displays the distribution of sites across geological units where they were located.

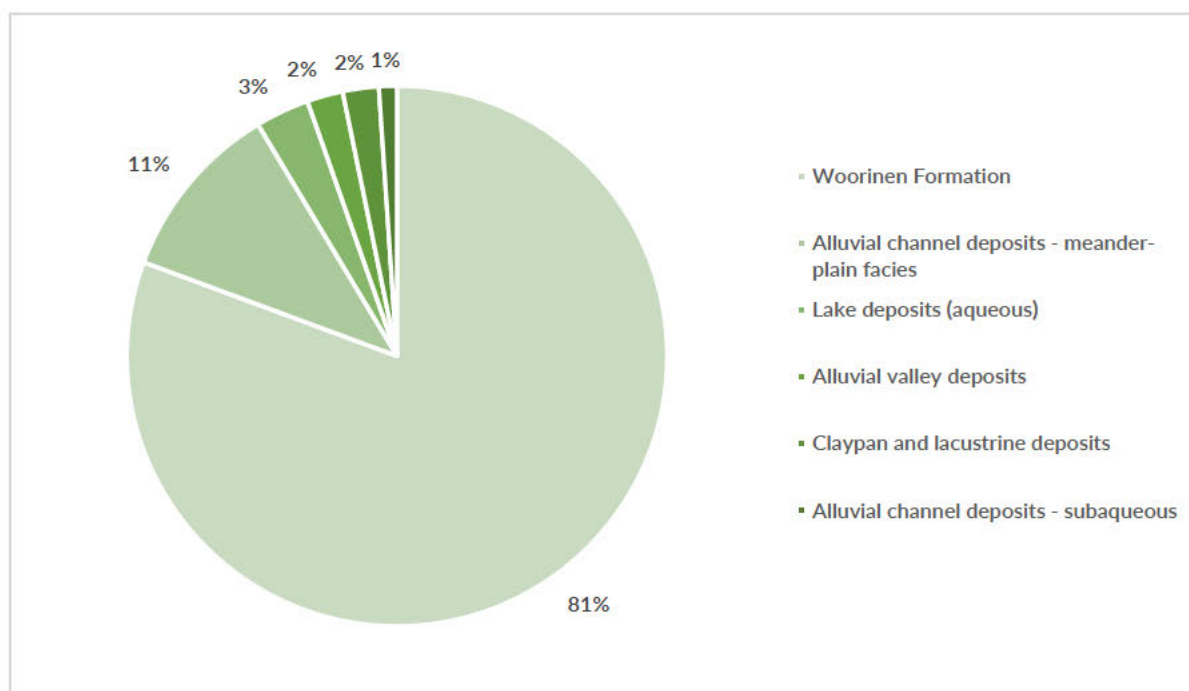


Figure 5.3 Distribution of site across geological units

WOORINEN FORMATION

The Woorinen formation contains the greatest number of features and types of features. It contains the PAD and 6 (5.7%) of the 7 hearths recorded in the region. Shell deposits appear in similar frequency to the hearths with 7 (6.6%) being recorded in the geological unit. A majority of the modified trees and artefacts in the region are recorded on the Woorinen formation with there being 42 (39.6%) recorded modified trees and 26 (24.5%) sites that contain artefacts. There is also [REDACTED] in this geological unit.

ALLUVIAL CHANNEL DEPOSITS – MEANDER-PLAIN FACIES

Within this geological unit, the number of modified trees and shell deposits have both been recorded at 4 (3.8%) sites. This is followed by artefacts being recorded at 2 (1.9%) sites. There is also 1 (0.9%) [REDACTED] and earth mound recorded in this geological unit. It is the only geological unit that contains an earth mound in the region.

5.1.3. TOPOGRAPHY

An analysis of the distribution of local sites in comparison to terrain has been undertaken using a spatial tool that classifies landforms using a range of parameters including slope, elevation and form (Stepinski and Jasiewicz 2011; Jasiewicz and Stepinski 2013). An overview of the landform classifications used by the algorithm is detailed in Figure 5.4.

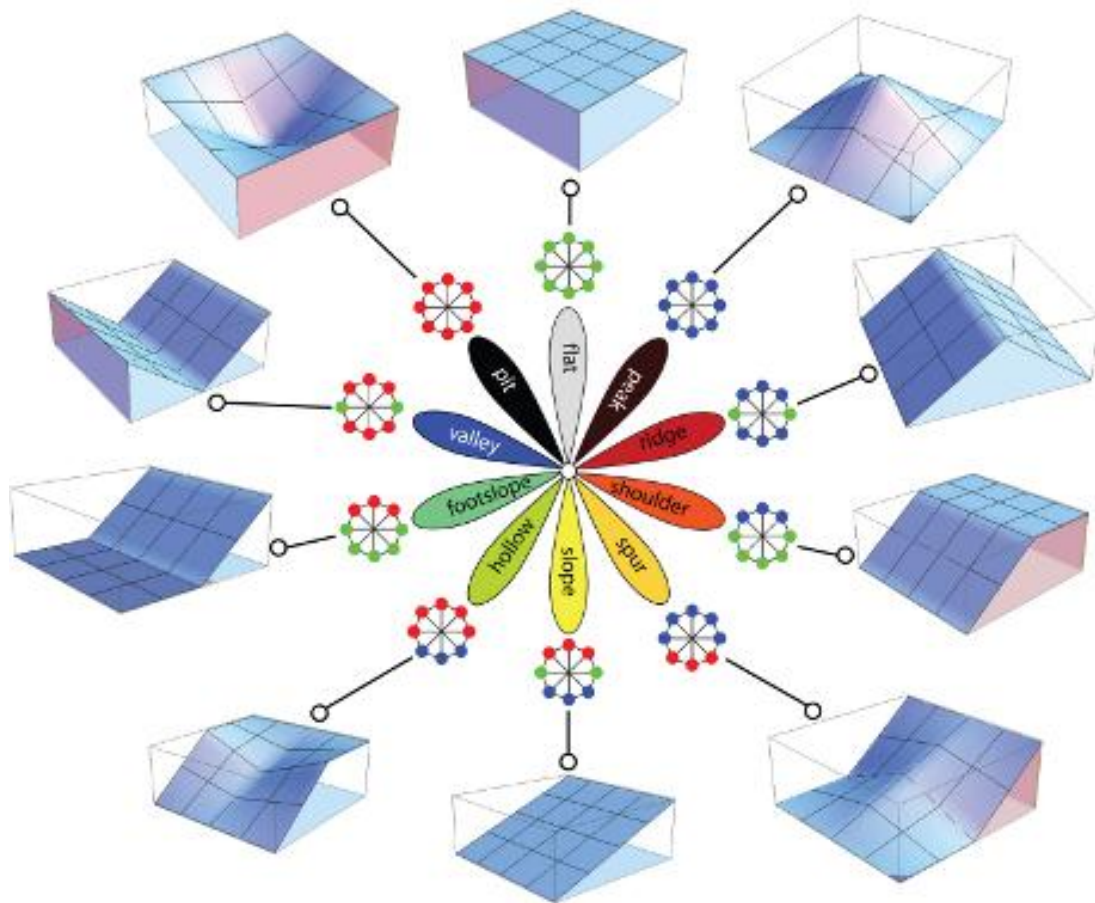


Figure 5.4 Examples of landform definitions by geomorphons

Based on these landform definitions, sites are recorded on 4 geomorphic landforms. Most sites are located on the flat landform with 86% (n=80) of sites identified on the landform. Foot slopes and shoulder landforms have the same number of sites recorded on them with each containing 6 (6.5%) sites. There is one site located on the ridge landform.

The site located on the ridge landform only contains a hearth. All the sites on the shoulder landform contain 1 feature. Features recorded on the shoulder landform included artefacts (n=2, 1.9%), shell deposits (n=2, 1.9%), [REDACTED] and the only recorded PAD in the region (n=1, 0.9%). On the foot slopes, there are 7 features recorded across 6 sites. The features recorded on the foot slopes included artefacts (n=3, 2.8%), shell deposits (n=3, 2.8%) and a modified tree (n=1, 0.9%).

Figure 5.5 displays the distribution of sites across geomorphic landforms where they were located.

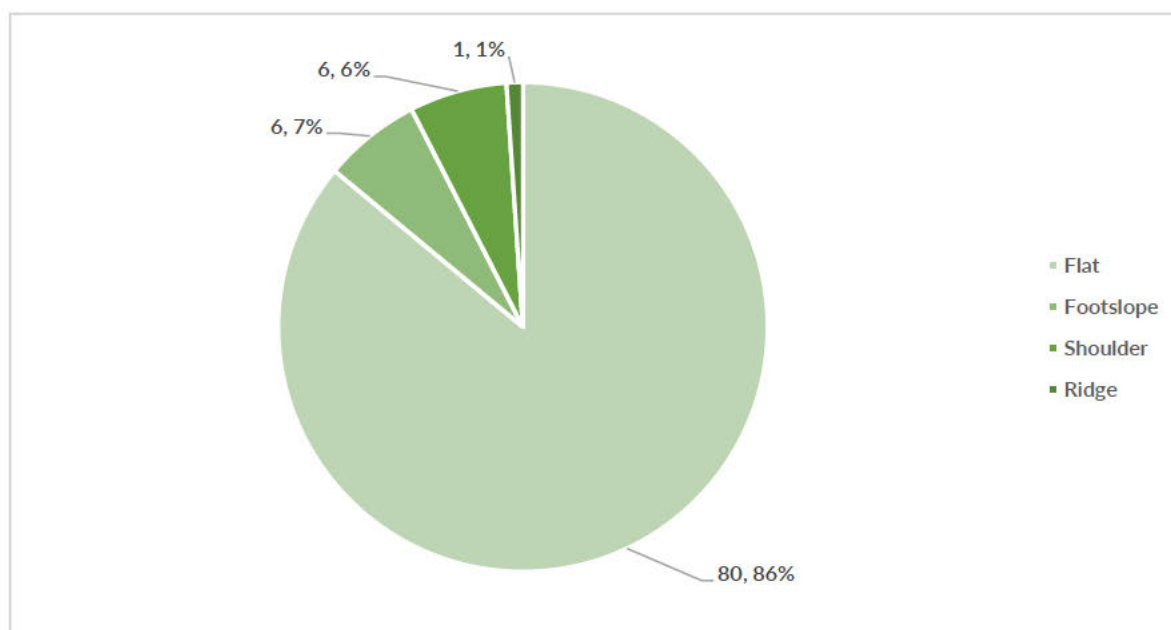


Figure 5.5 Distribution of site across geomorphic units

FLAT

The feature that is recorded the most on the flat geomorphic landform is modified trees with 46 (43.4%) recorded. This is followed by artefacts, which were recorded at 25 (23.6%) sites and shell deposits, which were located at 10 (9.4%) sites. A total of 6 (5.7%) hearths were recorded on the flat landform and [REDACTED] were identified at 4 (3.8%) sites. The earth mound that was recorded in the region is also located on this landform.

5.1.4. HYDROLOGY

Water has been identified as a significant variable in determining Aboriginal site locations. Sites located within 25 km of the Project Area were identified as being on average 751 m from the nearest water source. Sites ranged from 0.1 m from water to 2.5 km from a water source. Most of the sites (n=46, 49.4%) are located between 500 m and 1 km from a water source. There is, however, a concentration of sites closer to water sources mainly within 100 to 200 m. This distribution is mainly dictated by the distribution of modified trees. All the sites located between 700 and 800 m, which is the interval with the highest number of sites, from water are modified trees. When sites containing only modified trees are removed from the data, sites are concentrated within 300 m of a water source; although there is still a concentration of sites located between 800 m to 1 km from water. Figure 5.6 displays the distribution of sites in relation to their distance from water, including the distribution once sites only containing scar trees were removed.

When it comes to the permanency of the closest water sources of the site, non-perennial streams have the highest frequency. There are 82 sites (88.2%) that have a non-perennial water source as their nearest source of water. This leaves 11 (11.8%) sites being located near perennial water sources. Most features are associated with both perennial and non-perennial water sources, with the features that were only recorded once, earth mound and PAD each associated with either perennial or non-perennial water sources. For the features where 3 are multiples having been identified, they are mainly associated with non-perennial water sources. Shell deposits are the most common feature recorded in association with perennial water sources, with 7 (6.6%) being identified. Figure 5.7 displays the distribution of features in relation to the permanence of their nearest water source.

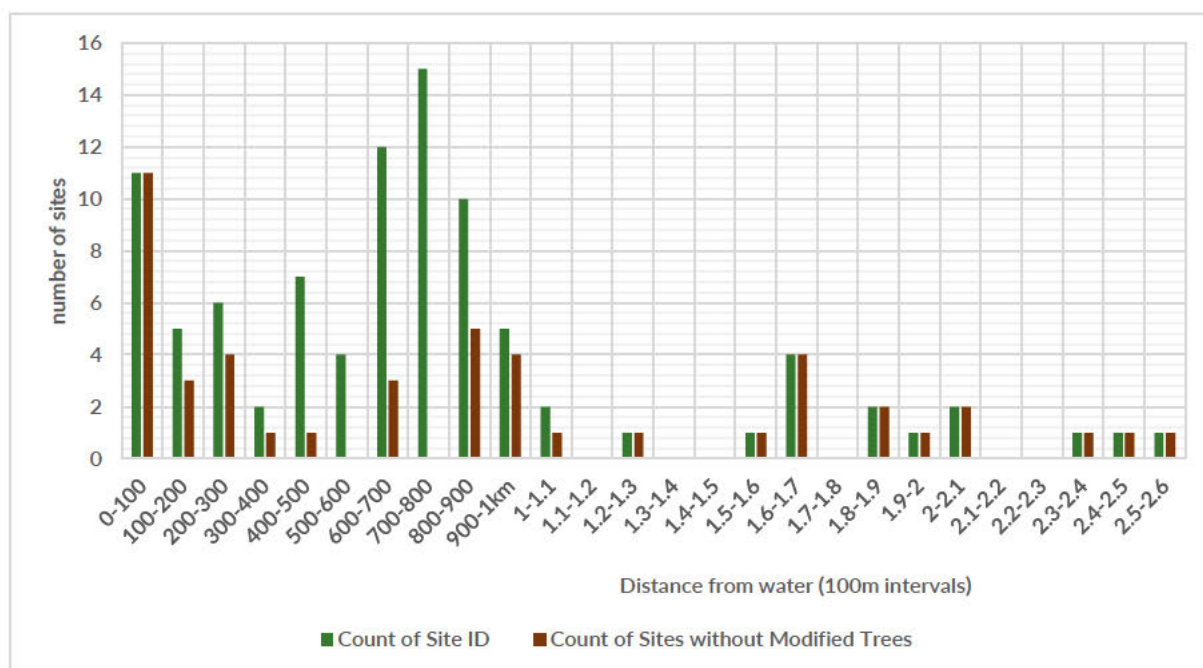


Figure 5.6 The distribution of sites in relation to their distance from the nearest water source

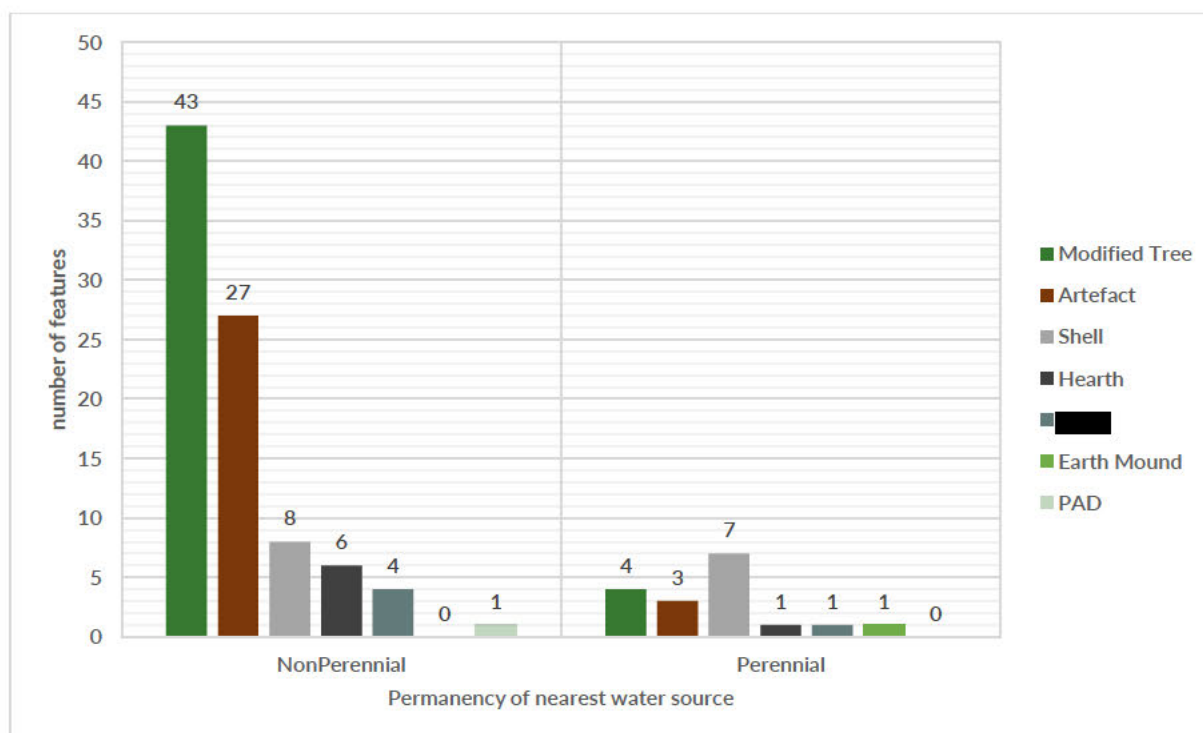


Figure 5.7 The distribution of sites in relation to the permanency of the nearest water source

5.2. PREDICTIVE STATEMENTS

In general, an archaeological predictive statement for any Project Area draws on surrounding environmental data, previous archaeological research and predictive models for Aboriginal occupation. Another essential aspect to predicting the archaeological integrity of a site and something that must be considered is previous land uses of the Project Area and the degree of disturbance.

In summary, the main trends broadly seen across central NSW are:

- Archaeological sites occur on most landforms.
- Site frequency and density are dependent on their location in the landscape.
- Earth mounds are usually located close to water sources with major confluences being key locations for occupation sites.
- The size of an oven could be as small as 1 m in diameter and 100 mm high up to as large as 120 m in diameter and 2 m high. Oven mound sites commonly consisted of multiple oven features, in and around the oven.
- Shell Middens are found close to sources of freshwater shellfish and are usually formed from the depositing of freshwater mussels, [REDACTED]
- The number of Scarred trees has been greatly reduced due to logging and would have been associated with areas that have relatively dense populations.
- [REDACTED]
- Archaeological material is also present beyond the immediate creek surrounds in decreasing artefact densities.
- Aboriginal scarred trees may be present in areas where remnant old-growth vegetation exists.

While these statements observe general trends in the region, forming a predictive model of the Project Area, based on the previous models it is possible to further expound on the generalisations made above. The search of the AHIMS database has helped to predict what certain site types can be expected within the Project Area. Based on the analysis presented in Section 5.1, the following predictive statements can be made:

- The most commonly identified site types within the region are modified trees, which are often located within the Woorinen formation geological unit and the Murray Channels and Floodplains landscape unit between 100 m and 1 km from water.
- Most sites are associated with either a relic or modern hydrological features, such as creeks, rivers and channels. Most sites are located within 800 m of a potential water source.
- Whilst sites may be located in a variety of landform contexts, most sites, (62.4%), are located within the Murray Channels and Floodplains Mitchell s landscape.
- Artefact features can be found across all geological units and Mitchell s landscapes and can be found up to 2.6 km from water.
- Shell deposits are mainly located within 500 m of a water source but can be located up to 1.6 km from water.
- Hearths are mainly located on the flats of the Woorinen Formation geological unit, up to 2 km from a water source.
- [REDACTED]
- Sites that are associated with Dreaming Stories and Ceremony are rare and can only be located through discussion with the Aboriginal community.

6. FIELD METHODS

A site-specific investigation methodology has been developed for the Project that complies with the requirements of the Code of Practice (Department of Environment, Climate Change and Water NSW 2010b).

6.1. SURVEY METHODOLOGY

A survey was conducted between 13 to 17 June 2023 by Taylor Foster (Senior Archaeologist, Austral) and Teleeha Thomas (Graduate Archaeologist, Austral) with assistance from Jason Smith (Dareton LALC), Derek Smith (Dareton LALC) and Talan Brown (Derek Hardman).

An additional survey was completed between 18 to 28 March 2024 by Crystal Wooding (Archaeologist, Austral) and Carmen Baulch (Archaeologist, Austral) with assistance from the RAPs listed in Table 6.1.

Several unsurveyed areas in the southern portion of Project Area (refer Figure 7.21) were subject to a visual assessment at a landscape level. These were assessed as having low archaeological potential due to previous disturbance from intensive cropping and vehicular movement, and with reference to the results of the survey of areas directly adjacent to them. The 3 off-site roadwork sites (refer to Figure 1.3), were also not assessed during the archaeological survey, and were subject to a desktop assessment, as they are minor works in existing disturbed road corridors.

Table 6.1 RAPs involved in the archaeological surveys

Name	Organisation	Date (March 2024)
Jason Smith	DLALC	18, 19, 25
Verna Pappin	Independent	18, 19, 20, 26, 27, 28
Mary Pappin	Independent	18, 19, 20, 21, 22, 25
Arthur Kirby	BMEET	18, 19, 20, 25
Ian Green	Barkandji Native Title Group	22, 25
Mikaela Dolan	Barkandji Native Title Group	22, 25
Robert Kennedy	Ngumbaay	21, 22, 25, 26, 27, 28
John Thomas	Mutthi Mutthi	26, 27, 28

6.1.1. SURVEY OBJECTIVES

The objectives of the surveys were to:

- Complete a systematic survey that targets areas that have been identified as having the potential to contain Aboriginal heritage values.
- Identify and record Aboriginal archaeological sites visible on the ground surface and areas of PAD.

6.1.2. SAMPLING STRATEGY

The survey methodology was designed to optimise the investigation of areas where archaeological materials may be present and visible, as well as investigate the broader archaeological potential of all landform elements present within the Project Area, which included:

- Dunes
- Ridgelines/Crest
- Flat

The specific survey methodology developed for this assessment was guided by the survey requirements as set out in requirements 5 to 10 of the Code of Practice (Department of Environment, Climate Change and Water NSW 2010b) and based upon consideration of the overall landform pattern within the Project Area, known landform elements (after Speight 2009) and the location of the previously identified sites. Due to the size of the Project Area, the survey targeted all landforms that were to be impacted and landforms with a higher potential for Aboriginal heritage. The landforms that were likely to have a lower potential for Aboriginal heritage were not targeted.

The survey methodology targeted the Project's Disturbance Footprint and sensitive landforms directly adjacent to it, such as sandy rises, uncleared bushland and water sources. A significant portion of the study area comprised ploughed fields interspersed with pastoral station tracks and roads that had been subject to prolonged cropping, clearing and mechanical/vehicle disturbance. In highly disturbed cropping areas on sand plain landforms, slow vehicle traverses were undertaken to identify areas of archaeological potential within the Project Development Footprint. These were then subject to targeted pedestrian traverses. All other areas and landforms were surveyed by pedestrian traverses by a minimum of 6 team members, using handheld GPS. All vehicle traverses were discussed and approved verbally by RAPs during the field survey. A copy of the survey methodology is supplied in Appendix C. Copies of daily field logs with RAP comments are supplied in Appendix D.

6.1.3. SURVEY METHODS

The archaeological survey consisted of pedestrian transects completed by between 4 to 6 team members. A key survey variable is ground visibility, which considers the amount of ground surface which is not covered by any vegetation; and exposure, which defines areas where dispersed surface soils and vegetative matter afford a clear assessment of the ground, were assessed across the Project Area and within each landform element. Overall survey coverage and calculated survey effectiveness was recorded. Note that the effectiveness of the field survey was largely dependent on the degree of ground surface visibility. Where surface visibility was restricted by dense vegetation cover, the potential for PADs was assessed, particularly in association with those landforms identified within the predictive model as more likely to contain Aboriginal archaeological sites. The potential of these areas and all landform elements within the Project Area was considered against available evidence of land disturbance.

Photographs were taken of all Survey Units and landforms as well as representative surface visibility, and where present, surface exposures, soil profiles and disturbances relevant to the interpretation of the stratigraphic conditions and archaeological potential within each Survey Unit.

7. ARCHAEOLOGICAL RESULTS

The following section outlines the results of the archaeological investigations conducted within the Project Area.

7.1. ARCHAEOLOGICAL SURVEY RESULTS

7.1.1. VISIBILITY

In most archaeological reports and guidelines, visibility refers to Ground Surface Visibility (GSV) and is usually a percentage estimate of the ground surface that is visible, allowing for the detection of (usually stone) artefacts that may be present on the ground surface (Department of Environment, Climate Change and Water NSW 2010b). GSV within the Project Area was high across most of the Project Area ranging from between 50 and 80%.

7.1.2. EXPOSURE

Exposure refers to those parts of the surveyed landforms whose topsoil has visibly been removed due to naturally occurring erosion or man-made disturbances. Usually expressed as a percentage of the total land surface, it is a theory predicting the nature of geomorphological change (Department of Environment, Climate Change and Water NSW 2010b). Exposure was also recorded with high percentages, ranging from 50 to 70%. These high percentages are likely attributed to the limited vegetation and the geology of the Project Area which consists mostly of sand.

7.1.3. DISCUSSION OF RESULTS

The most significant disturbance in the Project Area, is in the form of long-term agricultural use, in the form of both grazing and cropping.

The Project Area has been separated into landforms, which correspond with the Survey Units. The proposed Disturbance Footprint consists of 4 Survey Units within the Project Area. Survey Unit 1 comprises undulating dune landforms, Survey Unit 2 comprises ridge/crest landforms, Survey Unit 3 comprises flat/plain landforms and Survey Unit 4 comprises slope landforms.

SURVEY UNIT 1

Survey Unit 1 comprised undulating dune landforms across the Project Area, with very gentle slopes and depressions amid Mallee sand dune systems across the Project Area (Figure 7.1). Portions of Survey Unit 1 are highly disturbed by previous agricultural practices such as land clearing, the installation of fencing, development of farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, though areas of limited disturbance are still present. The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush *Atriplex polycarpa*, Old Man Saltbush *Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she oak (*Casuarina*) were also present throughout the dune systems (Figure 7.2).

The Survey Unit consists entirely of red sand and to the west of the Survey Unit there is a portion of undisturbed native vegetation that consists of mallee gum, she oak (*Casuarina*), spinifex grasses, saltbush and blue bush.

Four of the 5 cultural heritage sites identified during the pedestrian survey were located within this Survey Unit. This included 2 isolated stone artefact sites, 1 site comprising dispersed heat retainers and one high density site complex.

The visibility and exposure of Survey Unit 1 are displayed in Table 7.1 and Table 7.2 along with effective survey coverage.

Table 7.1 Survey coverage – Survey Unit 1

Survey Unit	Landform	Survey Unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
1	Undulating Dune	3,576,200	80	70	2,002,661	56

Table 7.2 Landform summary – Survey Unit 1

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Undulating Dune	3,576,200	2,002,661	56	4	~250



Figure 7.1 Survey Unit 1, south facing view



Figure 7.2 Survey Unit 1, west facing view of the native vegetation

SURVEY UNIT 2

Survey Unit 2 comprised ridge and crest landforms across the Project Area (Figure 7.3 & Figure 7.4). Survey of these landforms targeted areas of minimal disturbance and retained native vegetation due to the probability of cultural material being retained. Most areas within the Survey Unit contained undisturbed areas consisting of both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush *Atriplex polycarpa*, Old Man Saltbush *Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*), immature mallee gum and she oak (*Casuarina*) (Figure 7.5). Disturbances present in these areas largely comprised farm vehicle tracks, dirt roads, fence lines and some agricultural practices such as cropping. The Survey Unit consists entirely of red silty sand.

A single cultural heritage site was found in this Survey Unit, within a crest landform and comprised a low-density stone artefact scatter.

The visibility and exposure of Survey Unit 2 are displayed in Table 7.3 and Table 7.4 along with the landforms and effective coverage.

Table 7.3 Survey coverage – Survey Unit 2

Survey Unit	Landform	Survey Unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
2	Ridge/crest	1,139,300	70	60	478,506	42

Table 7.4 Landform summary – Survey Unit 2

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Ridge/crest	1,139,300	478,506	42	1	2

**Figure 7.3 Survey Unit 2, south facing view of ridge**



Figure 7.4 **Survey Unit 2, north facing view of upper slope and ridge**



Figure 7.5 **Survey Unit 2, west facing view of ridge landform**

SURVEY UNIT 3

Survey Unit 3 comprised undulating plain and flat landforms across the Project Area. The survey targeted areas of minimal disturbance within this landform context with retained native vegetation where possible, though disturbed samples were also taken. Most areas within Survey Unit 3 contained vegetation consisting of both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush *Atriplex polycarpa*, Old Man Saltbush *Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*), immature mallee gum and she oak (*Casuarina*) (Figure 7.6). Disturbances present in these areas largely comprised agricultural practices such as cropping (Figure 7.7) as well as land clearing, farm vehicle tracks, dirt roads (Figure 7.8), fence lines and some stock erosion. The Survey Unit consists entirely of red silty sand. No raw material was identified within the Survey Unit.

No cultural heritage was identified within Survey Unit 3 during the pedestrian survey.

The visibility and exposure of Survey Unit 3 are displayed in Table 7.5 and Table 7.6 along with the landforms and effective coverage.

Table 7.5 Survey Coverage – Survey Unit 3

Survey Unit	Landform	Survey Unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
3	Plain/Flat	3,078,400	70	50	1,077,440	35

Table 7.6 Landform summary – Survey Unit 3

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Plain/Flat	3,078,400	1,077,440	35	0	0



Figure 7.6 **Survey Unit 3, south facing view of the landform and native vegetation within flat**



Figure 7.7 **Survey Unit 3, west facing view of disturbance in the form of land clearing**



Figure 7.8 Survey Unit 3, north facing view of disturbance from development of informal track

SURVEY UNIT 4

Survey Unit 4 comprised slope landforms across the Project Area (Figure 7.9 and Figure 7.10). The native vegetation within this landform unit consists of immature mallee gum, she oak (*Casuarina*), low-lying grasses both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush *Atriplex polycarpa*, Old Man Saltbush *Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). The Survey Unit consists entirely of red silty sand. Disturbances present in these areas largely comprised agricultural practices such as cropping as well as land clearing, farm vehicle tracks, dirt roads, fence lines and some stock erosion. No raw material was identified within the Survey Unit.

No cultural heritage was identified within Survey Unit 4 during the pedestrian survey.

The visibility and exposure of Survey Unit 4 are displayed in Table 7.7 and Table 7.8 along with the landforms and effective coverage.

Table 7.7 Survey Coverage – Survey Unit 4

Survey Unit	Landform	Survey Unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
4	Slope	432,700	60	60	155,772	36

Table 7.8 Landform summary – Survey Unit 4

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	% of landform effectively surveyed	No. sites	No. artefacts / features
Slope	432,700	155,772	36	0	0



Figure 7.9 **Survey Unit 4, west facing view**



Figure 7.10 **Survey Unit 4, north facing view of slope landform**

OVERVIEW OF RESULTS FROM INITIAL SURVEY (June 2023)

The most significant disturbance within the Project Area is the result of the development of access tracks and roads, as well as the installation of silos in the central portion of the Project Area. Much of the Project Area has also been subject to decades of agricultural practices, including cropping and stock grazing. While neither of these practises completely destroys or removes cultural material, over decades it will have resulted in displacement and damage of some cultural material present within these areas. The survey targeted landforms throughout the Project Area concentrating on areas of minimal disturbance but also sampled areas subject to cropping and track damage, native vegetation either by the side access tracks or between cropped paddocks. The survey also targeted the limited areas in proximity to watercourses. The survey identified 5 Aboriginal archaeological sites, including one high density site complex, one low density artefact scatter and one area of dispersed heat retainers all in proximity to watercourses and 2 isolated finds between 1 and 2 km from the nearest watercourse. Four of the sites were identified in undulating sand dune landforms and one of the sites was identified within a crest landform. No cultural materials were found in other landform contexts or at great distances to water, and limited to no raw material was present in these areas.

A more detailed analysis of these sites and their relationship to the wider local archaeological context is presented in Chapter 4.

7.1.4. DISCUSSION OF RESULTS: ADDITIONAL SURVEY March 2024

Following the completion of the June 2023 survey, an additional survey was undertaken in March 2024 due to changes in the Project Area design. The March 2024 survey built upon the initial June 2023 survey by investigating additional landforms to further understand whether Aboriginal cultural heritage was present or whether there were deposits that suggested that subsurface material may be present.

To adequately investigate the Project Area in accordance with the Code, it was separated into 5 Survey Units, each divided into several transects (Table 7.9). The Survey Units were in the same location as the previous June 2023 survey, however, an additional Survey Unit, Survey Unit 5, was also established as part of the March 2024 program.

Survey Unit 1 is located to the north of Arumpo Road, Survey Unit 2 is located to the south of Arumpo Road, Survey Unit 3 is located to the north-west of Dansons Road, Survey Unit 4 is located to the south-east of Dansons Road and Survey Unit 5 is located along Dansons Road and a small area to the east of Dansons Road.

Ground surface visibility across the entire Project Area was high (80-90%) with small areas of less disturbed scrub land having a lower visibility (10-20%) (Figure 7.18) however, this was uncommon with the majority of scrub lands underbrush cleared from animal grazing. Exposure (80-90%) was high due to the large-scale agriculture clearing and erosion.

The most significant disturbance in the Project Area, is in the form of long-term agricultural use, in the form of both grazing and cropping.

The results of the March 2024 archaeological survey are provided in Figure 7.21. Several unsurveyed areas in the southern portion of Project Area (refer Figure 7.21) were subject to a visual assessment at a landscape level. These were assessed as having low archaeological potential due to previous disturbance from intensive cropping and vehicular movement, and with reference to the results of the survey of areas directly adjacent to them. The 3 offsite roadwork sites (refer to Figure 1.3), were also not assessed during the archaeological survey, and were only assessed at the desktop level, as they are minor works in existing disturbed road corridors.

Table 7.9 March 2024 Survey Units and transects

Survey Unit	Transects
Survey Unit 1	A, B, C, D, E, F, G, H, I, Track 1, Track 2, Battery 1, Met Mast 1 and Met Mast 2
Survey Unit 2	Battery 2, J, K, L, M, N, O, P, Q, R, S, T, U, V, Main Track, Track 3, East Track, Met Mast 3, Battery 3, Powerline 1, Battery 4, Main Track Turbine 1, East Track Turbine 1 and East Track Turbine 2
Survey Unit 3	Track 4, W, X, Y, Z, 1, 2, Powerline 1 and Met Mast 4
Survey Unit 4	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, Battery 6, Track 5, Powerline 1, Met Mast 5, Met Mast 6, Met Mast 7 and Battery 5
Survey Unit 5	Powerline 1 and Battery 7

SURVEY UNIT 1

Survey Unit 1 is located north of Arumpo Road and is comprised of undulating dune landforms, with very gentle slopes and depressions of the Mallee dune systems across the Project Area.

The majority of Survey Unit 1 is highly disturbed by agricultural practices such as land clearing, fencing, farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, however, small areas of limited disturbance are still present (Figure 7.12, Figure 7.13 and Figure 7.14). The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush (*Atriplex polycarpa*), Old Man Saltbush (*Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she-oak (*Casuarina*) were also present throughout the dune systems.

The Survey Unit consists entirely of red sand and small portions of undisturbed native vegetation that consists of mallee gum, she-oak, spinifex grasses, saltbush and bluebush, however, much of the underbrush had been cleared due to stock grazing. Both GSV (90%) and exposure (80-90%) were high due to the large-scale agricultural clearing and erosion.

All 4 of the suspect heaths and/or heath material were identified within either the ploughed paddock or the access track. The single identified isolated stone artefact was located within transect Track 1 which is the main access track.



Figure 7.12 Survey Unit 1, Transect A, east facing, open paddock



Figure 7.13 Survey Unit 1, end Transect A, west facing, small area of scrub



Figure 7.14 Survey Unit 1, Transect Track 1, south facing, main access track

SURVEY UNIT 2

Survey Unit 2 is located south of Arumpo Road and is comprised of undulating dune landforms, with very gentle slopes and depressions of the Mallee dune systems across the Project Area.

The majority of Survey Unit 2 is highly disturbed by agricultural practices such as land clearing, fencing, farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, however, small areas of limited disturbance are still present (Figure 7.15 and Figure 7-16). The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush (*Atriplex polycarpa*), Old Man Saltbush (*Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she-oak (*Casuarina*) were also present throughout the dune systems.

The Survey Unit consists entirely of red sand and small portions of undisturbed native vegetation that consists of mallee gum, she-oak, spinifex grasses, saltbush and bluebush, however, much of the underbrush had been cleared due to stock grazing. Both GSV (90%) and exposure (80-90%) were high due to the large-scale agriculture clearing and erosion.

A total of 16 Aboriginal cultural heritage materials were identified within Survey Unit 2, these included 11 isolated stone artefacts, 5 hearths and/or hearth material and a single PAD.



Figure 7.15 Survey Unit 2, Transect Battery 2, east facing



Figure 7.16 Survey Unit 2, Transect East Track, east facing

SURVEY UNIT 3

Survey Unit 3 is located to the north-west of Dansons Road and is comprised of undulating dune landforms, with very gentle slopes and depressions of the Mallee dune systems across the Project Area.

The majority of Survey Unit 3 is highly disturbed by agricultural practices such as land clearing, fencing, farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, however, small areas of limited disturbance are still present (Figure 7.17 and Figure 7.18). The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush (*Atriplex polycarpa*), Old Man Saltbush (*Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she-oak (*Casuarina*) were also present throughout the dune systems.

The Survey Unit consists entirely of red sand and small portions of undisturbed native vegetation that consists of mallee gum, she-oak, spinifex grasses, saltbush and bluebush, however, much of the underbrush had been cleared due to stock grazing. Both GSV (90%) with small areas of low GSV (10-20%) and exposure (80-90%) were high due to the large-scale agriculture clearing and erosion.

A total of 3 Aboriginal cultural heritage materials were identified within Survey Unit 3, these include a single isolated stone artefact, and 2 hearths and/or hearth material.



Figure 7.17 Survey Unit 3, Transect W, south facing



Figure 7.18 Survey Unit 3, Transect Z, north facing

SURVEY UNIT 4

Survey Unit 4 is located to the south-east of Dansons Road and is comprised of undulating dune landforms, with very gentle slopes and depressions of the Mallee dune systems across the Project Area.

The majority of Survey Unit 4 is highly disturbed by agricultural practices such as land clearing, fencing, farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, however, small areas of limited disturbance are still present (Figure 7.19 and Figure 7.20). The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush (*Atriplex polycarpa*), Old Man Saltbush (*Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she-oak (*Casuarina*) were also present throughout the dune systems.

The Survey Unit consists entirely of red sand and small portions of undisturbed native vegetation that consists of mallee gum, she-oak, spinifex grasses, saltbush and bluebush, however, much of the underbrush had been cleared due to stock grazing. Both GSV (90%) and exposure (80-90%) were high due to the large-scale agriculture clearing and erosion.

No Aboriginal cultural heritage was identified within Survey Unit 4.



Figure 7.19 Survey Unit 4, Transect 5, south-east facing



Figure 7.20 Survey Unit 4, Transect 11, north facing

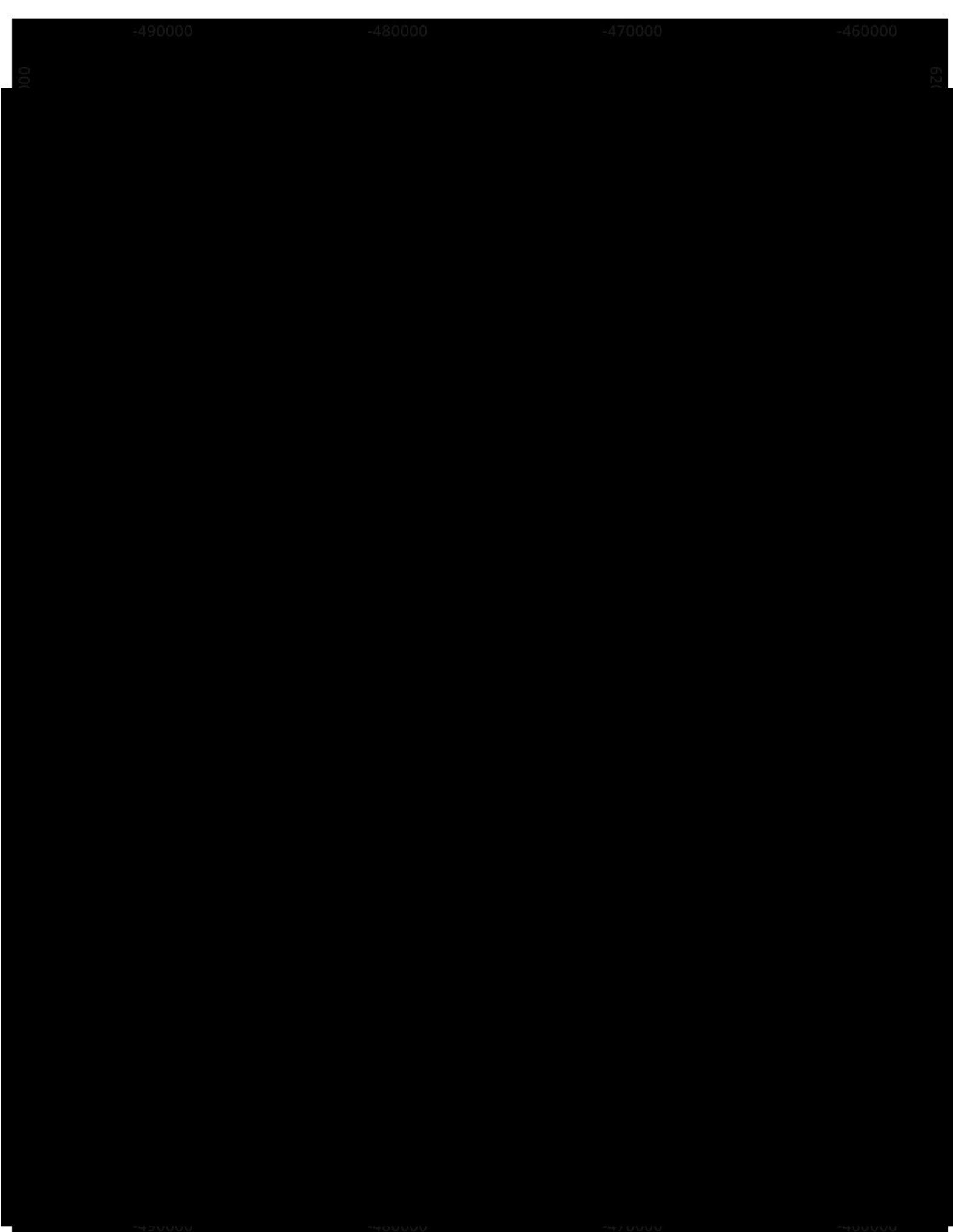
SURVEY UNIT 5

Survey Unit 5 is located along Dansons Road and a small area to the east of Dansons Road and is comprised of undulating dune landforms, with very gentle slopes and depressions of the Mallee dune systems across the Project Area.

The majority of Survey Unit 5 is highly disturbed by agricultural practices such as land clearing, fencing, farm tracks as well as stock movement which has resulted in stock erosion throughout the Project Area, however, small areas of limited disturbance are still present. The Survey Unit consists of low-lying grasses with both non-native and native grasses such as spinifex grass, saltbushes (Ruby Saltbush *Enchylaena tomentosa*, Common saltbush (*Atriplex polycarpa*), Old Man Saltbush (*Atriplex nummularia*), copperburr and bluebushes (*Chenopodium curvispication*). Mallee gum and she-oak (*Casuarina*) were also present throughout the dune systems.

The Survey Unit consists entirely of red sand and small portions of undisturbed native vegetation that consists of mallee gum, she-oak, spinifex grasses, saltbush and bluebush, however, much of the underbrush had been cleared due to stock grazing. Both GSV (90%) and exposure (80-90%) were high due to the large-scale agriculture clearing and erosion.

No Aboriginal cultural heritage was identified within Survey Unit 5.



-490000

-480000

-470000

-460000

600

620

-490000

-480000

-470000

-460000

Figure 7.21 - Results of the 2024 archaeological survey

25068 Mallee Wind Farm ACH Advice

Source: NSW LPI Aerial

Drawn by: PB Date: 2026-01-19

Figure 7.22 - Results of the 2024 archaeological survey with site names

22078 - Mallee Wind Farm - ACHA

7.2. IDENTIFIED ABORIGINAL SITES

Following the 2 surveys in June 2023 and March 2024, 29 sites were identified and have subsequently been registered on AHIMS. The newly registered sites identified as part of this investigation are outlined in Table 7.10.

Table 7.10 Survey Units and identified sites

AHIMS No.	Site name	Feature(s)	Survey Unit	Landform	Year recorded	Within the impact area (Yes/No)
46-3-0228	Mallee Windfarm AS1	Artefact	2	Ridge	2023	No
39-6-0101	Mallee Windfarm HR1	Hearth	1	Flat	2023	No
46-3-0241	Mallee Windfarm HR10	Hearth	2	Dune	2024	Yes
46-3-0243	Mallee Windfarm HR11	Hearth	2	Plain	2024	No
39-6-0103	Mallee Windfarm HR2	Hearth	1	Dune	2024	No
39-6-0104	Mallee Windfarm HR3	Hearth	1	Dune	2024	No
46-3-0237	Mallee Windfarm HR4	Hearth	1	Dune	2024	No
46-3-0238	Mallee Windfarm HR5	Hearth	2	Plain	2024	Yes
47-1-0072	Mallee Windfarm HR6	Hearth	2	Plain	2024	No
46-3-0239	Mallee Windfarm HR7	Hearth	3	Plain	2024	Yes
46-3-0240	Mallee Windfarm HR8	Hearth	3	Plain	2024	No
46-3-0242	Mallee Windfarm HR9	Hearth	2	Dune	2024	Yes
46-3-0229	Mallee Windfarm ISO1	Artefact	3	Flat	2023	No
47-1-0069	Mallee Windfarm ISO10	Artefact	2	Plain	2024	Yes
47-1-0070	Mallee Windfarm ISO11	Artefact	2	Plain	2024	No
47-1-0071	Mallee Windfarm ISO12	Artefact	2	Dune	2024	No
46-3-0233	Mallee Windfarm ISO13	Artefact	2	Plain	2024	No
46-3-0234	Mallee Windfarm ISO14	Artefact	2	Plain	2024	No
46-3-0235	Mallee Windfarm ISO15	Artefact	3	Plain	2024	Yes
46-3-0230	Mallee Windfarm ISO2	Artefact	3	Flat	2023	No
39-6-0102	Mallee Windfarm ISO3	Artefact	1	Flat	2024	No
46-3-0232	Mallee Windfarm ISO4	Artefact	2	Flat	2024	Yes
47-1-0064	Mallee Windfarm ISO5	Artefact	2	Plain	2024	No
47-1-0065	Mallee Windfarm ISO6	Artefact	2	Plain	2024	No
47-1-0067	Mallee Windfarm ISO7	Artefact	2	Plain	2024	Yes
47-1-0066	Mallee Windfarm ISO8	Artefact	2	Plain	2024	No
47-1-0068	Mallee Windfarm ISO9	Artefact	2	Plain	2024	No

AHIMS No.	Site name	Feature(s)	Survey Unit	Landform	Year recorded	Within the impact area (Yes/No)
46-3-0227	██████████ ██████	██████ ██████████	█	████	████	█
46-3-0236	Mallee Windfarm PAD	PAD	2	Dune	2024	No

The following section describes the Aboriginal archaeological sites that were identified within the Survey Units.

7.2.1. SURVEY UNIT 1

MALLEE WINDFARM HR1 (AHIMS # 39-6-0101)

Site type	Hearth
Centroid	GDA 94 Zone 54 634896 m E and 6239699 m N
Site Extent	3 m X 3 m

Mallee Windfarm HR1 (AHIMS # 39-6-0101) is a hearth situated in a flat within the Project Area, but outside of the proposed Disturbance Footprint (1.137 km to the north-east). Mallee Windfarm HR1 (AHIMS # 39-6-0101) is comprised of at least 10 clay heat retainers that are dispersed over a 3 m by 3 m area. The point of origin of this hearth could not be identified.

Figure 7.23 and Figure 7.24 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR1 (AHIMS # 39-6-0101).



Figure 7.23 East view of Mallee Windfarm HR1 (AHIMS # 39-6-0101)



Figure 7.24 Clay heat retainers from Mallee Windfarm HR1 (AHIMS # 39-6-0101)

MALLEE WINDFARM ISO3 (AHIMS # 39-6-0102)

Site type	Artefact
Centroid	GDA 94 Zone 54 637379 m E and 6238634 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO3 (AHIMS # 39-6-0102) is an isolated artefact situated in a flat within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO3 (AHIMS # 39-6-0102) is a silcrete flaked piece measuring 10 mm long, 6 mm wide and 2 mm thick. The artefact was located on a disturbed vehicle track.

Figure 7.25 and Figure 7.26 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO3 (AHIMS # 39-6-0102).



Figure 7.25 South view of Mallee Windfarm ISO3 (AHIMS # 39-6-0102)



Figure 7.26 Silcrete flaked piece (Mallee Windfarm ISO3, AHIMS # 39-6-0102)

MALLEE WINDFARM HR2 (AHIMS # 39-6-0103)

Site type	Hearth
Centroid	GDA 94 Zone 54 638636 m E and 6237021 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR2 (AHIMS # 39-6-0103) is a hearth situated on a dune within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm HR2 (AHIMS # 39-6-0103) is comprised of an isolated burnt clay heat retainer in a disturbed paddock. No other clay heat retainers were present in the immediate vicinity. This site was recorded at the request of the RAPs.

Figure 7.27, Figure 7.28 and Figure 7.26 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR2 (AHIMS # 39-6-0103).



Figure 7.27 West view of Mallee Windfarm HR2 (AHIMS # 39-6-0103)



Figure 7.28 Clay heat retainer from Mallee Windfarm HR2 (AHIMS # 39-6-0103)

MALLEE WINDFARM HR3 (AHIMS # 39-6-0104)

Site type	Hearth
Centroid	GDA 94 Zone 54 638516 m E and 6237011 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR3 (AHIMS # 39-6-0104) is a hearth situated on a dune within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm HR3 (AHIMS # 39-6-0104) is comprised of an isolated burnt clay heat retainer in a disturbed paddock. No other clay heat retainers were present in the immediate vicinity. This site was recorded at the request of the RAPs. Figure 7.29 and Figure 7.30 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR3 (AHIMS # 39-6-0104).



Figure 7.29 West view of Mallee Windfarm HR3 (AHIMS # 39-6-0104)



Figure 7.30 Clay heat retainer from Mallee Windfarm HR3 (AHIMS # 39-6-0104)

MALLEE WINDFARM HR4 (AHIMS # 46-3-0237)

Site type	Hearth
Centroid	GDA 94 Zone 54 637785 m E and 6235969 m N
Site Extent	2 m X 2 m

Mallee Windfarm HR4 (AHIMS # 46-3-0237) is a hearth situated on a dune within the Project Area, but outside of the proposed Disturbance Footprint Mallee Windfarm HR4 (AHIMS # 46-3-0237) is a scattered hearth with 3 small burnt clay heat retainers with some ochre in a disturbed paddock. This site was recorded at the request of the RAPs.

Figure 7.31 and Figure 7.32 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR4 (AHIMS # 46-3-0237).



Figure 7.31 South view of Mallee Windfarm HR4 (AHIMS # 46-3-0237)



Figure 7.32 Clay heat retainer from Mallee Windfarm HR4 (AHIMS # 46-3-0237)

7.2.2. SURVEY UNIT 2

(AHIMS # 46-3-0227)

Site type	
Centroid	
Site Extent	

(AHIMS # 46-3-0227)

Figure 7.33 [REDACTED] (AHIMS # 46-3-0227)



Figure 7.34 [REDACTED] (AHIMS # 46-3-0227)

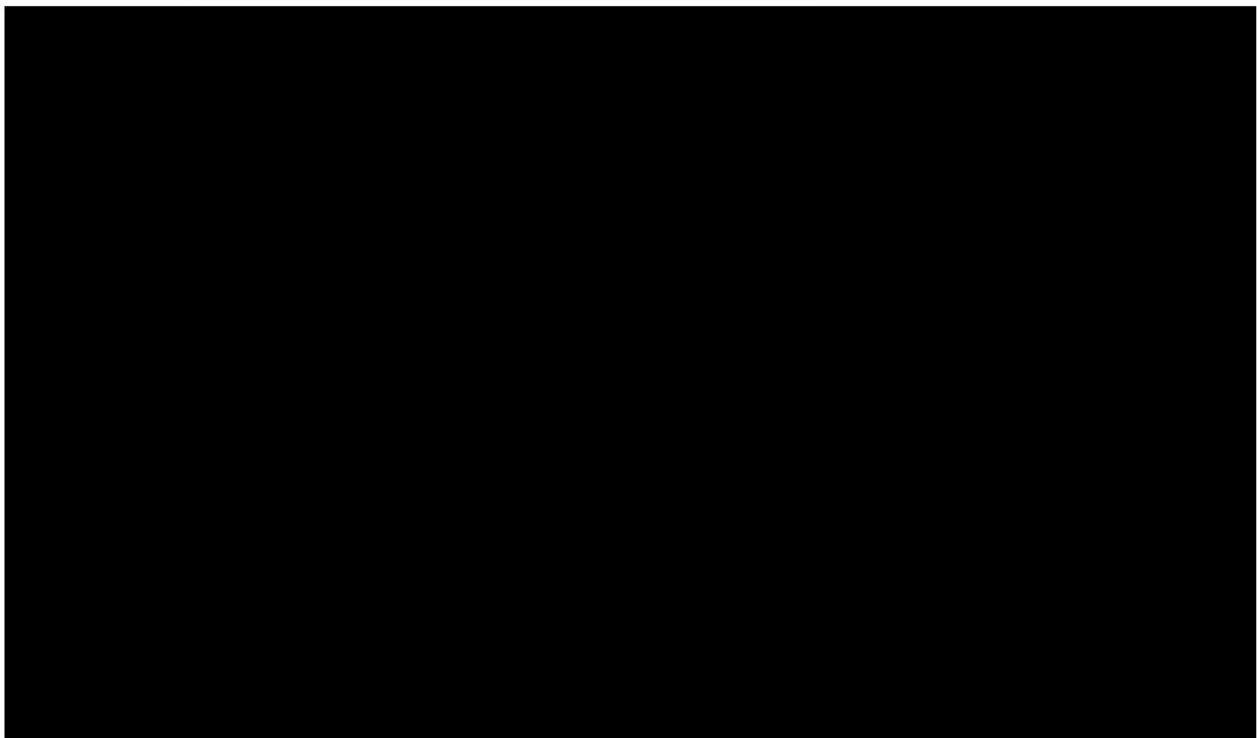


Figure 7.35 [REDACTED] (AHIMS # 46-3-0227)

MALLEE WINDFARM AS1 (AHIMS # 46-3-0228)

Site type	Artefact
Centroid	GDA 94 Zone 54 637587 m E and 6228216 m N
Site Extent	57 m X 5 m

Mallee Windfarm AS1 (AHIMS # 46-3-0228) is an artefact scatter situated on a ridge within the Project Area, but outside of the proposed Disturbance Footprint (21.86 m to the west). Mallee Windfarm AS1 (AHIMS # 46-3-0228) contains 2 stone artefacts; one silcrete flaked piece, measuring 15 mm long, 13 mm wide and 6 mm thick and one silcrete proximal fragment with a focal platform measuring 12 mm long, 12 mm wide and 3 mm thick.

Figure 7.36 and Figure 7.37 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm AS1 (AHIMS # 46-3-0228).



Figure 7.36 North view of Mallee Windfarm AS1 (AHIMS # 46-3-0228)



Figure 7.37 Silcrete proximal fragment from Mallee Windfarm AS1 (AHIMS # 46-3-0228)

MALLEE WINDFARM ISO4 (AHIMS # 46-3-0232)

Site type	Artefact
Centroid	GDA 94 Zone 54 634580 m E and 6235323 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO4 (AHIMS # 46-3-0232) is an isolated artefact situated on a flat within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO4 (AHIMS # 46-3-0232) is a silcrete longitudinal flake measuring 15 mm long, 10 mm wide and 5 mm thick. The artefact was exposed in a disturbed vehicle track.

Figure 7.38 and Figure 7.39 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO4 (AHIMS # 46-3-0232).



Figure 7.38 North view of Mallee Windfarm ISO4 (AHIMS # 46-3-0232)



Figure 7.39 Silcrete longitudinal flake (Mallee Windfarm ISO4 (AHIMS # 46-3-0232))

MALLEE WINDFARM ISO13 (AHIMS # 46-3-0233)

Site type	Artefact
Centroid	GDA 94 Zone 54 636069 m E and 6228206 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO13 (AHIMS # 46-3-0233) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO13 (AHIMS # 46-3-0233) is a silcrete flake measuring 20 mm long, 5 mm wide and 2 mm thick. The flake is located near a disturbed vehicle track.

Figure 7.40 and Figure 7.41 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO13 (AHIMS # 46-3-0233).



Figure 7.40 North-east view of Mallee Windfarm Iso13 (AHIMS # 46-3-0233)

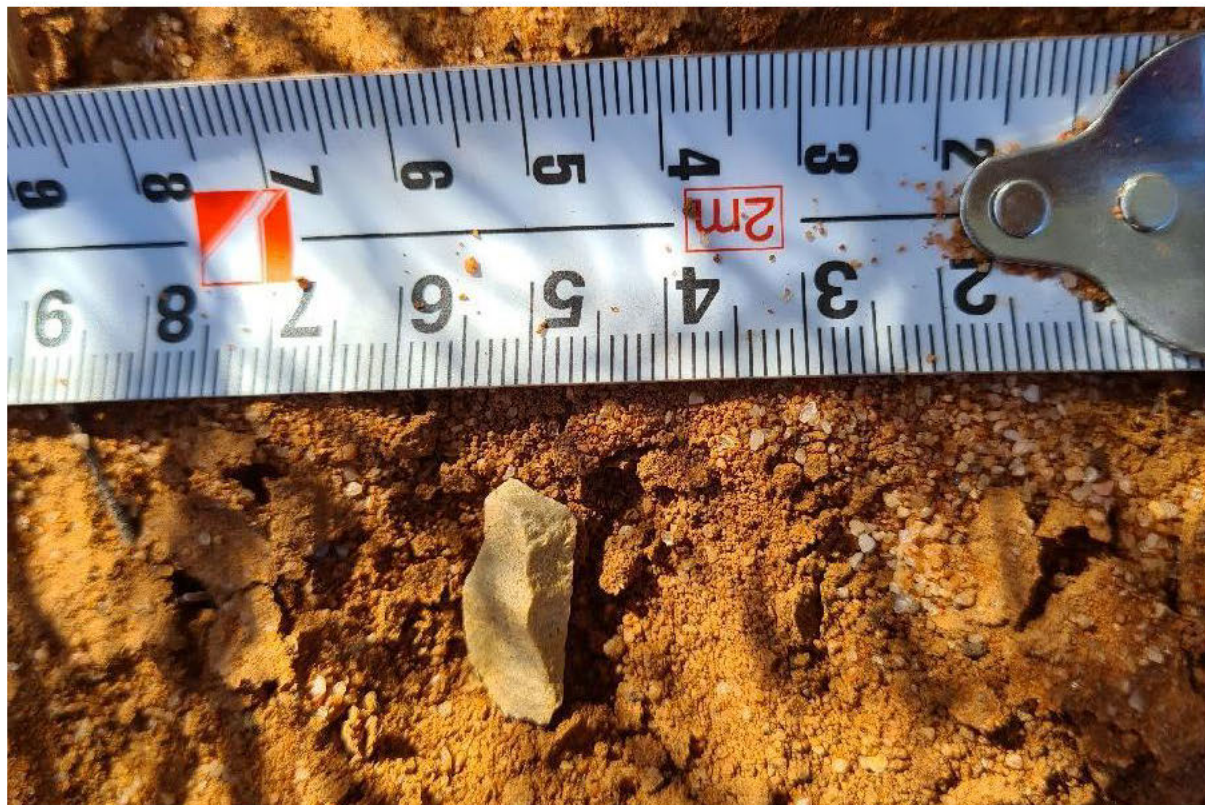


Figure 7.41 Silcrete flake (Mallee Windfarm ISO13 (AHIMS # 45-3-0233))

MALLEE WINDFARM ISO14 (AHIMS # 46-3-0234)

Site type	Artefact
Centroid	GDA 94 Zone 54 636216 m E and 6228272 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO14 (AHIMS # 46-3-0234) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO14 (AHIMS # 46-3-0234) is a silcrete whole flake measuring 55 mm long, 25 mm wide and 15 mm thick. The flake has a split down its centre and is in poor condition. It is located near a disturbed vehicle track.

Figure 7.42 and Figure 7.43 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO14 (AHIMS # 46-3-0234).



Figure 7.42 South-west view of Mallee Windfarm ISO14 (AHIMS # 46-3-0234)



Figure 7.43 Silcrete whole flake Mallee Windfarm ISO14 (AHIMS # 46-3-0234)

MALLEE WINDFARM PAD (AHIMS # 46-3-0236)

Site type	Potential Archaeological Deposit (PAD)
Centroid	[REDACTED]
Site Extent	150 m X 100 m

Mallee Windfarm PAD (AHIMS # 46-3-0236) is a PAD situated on a dune within the Project Area and is outside the proposed Disturbance Footprint. Mallee Windfarm PAD (AHIMS # 46-3-0236) is a sandy rise with high archaeological potential [REDACTED]. The PAD measures approximately 150 m long and 100 m wide.

Figure 7.44 and Figure 7.45 contain representative images of Mallee Windfarm PAD (AHIMS # 46-3-0236).

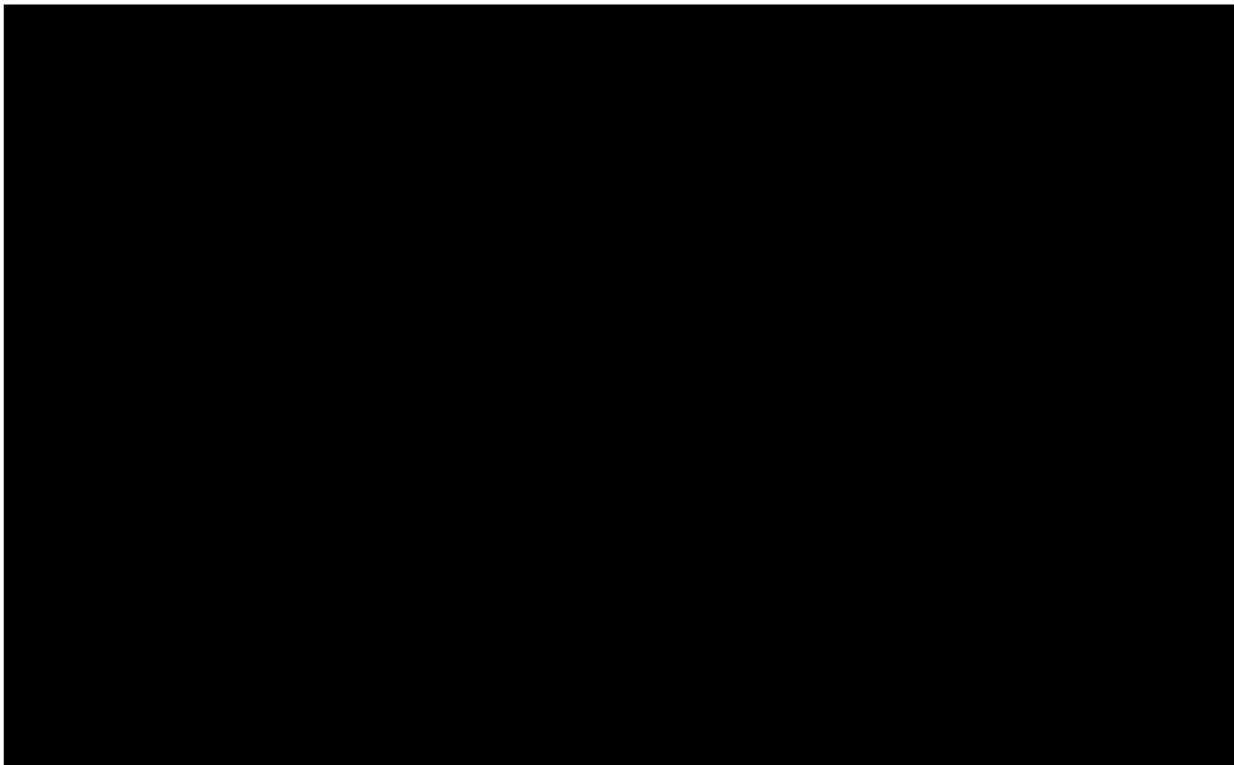


Figure 7.44 [REDACTED] (AHIMS # 46-3-0236)

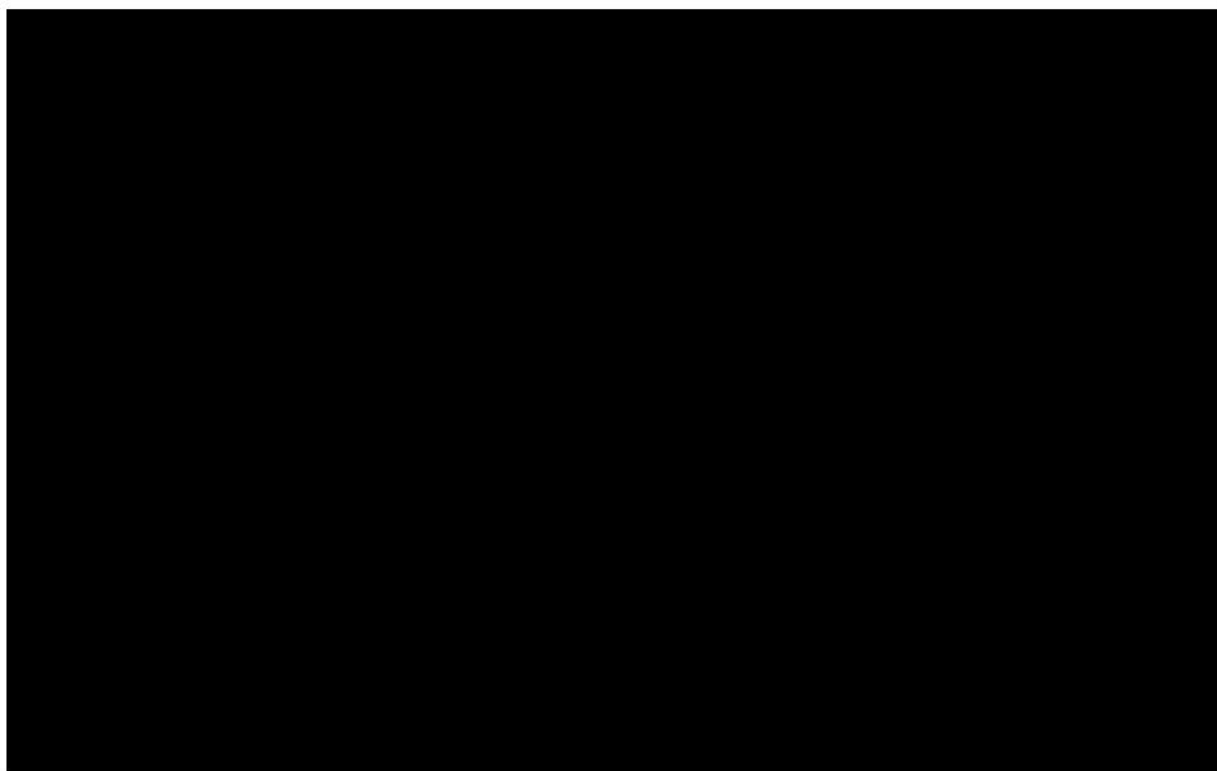


Figure 7.45 East view of Mallee Windfarm PAD (AHIMS # 46-3-0236)

MALLEE WINDFARM HR5 (AHIMS # 46-3-0238)

Site type	Hearth
Centroid	GDA 94 Zone 54 636498 m E and 6232013 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR5 (AHIMS # 46-3-0238) is a hearth situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm HR5 (AHIMS # 46-3-0238) is a 1 m x 1m hearth that has been exposed in a dirt track.

Figure 7.46 and Figure 7.47 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR5 (AHIMS # 46-3-0238).



Figure 7.46 West view of Mallee Windfarm HR5 (AHIMS # 46-3-0238)



Figure 7.47 Burnt hearth material at Mallee Windfarm HR5 (AHIMS # 46-3-0238)

MALLEE WINDFARM HR10 (AHIMS # 46-3-0241)

Site type	Hearth
Centroid	GDA 94 Zone 54 634260 m E and 6227324 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR10 (AHIMS # 46-3-0241) is a hearth situated on a dune within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm HR10 (AHIMS # 46-3-0241) is an isolated fired stone in a disturbed wheat paddock. This site was recorded at the request of the RAPs.

Figure 7.48 and Figure 7.49 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR10 (AHIMS # 46-3-0241).



Figure 7.48 South view of Mallee Windfarm HR10 (AHIMS # 46-3-0241)



Figure 7.49 Fired stone at Mallee Windfarm HR10 (AHIMS # 46-3-0241)

MALLEE WINDFARM HR9 (AHIMS # 46-3-0242)

Site type	Hearth
Centroid	GDA 94 Zone 54 635134 m E and 6227325 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR9 (AHIMS # 46-3-0242) is a hearth situated on a dune within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm HR9 (AHIMS # 46-3-0242) is comprised of an isolated clay heat retainer in a disturbed paddock. No other cultural material is present. This site was recorded at the request of the RAPs.

Figure 7.50 and Figure 7.51 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR9 (AHIMS # 46-3-0242).



Figure 7.50 West view of Mallee Windfarm HR9 (AHIMS # 46-3-0242)

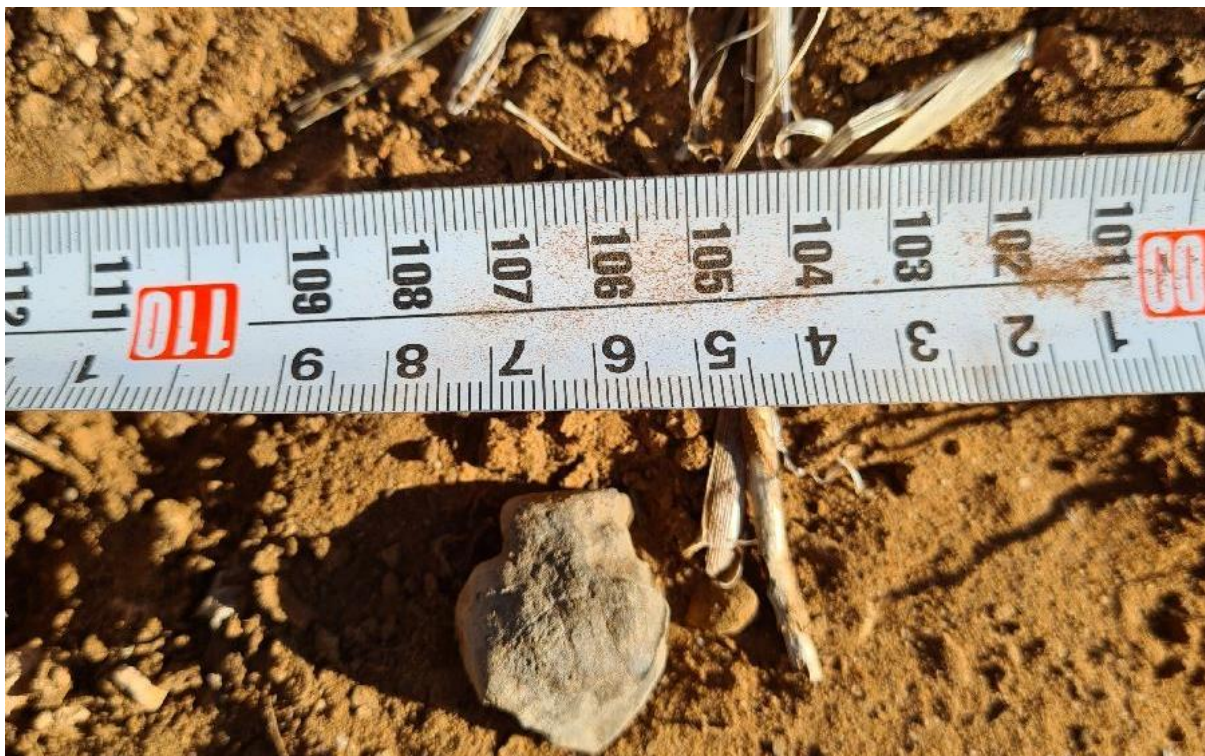


Figure 7.51 Isolated hearth material at Mallee Windfarm HR9 (AHIMS # 46-3-0242)

MALLEE WINDFARM HR11 (AHIMS # 46-3-0243)

Site type	Hearth
Centroid	GDA 94 Zone 54 634650 m E and 6227856 m N
Site Extent	20 m X 10 m

Mallee Windfarm HR11 (AHIMS # 46-3-0243) is a hearth situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm HR11 (AHIMS # 46-3-0243) is comprised of a scattered hearth with 2 clay heat retainers in a disturbed track. This site was recorded at the request of the RAPs.

Figure 7.52 and Figure 7.53 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR11 (AHIMS # 46-3-0243).



Figure 7.52 West view of Mallee Windfarm HR11 (AHIMS # 46-3-0243)



Figure 7.53 Clay heat retainer at Mallee Windfarm HR11 (AHIMS # 46-3-0243)

MALLEE WINDFARM ISO5 (AHIMS # 47-1-0064)

Site type	Artefact
Centroid	GDA 94 Zone 54 638741 m E and 6233404 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO5 (AHIMS # 47-1-0064) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO5 (AHIMS # 47-1-0064) is a silcrete proximal flake with a crush narrow platform, measuring 20 mm long, 21 mm wide and 10 mm thick. The platform width was 2 mm. The flake was within an eroded vehicle track.

A photograph of Mallee Windfarm ISO5 (AHIMS # 47-1-0064) is provided in Figure 7.54.



Figure 7.54 Silcrete proximal flake (Mallee Windfarm ISO5, AHIMS # 47-1-0064)

MALLEE WINDFARM ISO6 (AHIMS # 47-1-0065)

Site type	Artefact
Centroid	GDA 94 Zone 54 638986 m E and 6233366 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO6 (AHIMS # 47-1-0065) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO6 (AHIMS # 47-1-0065) is a silcrete proximal flake with 50% cortex measuring 25 mm long, 20 mm wide and 15 mm thick. The flake has a cortical platform measuring 5 mm wide. The flake was identified within a disturbed vehicle track.

A photograph of Mallee Windfarm ISO6 (AHIMS # 47-1-0065) is provided in Figure 7.55.



Figure 7.55 Silcrete proximal flake (Mallee Windfarm ISO6, AHIMS # 47-1-0065)

MALLEE WINDFARM ISO8 (AHIMS # 47-1-0066)

Site type	Artefact
Centroid	GDA 94 Zone 54 640344 m E and 6231533 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO8 (AHIMS # 47-1-0066) is an isolated artefact situated on a plain within the Project Area, and 1.12 m east of the proposed Disturbance Footprint. Mallee Windfarm ISO8 (AHIMS # 47-1-0066) is an isolated silcrete flake measuring 20 mm long, 15 mm wide and 10 mm thick. The flake was located near a disturbed vehicle track.

Figure 7.56 and Figure 7.57 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO8 (AHIMS # 47-1-0066).



Figure 7.56 South view of Mallee Windfarm ISO8 (AHIMS # 47-1-0066)



Figure 7.57 Silcrete flake (Mallee Windfarm ISO8, AHIMS # 47-1-0066)

MALLEE WINDFARM ISO7 (AHIMS # 47-1-0067)

Site type	Artefact
Centroid	GDA 94 Zone 54 639551 m E and 6231827 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO7 (AHIMS # 47-1-0067) is an isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO7 (AHIMS # 47-1-0067) is a silcrete flake measuring 60 mm long, 20 mm wide and 15 mm thick. The flake was located within a disturbed paddock.

Figure 7.58 and Figure 7.59 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO7 (AHIMS # 47-1-0067).



Figure 7.58 **West view of Mallee Windfarm ISO7 (AHIMS # 47-1-0067)**



Figure 7.59 Silcrete flake (Mallee Windfarm ISO7, AHIMS # 47-1-0067)

MALLEE WINDFARM ISO9 (AHIMS # 47-1-0068)

Site type	Artefact
Centroid	GDA 94 Zone 54 640078 m E and 6230347 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO9 (AHIMS # 47-1-0068) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint (40.03 m to the west). Mallee Windfarm ISO9 (AHIMS # 47-1-0068) is a silcrete core fragment measuring 25 mm long, 10 mm thick and 27 mm wide. The flake was located near a disturbed paddock.

Figure 7.60 and Figure 7.61 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO9 (AHIMS # 47-1-0068).



Figure 7.60 East view of Mallee Windfarm ISO9 (AHIMS # 47-1-0068)



Figure 7.61 Silcrete core fragment (Mallee Windfarm ISO9, AHIMS # 47-1-0068)

MALLEE WINDFARM ISO10 (AHIMS # 47-1-0069)

Site type	Artefact
Centroid	GDA 94 Zone 54 640817 m E and 6230344 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO10 (AHIMS # 47-1-0069) is an isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO10 (AHIMS # 47-1-0069) is a silcrete flake measuring 20 mm long, 10 mm wide and 2 mm thick. The flake is located in a disturbed paddock.

Figure 7.62 and Figure 7.63 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO10 (AHIMS # 47-1-0069).



Figure 7.62 South view of Mallee Windfarm ISO10 (AHIMS # 47-1-0069)



Figure 7.63 Silcrete flake (Mallee Windfarm ISO10, AHIMS # 47-1-0069)

MALLEE WINDFARM ISO11 (AHIMS # 47-1-0070)

Site type	Artefact
Centroid	GDA 94 Zone 54 638846 m E and 6230051 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO11 (AHIMS # 47-1-0070) is an isolated artefact situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO11 (AHIMS # 47-1-0070) is a silcrete core fragment measuring 20 mm long, 15 mm wide and 10 mm thick. The silcrete core fragment is located in a disturbed paddock.

Figure 7.64 and Figure 7.65 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO11 (AHIMS # 47-1-0070).



Figure 7.64 East view of Mallee Windfarm ISO11 (AHIMS # 47-1-0070)



Figure 7.65 Silcrete core fragment (Mallee Windfarm ISO11, AHIMS # 47-1-0070)

MALLEE WINDFARM ISO12 (AHIMS # 47-1-0071)

Site type	Artefact
Centroid	GDA 94 Zone 54 638652 m E and 6230068 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO12 (AHIMS # 47-1-0071) is an isolated artefact situated on a dune within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm ISO12 (AHIMS # 47-1-0071) is a silcrete cortical flake with 40% cortex measuring 30 mm long, 20 mm wide and 15 mm thick. The cortical flake is in a disturbed paddock. The isolated artefact was noted to be near a natural drainage line in the landscape.

Figure 7.66 and Figure 7.67 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO12 (AHIMS # 47-1-0071).



Figure 7.66 North view of Mallee Windfarm ISO12 (AHIMS # 47-1-0071), showing the natural drainage line



Figure 7.67 Silcrete cortical flake (Mallee Windfarm ISO12, AHIMS # 47-1-0071)

MALLEE WINDFARM HR6 (AHIMS # 47-1-0072)

Site type	Hearth
Centroid	GDA 94 Zone 54 639779 m E and 6230073 m N
Site Extent	1 m X 1 m

Mallee Windfarm HR6 (AHIMS # 47-1-0072) is a hearth situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm HR6 (AHIMS # 47-1-0072) is a hearth, with clay heat retainers, exposed in a dirt track in poor condition.

Figure 7.68 and Figure 7.69 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR6 (AHIMS # 47-1-0072).



Figure 7.68 North view of Mallee Windfarm HR6 (AHIMS # 47-1-0072)



Figure 7.69 Mallee Windfarm HR6 (AHIMS # 47-1-0072)

7.2.3. SURVEY UNIT 3

MALLEE WINDFARM ISO1 (AHIMS # 46-3-0229)

Site type	Artefact
Centroid	GDA 94 Zone 54 629746 m E and 6227677 m N
Site Extent	0.02 m X 0.02 m

Mallee Windfarm ISO1 (AHIMS # 46-3-0229) is an isolated artefact situated on a flat within the Project Area, but outside of the proposed Disturbance Footprint (622.7 m to the south-west). Mallee Windfarm ISO1 (AHIMS # 46-3-0229) is a silcrete proximal flake measuring 5 mm thick, 19 mm wide and 15 mm long. The proximal flake has a flaked platform and no cortex.

Figure 7.70 and Figure 7.71 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO1 (AHIMS # 46-3-0229).



Figure 7.70 East view of Mallee Windfarm ISO1 (AHIMS # 46-3-0229)



Figure 7.71 Silcrete proximal flake (Mallee Windfarm ISO1, AHIMS # 46-3-0229)

MALLEE WINDFARM ISO2 (AHIMS # 46-3-0230)

Site type	Artefact
Centroid	GDA 94 Zone 54 628746 m E and 6228555 m N
Site Extent	0.02m X 0.01 m

Mallee Windfarm ISO2 (AHIMS # 46-3-0230) is an isolated artefact situated on a flat within the Project Area, but outside of the proposed Disturbance Footprint (1.17 km to the west). Mallee Windfarm ISO2 (AHIMS # 46-3-0230) is a silcrete proximal fragment with a focal platform measuring 15 mm long, 7 mm wide and 7 mm thick.

Figure 7.72 and Figure 7.73 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO2 (AHIMS # 46-3-0230).



Figure 7.72 East view of Mallee Windfarm ISO2 (AHIMS # 46-3-0230)



Figure 7.73 Mallee Windfarm ISO2 (AHIMS # 46-3-0230)

MALLEE WINDFARM ISO15 (AHIMS # 46-3-0235)

Site type	Artefact
Centroid	GDA 94 Zone 54 630951 m E and 6228387 m N
Site Extent	1 m X 1 m

Mallee Windfarm ISO15 (AHIMS # 46-3-0235) is an isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO15 (AHIMS # 46-3-0235) is a silcrete flaked piece with a smooth texture and a focal platform, measuring 20 mm long, 16 mm wide and 5 mm thick. The flake was located near a disturbed vehicle track.

Figure 7.74 and Figure 7.75 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm ISO15 (AHIMS # 46-3-0235).



Figure 7.74 South east view of Mallee Windfarm ISO15 (AHIMS # 46-3-0235)



Figure 7.75 Silcrete flaked piece (Mallee Windfarm ISO15, AHIMS # 46-3-0235)

MALLEE WINDFARM HR7 (AHIMS # 46-3-0239)

Site type	Hearth
Centroid	GDA 94 Zone 54 630591 m E and 6228869 m N
Site Extent	2 m X 1 m

Mallee Windfarm HR7 (AHIMS # 46-3-0239) is a hearth situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm HR7 (AHIMS # 46-3-0239) is comprised of scattered hearth material in a dirt track, with clay heat retainers. The hearth is in poor condition and is eroding out of the track.

Figure 7.76 and Figure 7.77 contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR7 (AHIMS # 46-3-0239).



Figure 7.76 South view of Mallee Windfarm HR7 (AHIMS # 46-3-0239)



Figure 7.77 Mallee Windfarm HR7 (AHIMS # 46-3-0239)

MALLEE WINDFARM HR8 (AHIMS # 46-3-0240)

Site type	Hearth
Centroid	GDA 94 Zone 54 632414 m E and 6229028 m N
Site Extent	2 m X 2 m

Mallee Windfarm HR8 (AHIMS # 46-3-0240) is a hearth situated on a plain within the Project Area, but outside of the proposed Disturbance Footprint. Mallee Windfarm HR8 (AHIMS # 46-3-0240) is a hearth eroded in a dirt track with small clay heat retainers. The hearth is in poor condition.

Figure 7.78 and contain representative images indicating the landscape context and cultural material identified within Mallee Windfarm HR8 (AHIMS # 46-3-0240).



Figure 7.78 South view of Mallee Windfarm HR8 (AHIMS # 46-3-0240)



Figure 7.79 Mallee Windfarm HR8 (AHIMS # 46-3-0240)

7.2.4. LIMITATIONS

There were no limitations that prevented the survey from being completed.

Austral confirms the survey methodology was completed in accordance with the Code.

8. ANALYSIS AND DISCUSSION

The following section presents an analysis and discussion of the results of the archaeological investigation.

8.1. ARCHAEOLOGICAL ANALYSIS

The surveys undertaken as part of this assessment determined that most of the Project Area has been disturbed by the past land-use practices associated with agricultural use. These past activities include animal disturbance, the development of informal tracks and the installation of fencing.

Table 8.1 Distribution of archaeological features across landforms

Feature	Undulating Dune	Ridgeline / Crest	Flat	Plain	Total
Artefact	1	1	4	10	16
PAD	1	-	-	-	1
Hearth	5	-	1	5	11
Site Complex	-	1	-	-	1
Total	7	2	5	15	29

Table 8.2 Distribution of archaeological features across the Project Area

Study Unit	Artefact	Hearth	PAD	Site Complex	Total
Survey Unit 1	1	4	-	-	5
Survey Unit 2	12	5	1	1	19
Survey Unit 3	3	2	-	-	5
Survey Unit 4	-	-	-	-	-
Survey Unit 5	-	-	-	-	-
Total	16	11	1	1	29

Before the surveys of the Project Area were conducted, there was only one registered cultural heritage site within its boundary, however it was identified that the site had been registered in the wrong location. All other cultural heritage sites were associated with the Murray River and the remnant lakes in the region, such as Gol Gol swamp to the south-west.

In later AHIMS searches, cultural heritage sites were present within the Project Area; however, these sites were identified during Austral's surveys in 2023 and 2024. As a result of the 2 surveys, 29 sites have been identified and subsequently registered, with artefacts the most commonly identified (n=16, 55.17%) followed by hearths (n=11, 38.93%), a PAD (n=1, 3.43%) and a site complex (n=1, 3.43%).

Modified trees are the most prominent feature located within the region. They have been identified at 47 (50.54%) of the 93 sites identified during the AHIMS searches. These were mainly located along the Murray River and within floodplains between the river and Lake Gol Gol, to the south-west of the Project Area.

The cultural heritage due diligence assessment conducted within the Mallee Cliffs National Park, which borders the Project Area to the south-east, does not contain any known modified trees, and it is unlikely that there will be any identified as the tree species that are known to occur, such as mallee trees and pines, were not commonly used for cultural modification in the region (OnSite Cultural Heritage Management 2017). As the Project Area contains similar vegetation groups to the Mallee Cliffs National Park, this would explain the absence of scar trees during the survey. Places where modified trees may have been located, such as depression soaks, have been heavily modified and cleared for post-European agricultural practices and water management.

Similarly, shell middens, earth mounds and other site features are mainly identified closer to major water sources and remnant lakes. Middens and earth mounds do not appear in the Project Area, and it is highly unlikely that they would have done so in the past. This is due to these sites being associated with the continuous occupation of land surrounding water bodies. These sites are identified in areas that have been subject to higher residential development due to major regional towns being located near natural water sources.

Most of the sites identified with the Project Area are hearths and artefacts that can be associated more with travel rather than long-term occupation. The archaeological survey identified that sites are not dispersed evenly across the Project Area. All the sites were associated with the main sand ridge that runs north-south within the Project Area; however, this is partly due to the development being focused in this area. Aside from this, sites were located on either side of the water shed point of the sand ridge, with a majority distributed along the eastern side of the ridge, where there are a number of remnant swamps or clay pans. The other trend seen in the distribution of sites is that they are distributed just south of the centre of the sand ridge, roughly in line with the highest point of the sand ridge, Gol Gol Swamp and southern end of the Willandra Lake system.

The artefacts were mostly found in isolation and were located on the flat landforms, such as a plain or flats. The 2 sites that contained artefact scatters, [REDACTED] (AHIMS # 46-3-0227) and Mallee Wind Farm AS 1 (AHIM # 46-3-0228), were located in a depression that contained substantial property dams. One of the sites, [REDACTED] (AHIMS # 46-3-0227), [REDACTED] suggesting the depression was potentially a regular occupation site for people travelling through the landscape. The presence of the large European dams located within the depressions suggests that any water source within the depression was more reliable than the others surrounding it.

Most of the hearth sites that were recorded in the Project Area only contain singular or very low numbers of burnt clay balls or calcrete nodules. These particular sites were registered at the request of the RAPs; however, this material can be made through modern burning such as crop fires and windrow burning. These events can burn exposed clay and calcrete as well as lead to stumps and dead tree burning clay below the ground.

All the sites have been affected by some form of land clearing and agricultural practice. As mentioned the [REDACTED] (AHIMS # 46-3-0227) and Mallee Wind Farm AS 1 (AHIM # 46-3-0228) are located in a depression that contains a number of dams and stock yards. The disturbance from the construction of the dams and yards is isolated to their footprint. Although the use of the area for managing livestock would have led to a larger area of disturbance, it does not affect heritage below the ground surface or result in extensive movement of surface material (Schoville 2019). The main contributing factor to the exposure of cultural material in the region is soil deflation from wind erosion, which would have been exacerbated by the loss of vegetation covering the ground from both land clearing and agricultural practices.

All the other cultural heritage sites are located on property tracks or areas that have been subject to ploughing. Like the 2 sites identified in the depression, the other sites have been heavily affected by soil deflation; however, the effects have been increased through different processes. The soil deflation affecting these sites is associated with ploughing and vehicle use instead of livestock management.

It has been recognised that between 150 mm and 1.5 m of the soil profile in the region has been lost since the introduction of agriculture, which has reduced the amount of ground cover, exposing more soil to wind erosion (Cork et al. 2012:30–33; Alt et al. 2009:3; Fanning 1999; Cattle 2016). Ploughing has the added impact of moving cultural material horizontally through the soil profile. Due to this, it is highly unlikely that any surface material that has been identified are located in their original deposit. Fanning (1999) suggests that since the European settlement of Australia, soil erosion rates in western NSW have drastically increased to around 145 times their 'natural' rate. Fanning emphasises the introduction of domestic grazing animals, along with changes in land use and their associated effects (decreased vegetation cover, tree cutting, etc), as encouraging runoff and wind erosion in the arid zone. This has increased the level of both aeolian and water erosion in the far western region. These findings are supported by Cattle (2016) who identifies key events of wind erosion in the region.

As much of the Project Area has been subject to extensive clearing, grazing and cropping, it is likely that aeolian and fluvial erosion have had a significant impact on topsoil depth and any archaeological materials present. The soil landscapes observed within the Project Area comprise residual soils, with very little remaining undisturbed topsoil except in areas where some remnant Mallee and chenopod communities remain. This means that any archaeological materials present in the pre-contact layers of topsoil (the A horizon) are likely to have been subject to exposure by erosion and potential loss or movement.

8.2. DISCUSSION

The region surrounding the Project Area, including the Mallee Cliffs National Park, Mungo National Park and the Menindee Lakes, contains evidence of human occupation from at least 50,000 years ago, with the dates associated with the Murray River dated to Karadoc Swamp at 25,000 - 22,800 years. Although the climate in this area is now considered to be semi-arid, previously during the Pleistocene, the environment and climate would have made the area more habitable for short- and long-term occupation.

As part of the survey, key landforms were investigated to evaluate the likelihood of cultural heritage material and how they would be impacted by the proposed works. Based on the results of the archaeological survey, it was determined that cultural heritage is present within the Project Area, although in low densities. These cultural heritage sites are located in areas of disturbance, including from cropping, but most have been identified on the edge of remnant vegetation.

The survey supported the results of the predictive model, confirming there was a limited amount of cultural material likely to be present within the Project Area. Following the survey, it was determined that test excavations were not required. This decision was made on the basis of the location of the proposed development, and well-established models of site distribution and Aboriginal occupation for the region; pre-contact water availability; and other environmental factors, including levels of post-contact soil erosion and long-term agricultural impacts to the landscape. It is noted that a PAD (Mallee Windfarm PAD / 46-3-0236) was identified during survey, however this will not be tested due to the proposed works no longer impacting the site. Any test excavation of the PAD would cause unnecessary harm to any potential site located within the PAD.

Regional patterns of Aboriginal site distribution in far western NSW are affected by their distance from fresh water sources or stone material sources. Landforms suited to long-term intensive use [REDACTED], and levels of post-contact modification of the soil, are critical factors in determining the presence of surface and subsurface archaeology (Pardoe 2003; Witter 2004). The Project Area contains only ephemeral water sources and does not have any source bordering dunes or stone outcrops suited to tool procurement. This means that the Project Area is likely showing a distribution of sites that is representative of Aboriginal people travelling through the landscape and camping at reliable water holes. These activities leave few archaeological traces in the landscape.

Finally, within the Disturbance Footprint, the soils have been subject to extensive modification from vegetation clearing, cropping, grazing and other agricultural activities. Given that the Disturbance Footprint is not associated with permanent or semi-permanent fresh water or stone material sources, subsurface sites would only exist in low numbers with very low artefact concentrations. With the influence of post-contact land clearing, ploughing and soil erosion, it is unlikely that any subsurface artefacts are *in situ*. Any subsurface sites that would be *in situ* would likely be located in areas where sand has built up, and therefore would be approximately 1.5 m below the surface (Cattle 2016). Consequently, subsurface testing is highly unlikely to provide any additional information as to the nature of the cultural heritage within the Project Area that could not be determined through the survey.

Figure 8.1 depicts the archaeological potential of the Project Area, which was developed using topographic maps, modern and historical aerials, predictive modelling, and survey results. Figure 8.1 represents both surface and subsurface archaeological potential, with the only location for subsurface archaeology being present in areas of high archaeological potential.

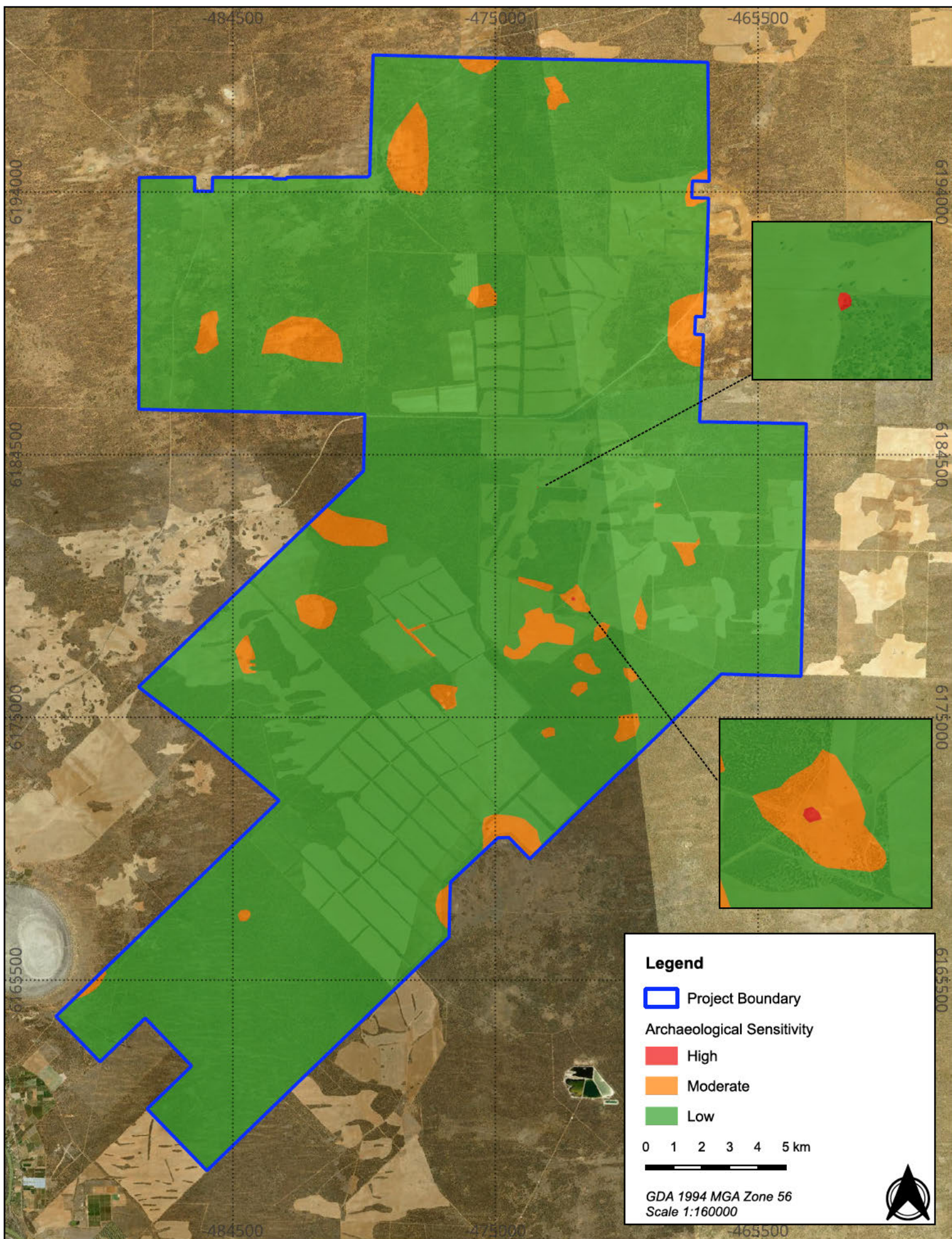


Figure 8.1 - Archaeological sensitivity of the Project Area

25068 Mallee Wind Farm ACH Advice

Source: NSW LPI Aerial

Drawn by: PB Date: 2026-01-19

AUSTRAL
ARCHAEOLOGY

9. CULTURAL HERITAGE VALUES

An assessment of significance seeks to determine and establish the importance or value that a place, site or item may have to the community at large. The concept of cultural significance is intrinsically connected to the physical fabric of the item or place, its location, setting and relationship with other items in its surrounds. The assessment of cultural significance is ideally a holistic approach that draws upon the response these factors evoke from the community.

9.1. WORLD AND NATIONAL HERITAGE VALUES

The WLWHA and WLRNHP are located approximately 25 km from the Project Area. Aboriginal cultural heritage values comprise a significant part of the overall OUV for which WLWHA and WLRNHP are listed on both the World Heritage and National Heritage listings. Specifically, the WLWHA and WLRNHP are listed for values relating to the authenticity of natural and Aboriginal cultural heritage, inclusive of the ongoing cultural connection of traditional owners to the region, as well as outstanding scientific and archaeological values, including evidence of human occupation of Australia dating to 42000 years BP (UNESCO World Heritage Convention n.d.). A more detailed discussion of the listings' history has been provided in Section 4.2. Although the Project Area is outside of the WLWHA and WLRNHP properties, their proximity required referral under the EPBC, and a consideration of the Proposed Actions in accordance with the MNES Significant Impact Guidelines 1.1 (Australian Government, Department of Sustainability, Environment, Water, Population and Communities 2013). A detailed assessment of the Proposed Actions is provided in Section 10.

9.2. BASIS FOR THE ASSESSMENT

The significance values provided in the Australia ICOMOS *Charter for the Conservation of Places of Cultural Significance* (the Burra Charter) are considered to be the best practice heritage management guidelines in Australia (Australia ICOMOS 2013a). The Burra Charter defines cultural significance as:

"...aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups." (Australia ICOMOS 2013a:2)

The Burra Charter significance values outlined in Table 9.1; these are frequently adopted by cultural heritage managers and government agencies as a framework for a more holistic assessment of significance.

Table 9.1 Definitions of Burra Charter significance values (Australia ICOMOS 2013b)

Value	Definition
Aesthetic	Refers to the sensory and perceptual experience of a place. That is how a person responds 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. Expressions of aesthetics are culturally influenced.

Value	Definition
Historic	Refers to all aspects of history. For example, the history of aesthetics, art and architecture, science, spirituality and society. It therefore often underlies other values. A place may have historic value because it has influenced, or has been influenced by, an historic event, phase, movement or activity, person or group of people. It may be the site of an important event. For any place, the significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence.
Scientific	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. The relative scientific value of a place is likely to depend on the importance of the information or data involved, on its rarity, quality or representativeness, and its potential to contribute further important information about the place itself or a type or class of place or to address important research questions.
Social	Refers to the associations that a place has for a particular community or cultural group and the social or cultural meanings that it holds for them.
Spiritual	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 a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places. The qualities of the place may inspire a strong and/or spontaneous emotional or metaphysical response in people, expanding their understanding of their place, purpose and obligations in the world, particularly in relation to the spiritual realm. The term spiritual value was recognised as a separate value in the Burra Charter, 1999. It is still included in the definition of social value in the Commonwealth and most state jurisdictions. Spiritual values may be interdependent on the social values and physical properties of a place.

In addition to the Burra Charter significance values, other criteria and guidelines have been formulated by other government agencies and bodies in NSW to assess the significance of heritage places in NSW. Of particular relevance to this assessment are the guidelines prepared by the Australian Heritage Council and the Department of the Environment, Water, Heritage and the Arts (DEWHA), and Heritage NSW (Australian Heritage Council and DEWHA 2009; Department of Environment, Climate Change and Water NSW 2010b; OEH 2011; NSW Heritage Office 2001).

The Guide (OEH 2011:10) states that the following criteria from the NSW Heritage Office (2001:9) should be considered:

- **Social value:** Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?
- **Historic value:** Is the subject area important to the cultural or natural history of the local area and/or region and/or state?
- **Scientific value:** Does the subject area 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:** Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?

OEH (2011:10) states that when considering the Burra Charter criteria, a grading system must be employed. Austral will use the following grading system to assess the cultural values of the Project Area and its constituent features. These are outlined in Table 9.2.

Table 9.2 Gradings used to assess the cultural values of the Project Area

Grading	Definition
Exceptional	The Project Area is considered to have rare or outstanding significance values against this criterion. The significance values are likely to be relevant at a state or national level.
High	The Project Area is considered to possess considerable significant values against this criterion. The significance values are likely to be very important at a local or state level.
Moderate	The Project Area is considered to have significance values against this criterion; these are likely to have limited heritage value but may contribute to broader significance values at a local or State level.
Low	The Project Area is considered to have little or no significance values against this criterion.

9.3. ASSESSMENT OF SIGNIFICANCE

The following section addresses the Burra Charter significance values with reference to the overall Project Area.

9.3.1. AESTHETIC SIGNIFICANCE VALUES

Aesthetic values refer to the sensory, scenic, architectural, and creative aspects of the place. These values may be related to the landscape and are often closely associated with social and cultural values.

The Project Area is an undulating landscape full of swales, dunes and plains in semi-arid Australia. Although the Project Area would have originally consisted of native vegetation and an open landscape, the continued use of the Project Area as an agricultural property has modified the landscape resulting in a negative impact to the aesthetic values.

Based on this assessment, the Project Area is considered to have **low** aesthetic significance values.

9.3.2. HISTORIC SIGNIFICANCE VALUES

The assessment of historic values refers to associations with places associated with Aboriginal history. Historic values may not be limited to physical values but may relate to intangible elements that relate to memories, stories or experiences.

The Project Area was originally part of the Mallee Cliff Station, which was established in 1866, which would have been a point of contact between Aboriginal people and European squatters, however there is no evidence of historically significant Aboriginal people or events occurring within or near the Project Area.

Based on this assessment, the Project Area is considered to have **low** historic significance values.

9.3.3. SCIENTIFIC SIGNIFICANCE VALUES

Scientific significance generally relates to the ability of archaeological objects or sites to answer research questions that are important to the understanding of the past lifeways of Aboriginal people. Australia ICOMOS (2013b:5) suggests that to appreciate scientific value, that the following question is asked: *"Would further investigation of the place have the potential to reveal substantial new information and new understandings about people, places, processes or practices which are not available from other sources?"*

In addition to the above criteria, The Guide (OEH 2011:10) also suggests that consideration is given to the Australian Heritage Council and DEWHA (2009) criteria, which are particularly useful when considering scientific potential:

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

An assessment of the scientific significance of the Aboriginal sites located within the Project Area is outlined in Table 9.3.

Table 9.3 Scientific significance of Aboriginal sites in the Project Area

Site name	AHIMS No.	Assessment of significance	Grading
Mallee Windfarm AS1	46-3-0228	Mallee Windfarm AS1 (AHIMS #46-3-0228) is located on a ridge of a sand dune. Mallee Windfarm AS1 (AHIMS #46-3-0228) consists of an artefact scatter with a silcrete flake and a silcrete proximal fragment. Artefacts are common in the region and offer little educational and/or research potential. Mallee Windfarm AS1 (AHIMS #46-3-0228) is therefore considered to have low scientific value.	Low
Mallee Windfarm HR1	39-6-0101	Mallee Windfarm HR1 (AHIMS #39-6-0101) is a hearth that consists of 10 clay heat retainers that are heavily dispersed over an area of 3mx3m with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR1 (AHIMS #39-6-0101) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR2	39-6-0103	Mallee Windfarm HR2 (AHIMS #39-6-0103) is a hearth that consists of an isolated clay heat retainer with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR2 (AHIMS #39-6-0103) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR3	39-6-0104	Mallee Windfarm HR3 (AHIMS #39-6-0104) is a hearth situated on a dune that consists of an isolated clay heat retainer with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR3 (AHIMS #39-6-0104) is of little educational or research potential and is determined to be of low scientific value.	Low

Site name	AHIMS No.	Assessment of significance	Grading
Mallee Windfarm HR4	46-3-0237	Mallee Windfarm HR4 (AHIMS #46-3-0237) is a hearth situated on a dune that consists of 3 small burnt clay retainers with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR4 (AHIMS #46-3-0237) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR5	46-3-0238	Mallee Windfarm HR5 (AHIMS #46-3-0238) is a hearth on a flat landform. Mallee Windfarm HR5 (AHIMS #46-3-0238) consists of a hearth that measures 1mx1m eroding out of an exposed track. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm (AHIMS #46-3-0238) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR6	47-1-0072	Mallee Windfarm HR6 (AHIMS #47-1-0072) is a hearth on a plain landform. Mallee Windfarm HR6 (AHIMS #47-1-0072) consists of a hearth that measures 1m x 1m, is eroding and in poor condition. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR6 (AHIMS #47-1-0072) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR7	46-3-0239	Mallee Windfarm HR7 (AHIMS #46-3-0239) is a hearth on a plain landform. Mallee Windfarm HR7 (AHIMS #46-3-0239) consists of a hearth that measures 2mx1m and is scattered across a dirt track. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR7 (AHIMS #46-3-0239) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR8	46-3-0240	Mallee Windfarm HR8 (AHIMS #46-3-0240) is a hearth on a plain landform. Mallee Windfarm HR8 (AHIMS #46-3-0240) consists of a hearth that measures 2mx2m and is scattered across a dirt track with small clay heat retainers. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR8 (AHIMS #46-3-0240) is of little educational or research potential and is determined to be of low scientific value.	Low

Site name	AHIMS No.	Assessment of significance	Grading
Mallee Windfarm HR9	46-3-0242	Mallee Windfarm HR9 (AHIMS #46-3-0242) is a hearth that consists of an isolated burnt clay retainer with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR9 (AHIMS #46-3-0242) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR10	46-3-0241	Mallee Windfarm HR10 (AHIMS #46-3-0241) is a hearth that consists of an isolated burnt stone with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR10 (AHIMS #46-3-0241) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm HR11	46-3-0243	Mallee Windfarm HR11 (AHIMS #46-3-0243) is a hearth that consists of 2 clay heat retainers with no point of origin. This site type is common within the local region and the site has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR11 (AHIMS #46-3-0243) is of little educational or research potential and is determined to be of low scientific value.	Low
Mallee Windfarm ISO1	46-3-0229	Mallee Windfarm ISO1 (AHIMS #46-3-0229) is an isolated artefact located on a flat. Described as a silcrete proximal fragment, Mallee Windfarm ISO1 (AHIMS #46-3-0229) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO1 (AHIMS #46-3-0229) is determined to have low scientific significance.	Low
Mallee Windfarm ISO2	46-3-0230	Mallee Windfarm ISO2 (AHIMS #46-3-0230) is an isolated artefact located on a flat. Described as a silcrete proximal fragment, Mallee Windfarm ISO2 (AHIMS #46-3-0230) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO2 (AHIMS #46-3-0230) is determined to have low scientific significance.	Low
Mallee Windfarm ISO3	39-6-0102	Mallee Windfarm ISO3 (AHIMS #39-3-0102) is an isolated artefact located on a flat. Described as a silcrete flaked piece, Mallee Windfarm ISO3 (AHIMS #39-3-0102) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO3 (AHIMS #39-3-0102) is determined to have low scientific significance.	Low

Site name	AHIMS No.	Assessment of significance	Grading
Mallee Windfarm ISO4	46-3-0232	Mallee Windfarm ISO4 (AHIMS #46-3-0232) is an isolated artefact located on a flat. Described as a silcrete longitudinally broken flaked piece, Mallee Windfarm ISO4 (AHIMS #46-3-0232) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO4 (AHIMS#46-0232) is determined to have low scientific significance.	Low
Mallee Windfarm ISO5	47-1-0067	Mallee Windfarm ISO5 (AHIMS #47-1-0067) is an isolated artefact located on a plain. Described as a silcrete proximal fragment, Mallee Windfarm ISO5 (AHIMS #47-1-0067) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO5 (AHIMS #47-1-0067) is determined to have low scientific significance.	Low
Mallee Windfarm ISO6	47-1-0065	Mallee Windfarm ISO6 (AHIMS #47-1-0065) is an isolated artefact located on a plain. Described as a silcrete proximal fragment, Mallee Windfarm ISO6 (AHIMS #47-1-0065) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO6 (AHIMS #47-1-0065) is determined to have low scientific significance.	Low
Mallee Windfarm ISO7	47-1-0067	Mallee Windfarm ISO7 (AHIMS #47-1-0067) is an isolated artefact located on a plain. Described as a silcrete flake, Mallee Windfarm ISO7 (AHIMS #47-1-0067) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO7 (AHIMS #47-1-0067) is determined to have low scientific significance.	Low
Mallee Windfarm ISO8	47-1-0066	Mallee Windfarm ISO8 (AHIMS #47-1-0066) is an isolated artefact located on a plain. Described as a silcrete flake, Mallee Windfarm ISO8 (AHIMS #47-1-0066) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO8 (AHIMS #47-1-0066) is determined to have low scientific significance.	Low
Mallee Windfarm ISO9	47-1-0068	Mallee Windfarm ISO9 (AHIMS #47-1-0068) is an isolated artefact located on a plain. Described as a silcrete core fragment, Mallee Windfarm ISO9 (AHIMS #47-1-0068) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO9 (AHIMS #47-1-0068) is determined to have low scientific significance.	Low

Site name	AHIMS No.	Assessment of significance	Grading
Mallee Windfarm ISO10	47-1-00069	Mallee Windfarm ISO10 (AHIMS #47-1-00069) is an isolated artefact located on a plain. Described as a silcrete flake, Mallee Windfarm ISO10 (AHIMS #47-1-00069) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO10 (AHIMS #47-1-00069) is determined to have low scientific significance.	Low
Mallee Windfarm ISO11	#47-3-0070	Mallee Windfarm ISO11 (AHIMS #47-3-0070) is an isolated artefact located on a plain. Described as a silcrete core fragment, Mallee Windfarm ISO11 (AHIMS #47-3-0070) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO11 (AHIMS #47-3-0070) is determined to have low scientific significance.	Low
Mallee Windfarm ISO12	47-1-0071	Mallee Windfarm ISO12 (AHIMS #47-1-0071) is an isolated artefact located on a dune. Described as a silcrete cortical flake, Mallee Windfarm ISO12 (AHIMS #47-1-0071) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO12 (AHIMS #47-1-0071) is determined to have low scientific significance.	Low
Mallee Windfarm ISO13	46-3-0233	Mallee Windfarm ISO13 (AHIMS #46-3-0233) is an isolated artefact located on a plain. Described as a silcrete flaked piece, Mallee Windfarm ISO13 (AHIMS #46-3-0233) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO13 (AHIMS #46-3-0233) is determined to have low scientific significance.	Low
Mallee Windfarm ISO14	46-3-0234	Mallee Windfarm ISO14 (AHIMS #46-3-0234) is an isolated artefact located on a plain. Described as a silcrete flaked piece, Mallee Windfarm ISO14 (AHIMS #46-3-0234) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO14 (AHIMS #46-3-0234) is determined to have low scientific significance.	Low
Mallee Windfarm ISO15	46-3-0235	Mallee Windfarm ISO15 (AHIMS #46-3-0235) is an isolated artefact located on a plain. Described as a silcrete flaked piece, Mallee Windfarm ISO15 (AHIMS #46-3-0235) was located on a disturbed vehicle track and was not found in association with any other sites. Due to the artefact being isolated from other sites, it has limited research or education potential. Therefore, Mallee Windfarm ISO15 (AHIMS #46-3-0235) is determined to have low scientific significance.	Low

Site name	AHIMS No.	Assessment of significance	Grading
	46-3-0227		
Mallee Windfarm PAD	46-3-0236	Mallee Windfarm PAD (AHIMS #46-3-0236) is situated on a dune. As Mallee Windfarm PAD (AHIMS #46-3-0236) is a PAD it has unknown educational and research potential. Therefore, Mallee Windfarm PAD (AHIMS #46-3-0236) is determined to have unknown scientific significance.	Unknown
Dansons Road CMT1	46-3-0250	Dansons Road CMT1 (AHIMS #46-3-0250) is a culturally modified tree located on the on a sand plain. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT1 (AHIMS #46-3-0250) is considered to have a moderate scientific value at a local level.	Moderate
Dansons Road CMT2	46-3-0251	Dansons Road CMT2 (AHIMS #46-3-0251) is a culturally modified tree located on the on a sand plain. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT2 (AHIMS #46-3-0251) is considered to have a moderate scientific value at a local level.	Moderate
Dansons Road CMT3	46-3-0254	Dansons Road CMT3 (AHIMS #46-3-0254) is a culturally modified tree located on the on a sand plain. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT3 (AHIMS #46-3-0254) is considered to have a moderate scientific value at a local level.	Moderate

9.3.4. SOCIAL AND SPIRITUAL SIGNIFICANCE VALUES

As social and spiritual significance are interdependent, Austral has undertaken a combined assessment of these values. The Consultation Requirements specify that the social or cultural values of a place can only be identified through consultation with Aboriginal people. During the consultation period, no social or spiritual significance was identified to be associated with any to the sites or the Project Area.

Based on this assessment, the Project Area is considered to have **low** social and spiritual significance values.

9.4. STATEMENT OF SIGNIFICANCE

Statements of significance for identified Aboriginal sites within the Project Area are presented in Table 9.4. The statements of significance have been formulated using the Burra Charter significance values and relevant NSW guidelines (Department of Environment, Climate Change and Water NSW 2010b; OEH 2011; Australia ICOMOS 2013a).

Table 9.4 Statements of significance for Aboriginal sites in the Project Area

Site name	Statement of significance
Mallee Windfarm AS1 / AHIMS #46-3-0027	Mallee Windfarm AS1 (AHIMS #46-3-0027) is an artefact scatter. The site is located on a ridge on a sand dune formation and consists of 2 silcrete artefacts, one flaked piece and a proximal fragment. Based on these findings, the site is unlikely to have research potential. Mallee Windfarm AS1 (AHIMS #46-3-0027) has been assessed to not have historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance. This has been determined on the basis that the site consists of 2 silcrete artefacts that are not complete, nor show any unique technologies or are used for specific purposes.
Mallee Windfarm HR1 / AHIMS #39-6-0101	Mallee Windfarm HR1 (AHIMS #39-6-0101) is located on a flat landform and consists of a hearth. Mallee Windfarm HR1 (AHIMS #39-6-0101) s condition is poor due to the site being highly dispersed over a 3mx3m area with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR1 (AHIMS #39-6-0101) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR2 / AHIMS #39-6-0103	Mallee Windfarm HR2 (AHIMS #39-6-0103) is located on a dune landform and is a hearth that consists of an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR2 (AHIMS #39-6-0103) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.
Mallee Windfarm HR3 / AHIMS #39-6-0104	Mallee Windfarm HR3 (AHIMS #39-6-0104) is located on a dune landform within a disturbed paddock and is a hearth that consists of an isolated burnt clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR3 (AHIMS #39-6-0104) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR4 / AHIMS #46-3-0237	Mallee Windfarm HR4 (AHIMS #46-3-0237) is located on a dune landform and is a hearth that consists of 3 burnt clay heat retainers with ochre, with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR4 (AHIMS #46-3-0237) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance

Site name	Statement of significance
Mallee Windfarm HR5 / AHIMS #46-3-0238	Mallee Windfarm HR5 (AHIMS #46-3-0238) is located on a plain landform and consists of a hearth. Mallee Windfarm HR5 (AHIMS #46-3-0238) is eroding out of an informal dirt track and has been highly disturbed by the ongoing use of the track. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR5 (AHIMS #46-3-0238) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR6 / AHIMS #47-1-0072	Mallee Windfarm HR6 (AHIMS #47-1-0072) is located on a plain landform and consists of a hearth. Mallee Windfarm HR6 (AHIMS #47-1-0072) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR6 (AHIMS #47-1-0072) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR7 / AHIMS #46-3-0239	Mallee Windfarm HR7 (AHIMS #46-3-0239) is located on a plain landform and consists of a hearth. Mallee Windfarm HR7 (AHIMS #46-3-0239) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR7 (AHIMS #46-3-0239) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR8 / AHIMS #46-3-0240	Mallee Windfarm HR8 (AHIMS #46-3-0240) is located on a plain landform and consists of a hearth. Mallee Windfarm HR8 (AHIMS #46-3-0240) is eroding out of an informal dirt track that is currently in use and has been highly disturbed. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR8 (AHIMS #46-3-0240) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance
Mallee Windfarm HR9 / AHIMS #46-3-0242	Mallee Windfarm HR9 (AHIMS #46-3-0242) is located on a dune landform and is a hearth that consists of an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR9 (AHIMS #46-3-0242) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance

Site name	Statement of significance
Mallee Windfarm HR10 / AHIMS #46-3-0241	Mallee Windfarm HR10 (AHIMS #46-3-0241) is located on a dune landform within a worked paddock and consists of a hearth. Mallee Windfarm HR10 (AHIMS #46-3-0241) is an isolated clay heat retainer with no point of origin. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR10 (AHIMS #46-3-0241) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.
Mallee Windfarm HR11 / AHIMS #46-3-0243	Mallee Windfarm HR11 (AHIMS #46-3-0243) is located on a plain landform and consists of a hearth. Mallee Windfarm HR11 (AHIMS #46-3-0243) is scattered with 2 clay heat retainers and is eroding out of an informal dirt track. Based on these findings, the site is unlikely to have research potential. This site type is common within the local region and has been heavily disturbed by cropping and vehicle movement, resulting in the dispersal and degradation of hearth materials. Consequently, Mallee Windfarm HR11 (AHIMS #46-3-0243) has been assessed to have no historic, aesthetic, social or spiritual significance, and low scientific and archaeological significance.
Mallee Windfarm ISO1 / AHIMS #46-3-0229	Mallee Windfarm ISO1 (AHIMS #46-3-0229) is an isolated silcrete proximal flake located on a plain. The site is located on a dirt farm track and has likely been disturbed by the ongoing use of the informal track. Mallee Windfarm ISO1 (AHIMS #46-3-0229) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO2 / AHIMS #46-3-0230	Mallee Windfarm ISO2 (AHIMS #46-3-0230) is an isolated silcrete proximal fragment located on a flat. Mallee Windfarm ISO2 (AHIMS #46-3-0230) is situated on an informal farm track. Mallee Windfarm ISO2 (AHIMS #46-3-0230) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO3 / AHIMS #39-6-0102	Mallee Windfarm ISO3 (AHIMS #39-6-0102) is an isolated silcrete flaked piece located on a flat. Mallee Windfarm ISO3 (AHIMS #39-6-0102) is situated on an informal farm track. Mallee Windfarm ISO3 (AHIMS #39-6-0102) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO4 / AHIMS #46-3-0232	Mallee Windfarm ISO4 (AHIMS #46-3-0232) is an isolated silcrete longitudinally broken flaked piece located on a flat. Mallee Windfarm ISO4 (AHIMS #46-3-0232) is situated on an informal farm track. Mallee Windfarm ISO4 (AHIMS #46-3-0232) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.

Site name	Statement of significance
Mallee Windfarm ISO5 / AHIMS #47-1-0064	Mallee Windfarm ISO5 (AHIMS #47-1-0064) is an isolated silcrete proximal fragment located on a plain. Mallee Windfarm ISO5 (AHIMS #47-1-0064) is situated on an informal farm track. Mallee Windfarm ISO5 (AHIMS #47-1-0064) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO6 / AHIMS #47-1-0065	Mallee Windfarm ISO6 (AHIMS #47-1-0065) is an isolated silcrete proximal fragment located on a plain. Mallee Windfarm ISO6 (AHIMS #47-1-0065) is situated on an informal farm track. Mallee Windfarm ISO6 (AHIMS #47-1-0065) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO7 / AHIMS #47-1-0067	Mallee Windfarm ISO7 (AHIMS #47-1-0067) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO7 (AHIMS #47-1-0067) is situated on an informal farm track. Mallee Windfarm ISO7 (AHIMS #47-1-0067) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO8 / AHIMS #47-1-0066	Mallee Windfarm ISO8 (AHIMS #47-1-0066) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO8 (AHIMS #47-1-0066) is situated on an informal farm track. Mallee Windfarm ISO8 (AHIMS #47-1-0066) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO9 / AHIMS #47-1-0068	Mallee Windfarm ISO9 (AHIMS #47-1-0068) is an isolated silcrete core fragment located on a plain. Mallee Windfarm ISO9 (AHIMS # 47-1-0068) is situated on an informal farm track. Mallee Windfarm ISO9 (AHIMS # 47-1-0068) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.
Mallee Windfarm ISO10 AHIMS #47-1-0069	Mallee Windfarm ISO10 (AHIMS #47-1-0069) is an isolated silcrete flake located on a plain. Mallee Windfarm ISO10 (AHIMS #47-1-0069) is situated on an informal farm track. Mallee Windfarm ISO10 (AHIMS #47-1-0069) has been assessed to not have historic, aesthetic, social or spiritual significance and low scientific and archaeological significance. This has been determined on the basis that the artefact is isolated from other sites and is unlikely to provide research or educational potential.

Site name	Statement of significance
Dansons Road CMT1 / 46-3-0250	Dansons Road CMT1 (AHIMS #46-3-0250) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT1 (AHIMS #46-3-0250) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.
Dansons Road CMT2 / 46-3-0251	Dansons Road CMT2 (AHIMS #46-3-0251) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT2 (AHIMS #46-3-0251) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.
Dansons Road CMT3 / 46-3-0254	Dansons Road CMT3 (AHIMS #46-3-0254) is not considered to have aesthetic historical or social/spiritual significance. Scarred trees are a finite archaeological site as they are dependent on the life expectancy of the tree and the surrounding environmental conditions. Due to this Dansons Road CMT3 (AHIMS #46-3-0254) is considered to have a moderate scientific value at a local level. Overall, the site is of moderate significance.

Heritage NSW specifies the importance of considering cultural landscapes when determining and assessing Aboriginal cultural values. The principle behind this is that *'For Aboriginal people, the significance of individual features is derived from their inter-relatedness within the cultural landscape. This means features cannot be assessed in isolation and any assessment must consider the feature and its associations in a holistic manner'* (Department of Environment, Climate Change and Water NSW 2010c).

The Project Area is located within semi-arid Australia and consists of a landscape of dunes, swales, and flats that although currently cleared would have been vegetated. The background research suggested there were limited resources available for Aboriginal people, however there were 29 Aboriginal cultural heritage sites recorded as part of this ACHA that provide evidence of occupation, both short and long term, within the Project Area. These sites vary from isolated artefacts to complex sites [REDACTED] and although all these sites are individually assessed they also collectively tell a story about how Aboriginal people have used the Project Area. As a result, the Project Area is part of an important landscape that includes cultural values that contribute to the significance of the area.

10. IMPACT ASSESSMENT

This section outlines, according to Heritage NSW guidelines, the potential harm that the proposed activity may have on identified Aboriginal objects and places within the Project Area (Department of Environment, Climate Change and Water NSW 2010b; OEH 2011).

10.1. LAND USE HISTORY

The Project Area is found within an area under constant artificial change. Deforestation and vegetation clearance have occurred throughout most of the Project Area, which has resulted in erosion along the slopes within the Project Area. Historically the Project Area was used for grazing and other relatively low-impact agricultural activity, with little development beyond access tracks, bores, dams, and roads. In recent times, the Project Area has been intensively ploughed for agricultural cropping and livestock grazing.

Agricultural cropping and livestock grazing activities have resulted in broadscale soil disturbance and topsoil movement across the Project Area. The impact of this upon Aboriginal cultural heritage material includes stone artefact displacement and dispersion of hearths rather than the complete destruction of Aboriginal sites. The limited archaeological potential across this disturbance zone is more likely to reflect the inherent unsuitability of the terrain for permanent Aboriginal occupation than the prior loss of the Aboriginal sites due to European land use practices. This is readily evidenced by both the number of recorded AHIMS sites close to the Murray River (refer Figure 4.5) and other semi-permanent lakes and the density of artefacts, hearths and scarred trees in those locations in comparison with those identified in during the current investigation. With the exception of the [REDACTED] (AHIMS #46-3-0227), the main site types in located in the Project Area comprise isolated finds, hearths and very low-density scatters.

A summary of past land uses within the Project Area is shown in Table 10.1.

Table 10.1 Summary of past land use within the Project Area

Past land uses	Potential impacts on archaeological resources
Deforestation and vegetation clearance	The deforestation and vegetation clearance of the Project Area and surrounds in the past may have resulted in a loss of archaeological potential. Aboriginal scarred trees may have been completely destroyed, or severely damaged.
Animal grazing	Animal grazing could have resulted in the displacement of archaeological artefacts and/or damage to subsurface archaeological artefacts (if present). It could also result in unnatural movements of artefacts through the stratigraphic record.
Agricultural cropping	Agricultural cropping within the Project Area, including the use of ploughs, may have resulted in further artefact displacement, damage to artefacts and movement of artefacts through the archaeological record.
Construction of access tracks, bores, dams and roads	The construction of access tracks, bores, dams and roads within the Project Area would have involved significant groundworks which may have resulted in significant artefact displacement.

10.2. PROPOSED ACTIVITY

The proposed Project is for a renewable energy development that will include the installation of up to 76 WTGs and a containerised Battery Energy Storage System (BESS).

The key components of the Project include:

- Up to 76 (3-blade) WTGs with a maximum blade-tip height of 280 m above ground.
- A single grid-scale 100 MW /200 MWh BESS.
- Permanent ancillary infrastructure including internal roads, hardstands, main and collector substations, switchyards, operations and maintenance facilities, underground and overhead electricity transmission lines and poles, telecommunications facilities and utility services, permanent meteorological masts and water storage tanks.
- Temporary facilities including TWA camp (if required), site offices, amenities, construction compounds and laydown areas, concrete or asphalt batching plants, minor 'work front' construction access roads, environmental management and monitoring and signage.
- Off-site road works, involving upgrades to the proposed local transport route and establishment of site access points to facilitate delivery of wind turbine components to the Project Area as required.

10.3. DESIGN REFINEMENT AND AVOIDANCE

Following the archaeological surveys, part of the design for the proposed works was refined to avoid impacts to the sites listed in Table 10.2. These sites are now wholly excluded from the Project Disturbance Footprint.

Table 10.2 Sites that will be avoided due to a refinement in the Project design

Site Name	AHIMS Number	Scientific Significance
██████████	46-3-0227	████
Mallee Windfarm AS1	46-3-0228	Low
Mallee Windfarm PAD	46-3-0236	Unknown
Mallee Windfarm ISO1	46-3-0229	Low
Mallee Windfarm ISO2	46-3-0230	Low
Mallee Windfarm ISO3	39-6-0102	Low
Mallee Windfarm ISO5	47-1-0064	Low
Mallee Windfarm ISO6	47-1-0065	Low
Mallee Windfarm ISO8	47-1-0066	Low
Mallee Windfarm ISO9	47-1-0068	Low
Mallee Windfarm ISO11	47-1-0070	Low
Mallee Windfarm ISO12	47-1-0071	Low
Mallee Windfarm ISO13	46-3-0233	Low
Mallee Windfarm ISO14	46-3-0234	Low
Mallee Windfarm HR1	39-6-0101	Low
Mallee Windfarm HR2	39-6-0103	Low
Mallee Windfarm HR3	39-6-0104	Low

Site Name	AHIMS Number	Scientific Significance
Mallee Windfarm HR4	46-3-0237	Low
Mallee Windfarm HR6	47-1-0072	Low
Mallee Windfarm HR8	46-3-0240	Low
Mallee Windfarm HR11	46-3-0243	Low

10.4. ASSESSING HARM

This section outlines the assessment process for addressing potential harm to Aboriginal objects and/or places within the Project Area, as outlined by Heritage NSW (OEH 2011:12).

10.4.1. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

An objective of the NPW Act, under Section 2A(1)(b)(i) is to conserve “*places, objects and features of significance to Aboriginal people*” through applying the principles of ecologically sustainable development (ESD) (Section 2A(2)). ESD is defined in Section 6(2) of the *Protection of the Environment Administration Act 1991* (NSW) as “*...the effective integration of social, economic and environmental considerations in decision-making processes*”. ESD can be achieved with regards to Aboriginal cultural heritage, by applying principle of inter-generational equity, and the precautionary principle to the nature of the proposed activity, with the aim of achieving beneficial outcomes for both the development, and Aboriginal cultural heritage.

INTERGENERATIONAL EQUITY

The principle of intergenerational equity is that the present generation has a responsibility to ensure the health, diversity and productivity of the environment for the benefit of future generations. The Department of Environment and Climate Change (DECC), now Heritage NSW, states that in terms of Aboriginal cultural heritage “*intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and places remain in a region (for example, because of impacts under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.*” (Department of Environment and Climate Change NSW 2009:26).

The assessment of intergenerational equity and understanding of cumulative impacts should consider information about the integrity, rarity or representativeness of the Aboriginal objects and/or places that may be harmed and how they illustrate the occupation and use of the land by Aboriginal people across the locality (Department of Environment and Climate Change NSW 2009:26).

Where there is uncertainty over whether the principle of intergenerational equity can be followed, the precautionary principle should be applied.

PRECAUTIONARY PRINCIPLE

Heritage NSW defines the Precautionary Principle as “*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*” (Department of Environment and Climate Change NSW 2009:26).

The application of the precautionary principle should be guided through:

- A careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment.
- An assessment of the risk—weighted consequences of various options.

DECC (2009:26) states that the precautionary principle is relevant to the consideration of potential impacts to Aboriginal cultural heritage, where:

- The proposal involves a risk of serious or irreversible damage to Aboriginal objects and/or places or to the value of those objects and/or places.
- There is uncertainty about the Aboriginal cultural heritage values, scientific, or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.

Where either of the above is likely, a precautionary approach should be taken, and all effective measures implemented to prevent or reduce harm to Aboriginal cultural heritage values.

10.4.2. TYPES OF HARM

When considering the nature of harm to Aboriginal objects and/or places, it is necessary to quantify direct and indirect harm. The types of harm, as defined in the Guide (OEH 2011:12), and are summarised in Table 10.3. These definitions will be used to quantify the nature of harm to identified Aboriginal objects and/or places that have been identified as part of this assessment. The Code states that the degree of harm can be either total or partial (Department of Environment, Climate Change and Water NSW 2010d:21).

Table 10.3 Definition of types of harm

Type of harm	Definition
Direct harm	May occur as the result of any activity which disturbs the ground including, but not limited to, site preparation activities, installation of services and infrastructure, roadworks, excavating detention ponds and other drainage or flood mitigation measures, and changes in water flows affecting the value of a cultural site.
Indirect harm	May affect sites or features located immediately beyond, or within, the area of the proposed activity. Examples of indirect impacts include, but are not limited to, increased impact on art in a shelter site from increased visitation, destruction from increased erosion and changes in access to wild food resources.

10.5. IMPACT ASSESSMENT

This ACHA has included a programme of investigations that have characterised the nature, extent and significance of Aboriginal sites within the Disturbance Footprint.

As part of the ACHA field investigations, 32 Aboriginal sites have been identified within the Project Area including an additional 3 sites that had been identified during the writing of this ACHA as a part of an unrelated project.

Of the 32 Aboriginal sites, 24 are located outside of the Disturbance Footprint. There are 8 Aboriginal sites that are located within the Disturbance Footprint. All of the sites located within the Disturbance Footprint will be directly impacted by the proposed works.

The 3 off-site roadworks locations (Figure 1.3) are likely to have no impact on Aboriginal cultural heritage as they are minor works in existing disturbed road corridors. These minor works will involve traffic management, the installation of temporary fences, hardstands and gates, vegetation management, signage and lighting, and alternative route provision.

An evaluation of harm to the Aboriginal sites identified as part of the ACHA is summarised in Table 10.4. Details of the proposed activity and its relationship to identified Aboriginal sites are outlined in Figure 10.1 to Figure 10.8.

Table 10.4 Assessment of harm to identified Aboriginal sites

Site name / AHIMS No.	Significance	Type of harm	Degree of harm	Consequence of harm
Mallee Windfarm AS1 / 46-3-0228	Low	None	None	No loss of value
Mallee Windfarm HR1 / 39-6-0101	Low	None	None	No loss of value
Mallee Windfarm HR10 / 46-3-0241	Low	Direct	Total	Total loss of value
Mallee Windfarm HR11 / 46-3-0243	Low	None	None	No loss of value
Mallee Windfarm HR2 / 39-6-0103	Low	None	None	No loss of value
Mallee Windfarm HR3 / 39-6-0104	Low	None	None	No loss of value
Mallee Windfarm HR4 / 46-3-0237	Low	None	None	No loss of value
Mallee Windfarm HR5 / 46-3-0238	Low	Direct	Total	Total loss of value
Mallee Windfarm HR6 / 47-1-0072	Low	None	None	No loss of value
Mallee Windfarm HR7 / 46-3-0239	Low	Direct	Total	Total loss of value
Mallee Windfarm HR8 / 46-3-0240	Low	None	None	No loss of value
Mallee Windfarm HR9 / 46-3-0242	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO1 / 46-3-0229	Low	None	None	No loss of value
Mallee Windfarm ISO10 / 47-1-0069	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO11 / 47-1-0070	Low	None	None	No loss of value
Mallee Windfarm ISO12 / 47-1-0071	Low	None	None	No loss of value
Mallee Windfarm ISO13 / 46-3-0233	Low	None	None	No loss of value
Mallee Windfarm ISO14 / 46-3-0234	Low	None	None	No loss of value
Mallee Windfarm ISO15 / 46-3-0235	Low	Direct	Total	Total loss of value

Site name / AHIMS No.	Significance	Type of harm	Degree of harm	Consequence of harm
Mallee Windfarm ISO2 / 46-3-0230	Low	None	None	No loss of value
Mallee Windfarm ISO3 / 39-6-0102	Low	None	None	No loss of value
Mallee Windfarm ISO4 / 46-3-0232	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO5 / 47-1-0064	Low	None	None	No loss of value
Mallee Windfarm ISO6 / 47-1-0065	Low	None	None	No loss of value
Mallee Windfarm ISO7 / 47-1-0067	Low	Direct	Total	Total loss of value
Mallee Windfarm ISO8 / 47-1-0066	Low	None	None	No loss of value
Mallee Windfarm ISO9 / 47-1-0068	Low	None	None	No loss of value
██████████ / 46-3-0227	High	None	None	No loss of value
Mallee Windfarm PAD / 46-3-0236	Unknown	None	None	No loss of value
Dansons Road CMT1 / 46-3-0250	Moderate	None	None	No loss of value
Dansons Road CMT2 / 46-3-0251	Moderate	None	None	No loss of value
Dansons Road CMT3 / 46-3-0254	Moderate	None	None	No loss of value

10.5.1. VISUAL IMPACT ASSESSMENT

To assist in understanding the impact on cultural heritage within the vicinity of the Project Area, the authors of this report assessed the Visual Impact Assessment (VIA) completed by Moir Landscape Architecture from July 2024. The VIA demonstrates that there will be between 86 and 129 wind turbines visible at a distance of at least 18 kilometres to the east of the Project Area (Moir Landscape Architects 2024). While the Project Area is not listed on any heritage registers, the view lines from both World Heritage and National Heritage-listed items within proximity to the Project Area must be considered within this assessment.

The visibility of the wind turbines from a significant distance from the Project Area will have a minor visual impact on the view lines from the WLWHA and WLRNHP; however, it is unlikely to negatively impact Aboriginal cultural heritage values, create visual intrusiveness, or be a barrier to the wider views from the items due to their distance to the works. Therefore, it is not expected the proposed works will impact negatively on the overall views of World Heritage and National Heritage-listed items within the vicinity.

10.6. ASSESSMENT OF IMPACTS UNDER THE EPBC ACT

Although the WLWHA and WLRNHP are located more than 20 km from the Project Area, in accordance with the referral under the EPBC Act and the Supplementary SEARs, an assessment of the Proposed Actions is required with reference to MNES Significant Impact Guidelines 1.1 (DoE, 2013). The MNES Significant Impact Guidelines 1.1 (DoE, 2013, p. 16) define actions likely to have a significant impact on the World Heritage values of a declared World Heritage property must be assessed if there is a real chance or possibility that it will cause:

- One or more of the World Heritage values to be lost.
- One or more of the World Heritage values to be degraded or damaged.
- One or more of the World Heritage values to be notably altered, modified, obscured or diminished.

There are no listed World Heritage properties or National Heritage Places located within or directly adjacent to the EPBC Referral Area, therefore the impacts of the Proposed Actions upon MNES have been assessed as nil. As stated above, the WLWHA and WLRNHP are located approximately 25 km from the Proposed Action/Project Area. Consequently, there will be no direct or indirect impacts on these properties as a result of the Proposed Action. Furthermore, there are no listed Commonwealth Heritage places within 20 km of the Referral Area. As such, there will be no direct or indirect impacts on these places as a result of the Proposed Action.

Additionally, the Supplementary SEARs required specific consideration of the impacts upon Aboriginal cultural heritage values for which WLWHA and WLRNHP had been set aside. Table 10.5 provides a detailed assessment of these values, their impacts and the proposed mitigation measures. Mitigation measures are discussed in detail in Section 11 and Section 12.

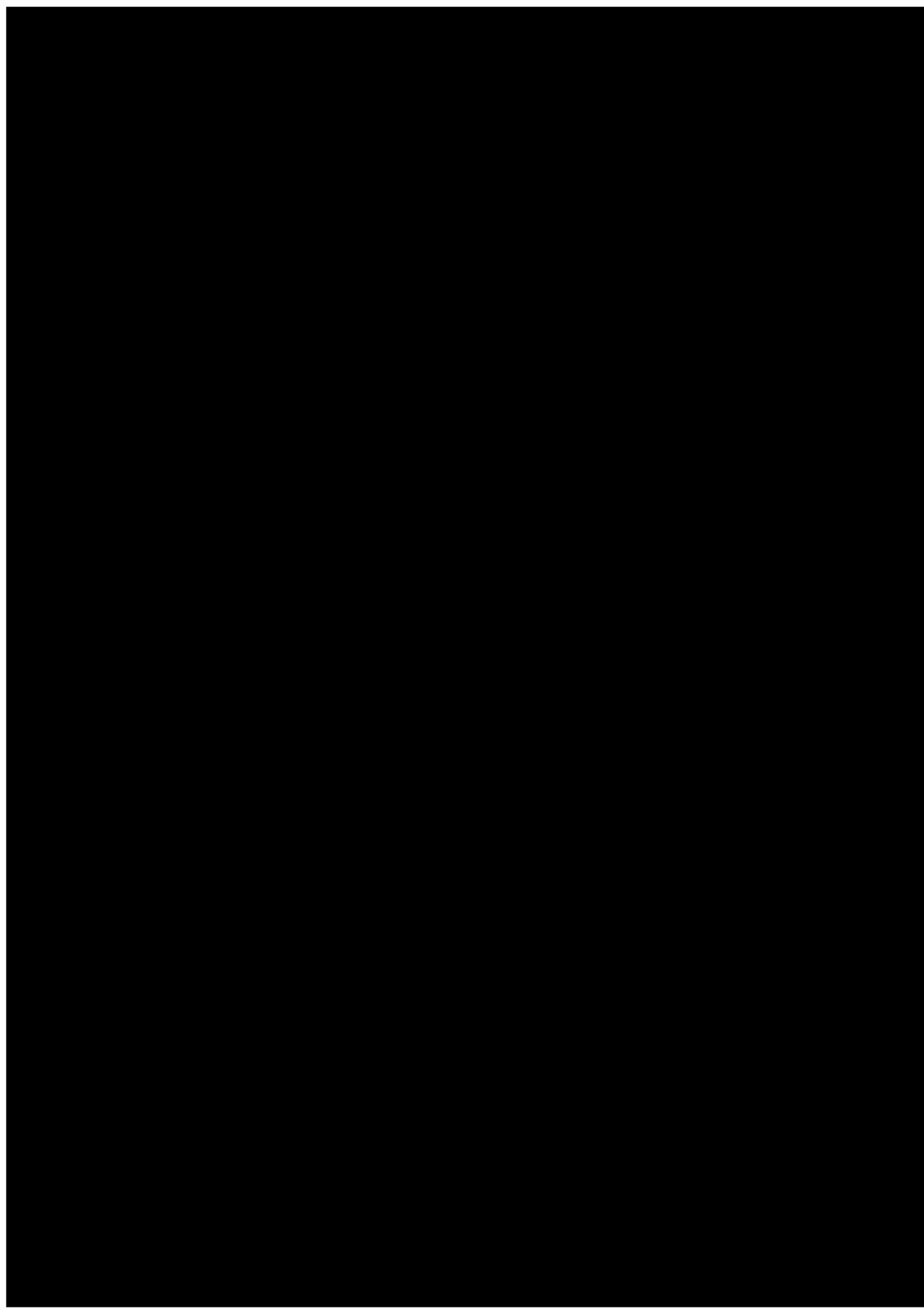
Table 10.5 Assessment of Supplementary SEARS criteria for cultural heritage sites

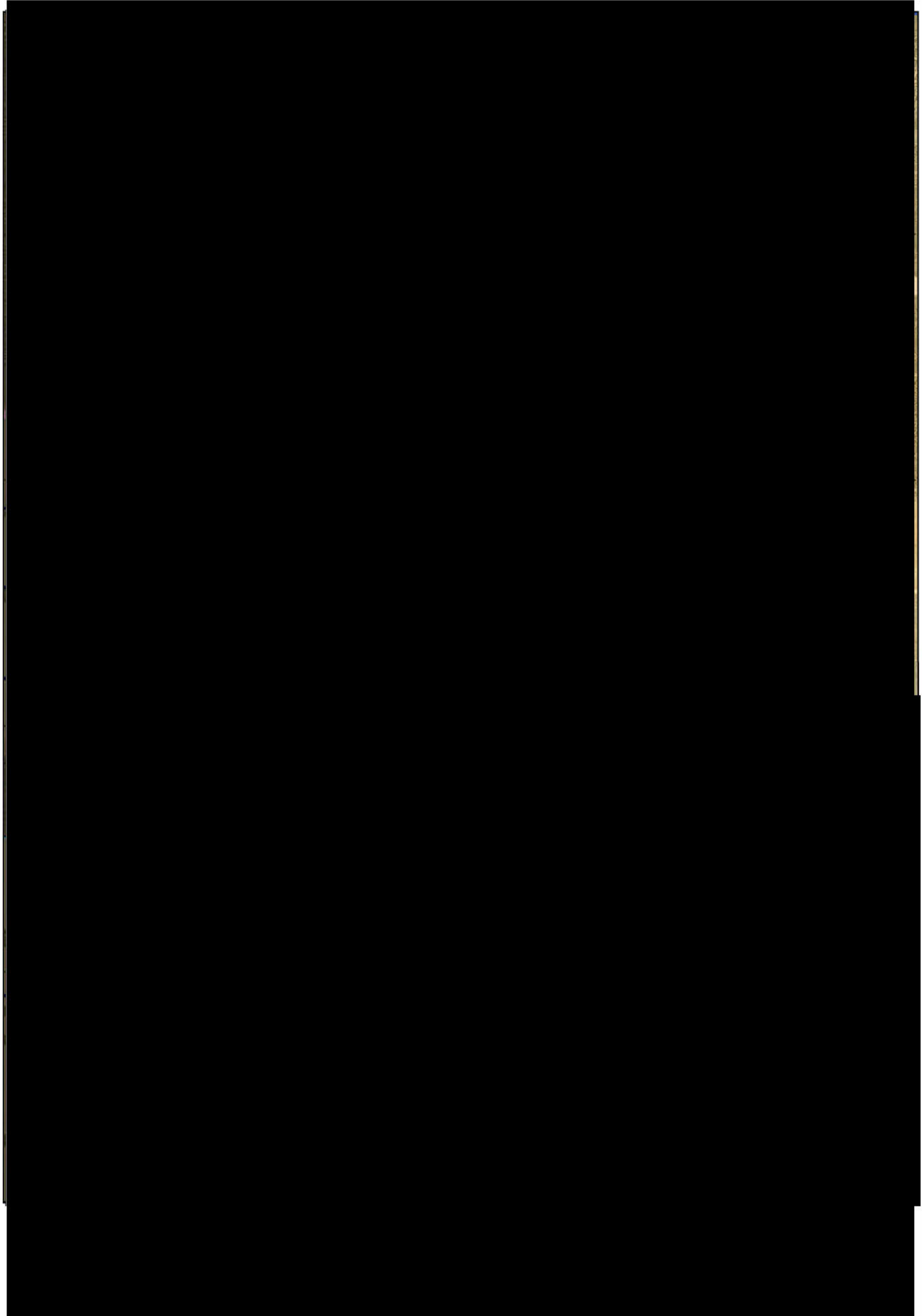
Supplementary SEARs Item	Impact Assessment	Mitigation Measure
Direct impacts to a World Heritage Area		
The proposed action may have a direct impact on the OUV of the WLWHA. Within the Statement of OUV, cultural practices are included as part of the authenticity of the site, stating that <i>"Aboriginal people of the Willandra take great pride in their cultural heritage and maintain their connection through modern day cultural, social and economic practices."</i>	The Proposed Actions result in no direct impacts upon the ability of Aboriginal people of the WLWHA to practice and maintain connection to Country through continuing cultural, social and economic practices.	Spark Renewables should establish protocols for the Aboriginal community to have access, ongoing consultation and review of the Proposed Actions and their impacts on cultural, social and economic practices across the life of the project. Recommendations for these protocols within an ACHMP are contained in Section 12.
Due to the proximity of the proposed action site and the height of wind turbines, the proposed action may be visible from multiple locations within the WLWHA. The proposed action may impact the WLWHA by obstructing/modifying/diminishing the important associated historical views of the landscape, impacting the current and ongoing cultural	The VIA has confirmed that visual impacts to the WLWHA are negligible, and therefore there will be no direct or indirect visual impacts to the World Heritage Area Property. The Proposed Actions result in no direct impacts upon the associated historical views of the landscape, nor do they impact the current and	Spark Renewables should establish protocols for the Aboriginal community to review and provide input consultation and review of the Proposed Actions and their visual impacts on the adjacent WLWHA across the life of the Project.

Supplementary SEARs Item	Impact Assessment	Mitigation Measure
practices that occur there by First Nations peoples.	ongoing cultural practices that occur there by First Nations peoples.	Recommendations for these protocols within an ACHMP are contained in Section 12.
The impacts to the WLRWHA would not only apply during the day but also of a night. Several of the dreaming stories that belong to the Barkandji/Paakantyi, Mutthi Mutthi and Ngiyampaa peoples are linked to the night sky. The light pollution created by the continuous blinking lights on the 150 wind turbines may obstruct/modify/diminish the skies and views of the stars at night, impacting the current and ongoing cultural practices that occur there by these First Nations peoples.	The VIA has confirmed that visual impacts to both of these sites are negligible, and therefore there will be no direct or indirect visual impacts to the Willandra Lakes World Heritage Area and the Willandra Lakes National Heritage Property. The Proposed Actions result in no direct impacts upon the Dreaming stories or views of the stars at night, impacting the current and ongoing cultural practices that occur there by these First Nations peoples.	Spark Renewables should establish protocols for the Aboriginal community to review and provide input consultation and review of the Proposed Actions and their visual impacts on the adjacent WLRWHA and Dreaming/cultural heritage across the life of the project. Ongoing access, consultation and regular monitoring/review of the Proposed Actions within the ACHMP recommended in Section 12.
Direct impacts to a National Heritage Property		
The proposed action may have a direct impact on the National Heritage Listed Values of the WLRNHP. These are largely the same values and impacts as described above with the World Heritage OUV.	The Proposed Actions result in no direct impacts upon the ability of Aboriginal people of the WLRNHP to practice and maintain connection to Country through continuing cultural, social and economic practices.	Spark Renewables should establish protocols for the Aboriginal community to have access, ongoing consultation and review of the Proposed Actions and their impacts on cultural, social and economic practices across the life of the project. Recommendations for these protocols within a ACHMP are contained in Section 12.
The proposed action has the potential to seriously degrade / disrupt / obstruct / modify / diminish several National Heritage Listed Values of the WLRNHP, primarily because it is an area that has a “strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.” All three of these reasons apply to the Barkandji/Paakantyi, Mutthi Mutthi and Ngiyampaa First Nations peoples both historically and currently, as they “maintain their connection through modern day cultural, social and economic practices” in the WLRNHP.	The VIA has confirmed that visual impacts to the WLRNHP are negligible, and therefore there will be no direct or indirect visual impacts to the National Heritage Property. The Proposed Actions result in no direct impacts upon the associated historical views of the landscape, nor do they impact the current and ongoing cultural practices that occur there by First Nations peoples.	Spark Renewables should establish protocols for the Aboriginal community to review and provide input consultation and review of the Proposed Actions and their visual impacts on the adjacent WLRNHP across the life of the project. Recommendations for these protocols within a ACHMP are contained in Section 12
As described above with the World Heritage OUV, the daylight visibility and night-time light pollution from the proposed action may seriously disturb the historical connection to, and contemporary practice of, the	The VIA has confirmed that visual impacts to the WLRNHP are negligible, and therefore there will be no direct or indirect visual impacts to the National Heritage Property.	Spark Renewables should establish protocols for the Aboriginal community to review and provide input consultation and review of the Proposed Actions and their visual

Supplementary SEARs Item	Impact Assessment	Mitigation Measure
social, cultural, and economic traditions of First Nations peoples.	The Proposed Actions result in no direct impacts upon the Dreaming stories or views of the stars at night, impacting the current and ongoing cultural practices that occur there by these First Nations peoples.	impacts on the adjacent WLRNHP and Dreaming/cultural heritage across the life of the project. Ongoing access, consultation and regular monitoring/review of the Proposed Actions within the ACHMP recommended in Section 12.

Section 12 of this ACHA contains recommendations for an ACHMP. The ACHMP should include protocols for ongoing access to the Project Area by the Aboriginal community across the life of the project, as well as ongoing consultation and opportunity for review of the Proposed Actions and their impacts on World Heritage properties.





11. AVOIDING AND MINIMISING HARM

The Burra Charter, advocates a cautious approach to change: “*do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained*” (Australia ICOMOS 2013a:1). Based on this principle, this section identifies the measures that have been taken to avoid harm and what conservation outcomes have been achieved through the preparation of this ACHA.

11.1. DEVELOPMENT OF PRACTICAL MEASURES TO AVOID HARM

The Project Area is located within an area of predominantly rural farmland, which has been utilised for pastoral grazing and cropping. As such, most impacts to the Project Area have been caused by European agricultural development, with previous land use practices having limited, but significant, effects on the Aboriginal cultural material that was likely to be present in the Project Area.

The proposed works will involve the construction of a renewable energy Project which will involve the development of access roads, a BESS, ancillary structures, temporary facilities, and up to 76 WTGs. This will result in harm to Aboriginal cultural material within the Disturbance Footprint.

As part of this ACHA, the proposed works have been altered to reduce harm to sites where possible. These sites are listed in Table 10.2. Furthermore, these sites are able to be further protected under the provisions of an ACHMP, as identified in Table 10.4, to prevent workers from impacting these sites.

However, there are 8 sites which cannot reasonably be avoided and would be directly impacted by the Project. It is not practical to conduct salvage excavation in association with all the impacted sites, due to low scientific value of the sites. Therefore, any measures to avoid and reduce harm will take into consideration the nature and significance of a site as well as the impacts that will affect it.

Isolated surface artefacts will be salvaged through community collection. Hearth sites, however, are often too complex or in extremely poor condition for surface collection to be undertaken. Therefore, there are only 2 practical measures when reducing harm to hearths, depending on their significance and number. They are to avoid the site, or allow the hearth to be impacted. Due to the location of the hearths, none of them can be avoided; therefore, allowances will be made to impact the relevant hearths.

11.2. PRINCIPLES OF ESD AND CUMULATIVE IMPACTS

The NSW Government, through the Energy Corporation of NSW (EnergyCo) seeks to maximise opportunities created by the transformation of the NSW electricity system by coordinating investment in Renewable Energy Zones (REZs) across NSW. A REZ is the equivalent of modern-day power stations, combining new renewable energy infrastructure, including generators (such as solar and wind farms), storage (such as batteries and pumped hydro) and high-voltage transmission infrastructure for connection to the National Electricity Market (NEM). Five (5) REZs have been declared in NSW to date.

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

Based on information available within the public domain, specifically the Department of Planning, Housing and Infrastructure’s (DPHI) Major Projects website, there are several projects in the vicinity of the Project and multiple more in the region more broadly.

The Guide to Reporting requires ACHAs to consider the effects of cumulative impacts under the principles of ESD. These principles are outlined in Section 10.4.1. In essence, this requires the acknowledgement that while a single development might have minimal impact, it forms part of an urbanisation process which results in the widespread loss of environmental and cultural resources.

The landscapes in the Murray Mallee region have been subject to progressive and continuing agricultural and pastoral practices, which have and will continue to place pressure on the archaeological resources within the region. To assess whether the proposed impacts from the Project will have a broader impact on the cultural resources of the region, Austral has undertaken an analysis of AHIMS sites associated with current or previous AHIPs based on the results of the extensive AHIMS search completed for this Project. Although the current project will be assessed as an SSD and does not require an AHIP, AHIPs are used here as a qualitative measure to determine cumulative impacts on Aboriginal archaeology in the Murray Mallee region.

Where impacts to Aboriginal archaeological sites in the region have been permitted following a development consent under the SSD pathway, these have been assessed by a search of destroyed sites on the AHIMS register. Any Aboriginal site subject to destruction under a consent determination or AHIP requires that its site card be updated to reflect the level of impact (i.e. 'destroyed' or 'partially destroyed'). The AHIMS search conducted on 12 March 2024 (Client Service ID : 872664) returned 1 partially destroyed and 2 destroyed sites (3.33%), all associated with an AHIP. While projects approved as SSDs within the Wentworth LGA exist, a search of determinations within the NSW Major Projects Portal resulted in none that intersected with the current Project Area or were located within the AHIMS search (Client Service ID : 872664) parameters. An extensive analysis of site impacts permitted by SSDs across the entire Wentworth LGA is beyond the scope of this assessment.

AHIMS sites were additionally analysed in relation to their current or future zoned use. The purpose behind this analysis is to determine the volume of AHIMS sites that are located within zonings that have or are likely to be subject to progressive development. This assumes that sites located within land zoned for residential (R1 – R5), business (B1 – B5) and industrial (IN1 – IN4) purposes are more likely to have been harmed or may be under threat of harm. Sites that are zoned for environmental (E1 – E5), recreational (RE1 – RE2) and rural (RU1 – RU6) purposes are likely to be subject to agricultural activities and renewable energy development. This analysis is presented in Table 11.1.

Table 11.1 Analysis of number of AHIMS sites in relation to land zoning

Land Zone Classification	No. of Sites by Zone	% Sites by Zone
RU1 (Rural Primary Production)	72	77.42%
SP2 (Infrastructure)	6	6.45%
C3 (Environmental Management)	5	5.38%
W2 (Recreational Waterways)	4	4.30%
RU5 (Rural Villages)	2	2.15%
RE1 (Public Recreation)	1	1.08%

Land Zone Classification	No. of Sites by Zone	% Sites by Zone
R5 (Large Lot Residential Areas)	1	1.08%
RU4 (Primary Production Small Lots)	1	1.08%
U (Unzoned)	1	1.08%
Total	93	100.00%

Although not always possible, avoiding sites and protecting them with buffers means these sites will continue to contribute to the cultural and social knowledge of past Aboriginal use of the area. As an alternative to complete destruction, community collection is recommended as a way of preserving the objects located within the site. Given the extensive clearing and ploughing of the Project Area, it is unlikely that a number of the sites occur *in situ* and therefore their removal will have less impact due to being out of their original context.

A review of the frequency of one or more AHIPs listed against AHIMS sites indicates some slightly differing trends. This indicates that 55.45% of sites have not had one or more AHIPs listed against them (Table 11.2). In relation to projects determined as SSDs, as discussed above, a search of determinations within the NSW Major Projects Portal resulted in none that intersected with current Project Area or located within the AHIMS search (Client Service ID: 872664) parameters. Consequently, Table 11.2 does not contain references to SSDs as no current determinations intersect with the AHIMS search parameters.

Table 11.2 Analysis of AHIMS sites with AHIPs issued

Site types	No. Sites	No. sites with AHIPs	% Sites with AHIPs
Modified Tree (Carved or Scarred)	46	2	4.35
Artefact	23	3	13.04
Shell	8	2	25.00
Hearth	4	0	0
Shell, Artefact	3	2	66.66
██████	2	0	0
Artefact, Hearth, Shell, Modified Tree (Carved or Scarred)	1	0	0
Earth Mound	1	1	100
██████████	1	0	0
██████████████	1	0	0
██████████	1	0	0
Artefact, Hearth, Shell	1	0	0
PAD	1	0	0
Total	93	10	10.75

The results demonstrated in Table 11.2, show that 10 (10.75%) of the 93 sites within the designated local search area have been subject to AHIPs. This analysis does indicate that 100% of earth mounds and 66.66% of shell and artefact sites have had AHIPs issued against them, indicating that these sites have been subject to cumulative impacts from successive approvals. However, this analysis does appear to indicate that locally, a higher proportion of AHIMS sites, specifically hearths and [REDACTED] (100%) are being conserved rather than destroyed. These results would also apply to any SSD determinations intersecting with the AHIMS search parameters and the Project Area, as the consent would require an update of AHIMS sites partially or wholly destroyed under the determination. As there are no currently intersecting SSD determinations, the AHIMS register returns no corresponding results.

11.3. STRATEGIES TO MINIMISE HARM

ACHA investigations included a programme of investigations that have characterised the nature, extent and significance of Aboriginal sites within the Project Area. The proposed works include developing a renewable energy Project that will connect to the NEM. The proposed works will include ground disturbance activities that will impact any Aboriginal cultural heritage present. Although the proposed works have been altered to avoid 24 of the sites (listed in Table 10.2), 8 sites will be directly impacted by the proposed works.

To ensure that impacts do not occur in these areas, a series of general management strategies will be implemented under an ACHMP for the Project. This would include the requirement of a cultural heritage induction, clear signage and fencing where required. The ACHMP will also include specific management strategies for the 8 sites that cannot be avoided, based on the nature and significance of the site and the likely impacts.

Due to the redesign of the proposed works, only isolated artefacts and hearths will be impacted, all of which have been identified as being of low significance. For the isolated artefact sites, it is recommended that a community collection program for the artefacts be initiated. Although harm will occur as part of this activity, the collection and relocation of these sites will minimise the harm that would occur as part of the proposed works, either directly or indirectly. Four artefact sites will be harmed through this community collection program.

The 4 hearths that have been identified are located within the Disturbance Footprint and cannot be avoided. These recorded hearth sites are in extremely poor condition, with most of them being a singular piece of hearth material that has been significantly disturbed, with some being a solitary piece of burnt clay or calcrete. As there is no hearth location associated with these sites, they cannot be archaeologically investigated. Therefore, no specific management strategy is proposed in relation to these 4 hearth sites, and they are allowed to be directly impacted.

A breakdown detailing the management strategies for each of the sites within the Project Area is presented in Table 11.3, with 'general' referring to those being managed under general management strategies, 'community collection' referring to the sites that will be subject to community collection and 'impacted' referring to sites that will be impacted with no further investigation.

Table 11.3 Management strategies by site

Site name/ AHIMS No.	Site Type	Significance	Impact	Management Strategy
Mallee Windfarm HR3 / 39-6-0104	Hearth– hearth material	Low	None – Outside of proposed works	General
Mallee Windfarm HR4 / 46-3-0237	Hearth– hearth material	Low	None – Outside of proposed works	General
Mallee Windfarm AS1 / 46-3-0228	Artefact Scatter	Low	None – Outside of proposed works	General
Mallee Windfarm HR1 / 39-6-0101	Hearth– hearth material	Low	None – Outside of proposed works	General
Mallee Windfarm HR11 / 46-3-0243	Hearth– hearth material	Low	None – Outside of proposed works	General
Mallee Windfarm ISO1 / 46-3-0229	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO12 / 47-1-0071	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO13 / 46-3-0233	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO14 / 46-3-0234	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO2 / 46-3-0230	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO8 / 47-1-0066	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO9 / 47-1-0068	Isolated artefact	Low	None – Outside of proposed works	General
██████████ ██████████ 46-3-0227	██████████ ██████████	████	██████████ ██████████	████
Mallee Windfarm PAD / 46-3-0236	PAD	Unknown	None – Outside of proposed works	General
Mallee Windfarm ISO10 / 47-1-0069	Isolated artefact	Low	Direct – Development Footprint	Community Collection
Mallee Windfarm ISO11 / 47-1-0070	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO15 / 46-3-0235	Isolated artefact	Low	Direct – Development Footprint	Community Collection
Mallee Windfarm ISO3 / 39-6-0102	Isolated artefact	Low	None – Outside of proposed works	General

Site name/ AHIMS No.	Site Type	Significance	Impact	Management Strategy
Mallee Windfarm ISO4 / 46-3-0232	Isolated artefact	Low	Direct – Development Footprint	Community Collection
Mallee Windfarm ISO5 / 47-1-0064	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO6 / 47-1-0065	Isolated artefact	Low	None – Outside of proposed works	General
Mallee Windfarm ISO7 / 47-1-0067	Isolated artefact	Low	Direct – Development Footprint	Community Collection
Mallee Windfarm HR10 / 46-3-0241	Hearth – hearth material	Low	Direct – Development Footprint	Impacted
Mallee Windfarm HR2 / 39-6-0103	Hearth – hearth material	Low	None – Outside of proposed works	General
Mallee Windfarm HR5 / 46-3-0238	Hearth – hearth	Low	Direct – Development Footprint	Impacted
Mallee Windfarm HR6 / 47-1-0072	Hearth – hearth	Low	None – Outside of proposed works	General
Mallee Windfarm HR7 / 46-3-0239	Hearth – hearth	Low	Direct – Development Footprint	Impacted
Mallee Windfarm HR8 / 46-3-0240	Hearth – hearth	Low	None – Outside of proposed works	General
Mallee Windfarm HR9 / 46-3-0242	Hearth – hearth material	Low	Direct – Development Footprint	Impacted
Dansons Road CMT1 / 46-3-0250	Modified Tree	Moderate	None – Outside of proposed works	General
Dansons Road CMT2 / 46-3-0251	Modified Tree	Moderate	None – Outside of proposed works	General
Dansons Road CMT3 / 46-3-0254	Modified Tree	Moderate	None – Outside of proposed works	General

In terms of tangible material culture, the Project Area has been largely modified and disturbed by post-settlement European land practices. This includes the clearing of native vegetation, grading and fencing, some modification of natural water flows and topsoil layers. The combined impacts of these disturbances have resulted in the area being assessed as having generally low archaeological potential. Consequently, the impacts of the proposed works on Aboriginal archaeological heritage values are considered negligible.

Additionally, the assessment has taken into consideration the impacts of the renewable energy Project/Proposed Action on the nearby WLWHA and the WLRNHP. While no direct impacts to either World Heritage or National Heritage-listed property, it is recommended that RAPs and the wider Aboriginal community be involved in ongoing monitoring, consultation and review of the Project. This arises from the recognition that the Project Area is part of the broader cultural landscape surrounding the WLWHA and the WLRNHP. Specifically, protocols for monitoring, consultation and review should form part of a ACHMP within the Project's Environmental Management Plan. The protocols contained within the ACHMP will further enhance ESD, in linking Country, people and the environment to the Project's implementation, and support Intergenerational Equity for Aboriginal people by retaining and recovering knowledge of pre-settlement landscapes and cultural practices. Section 12 of this ACHA contains recommendations for an ACHMP.

12. RECOMMENDATIONS

The following recommendations are derived from the findings described in this ACHA. The recommendations have been developed after considering the archaeological context, environmental information, consultation with the local Aboriginal community, and the findings of the archaeological surveys and the predicted impact of the planning proposal on archaeological resources.

It is recommended that:

1. Before any works occur, Spark Renewables should develop ACHMP to mitigate and manage impacts to all Aboriginal heritage sites within and directly adjacent to the Project Area. These sites are protected under Section 90 of the *NSW National Parks and Wildlife Act 1974*. The ACHMP should form part of the Project's construction environmental management plan (EMP), and the conditions contained within it should apply to the construction, operational and decommissioning phases of the Project.
2. It is recommended that the ACHMP include the following general management and mitigation measures to ensure the protection of any sites that are located outside the proposed works area, including the sites of high, moderate or unknown ([REDACTED] AHIMS #46-3-0227 and Mallee Windfarm PAD AHIMS #46-3-0236) significance. All sites that are protected under these general management conditions are listed in Table 11.3 of the ACHA. The ACHMP should include the following:
 - Measures to ensure all vehicles, machinery and personnel associated with the Project remain within the Disturbance Footprint as defined in this ACHA, unless they are carrying out pedestrian monitoring or surveying work that does not involve ground-breaking works. Vehicles are restricted to property tracks that are not associated with known sites, which is considered low impact. To ensure that people remain in designated areas:
 - Clear signage must be installed to ensure that all personnel remain within the approved Disturbance Footprint. Where access roads extend beyond the Disturbance Footprint, signage must explicitly state that personnel must remain confined to the designated road alignment at all times.
 - Provisions for monitoring potential impacts to ensure the protection of the World Heritage Values associated with any World Heritage and National Heritage properties located within the local area based on the mitigation measures listed in Table 10.5.
 - Provisions for protecting Aboriginal heritage items outside the Disturbance Footprint.
 - [REDACTED]
 - [REDACTED]
 - A contingency plan and reporting procedure if Aboriginal heritage items within or in close proximity to the approved Disturbance Footprint are incidentally damaged.
 - Protocols for conducting further archaeological and heritage assessment in disturbance areas where this assessment has not already been carried out.
 - Measures to ensure any workers on-site receive suitable heritage inductions prior to carrying out any work on site.
 - Measures to maintain and manage reasonable access for Aboriginal stakeholders to visit heritage items on site.

- Provisions for ongoing consultation with Aboriginal stakeholders for the conservation and management of Aboriginal cultural heritage on site.
 - A program to monitor and report on the effectiveness of these measures and any heritage impacts of the Project.
3. It is recommended that the ACHMP also contain the following strategies to protect and reduce impacts to sites located within the proposed work area. These sites and their relevant management conditions are detailed in Table 11.3.
 - Sites that will be managed through exclusion zones are to be fenced off using star pickets and flags before any works occur.
 - Sites that will be managed through Community Collection are to be salvaged prior to any works taking place with the assistance of RAPs. The community collection methodology is present in APPENDIX A.
 4. The ACHMP is to allow for the proposed works to impact sites listed as 'impacted' in Table 11.3 without any mitigation strategies.
 5. In the event that unexpected finds occur during any activity within the Project Area, all works in the vicinity must cease immediately. The find must be left in place and protected from any further harm. Depending on the nature of the find, the following processes must be followed:
 - If, while undertaking the activity, an Aboriginal object is identified, it is a legal requirement under Section 89A of the NPW Act to notify Heritage NSW, as soon as possible.
 - If human skeletal remains are encountered, all work must cease immediately and NSW Police must be contacted; they will then notify the Coroner's Office. Following this, if the remains are believed to be of Aboriginal origin, then the Aboriginal stakeholders and Heritage NSW must be notified.
 6. It is recommended that Spark Renewables continues to inform Aboriginal stakeholders about the management of Aboriginal cultural heritage within the Project Area throughout the life of the Project. The consultation outlined as part of this ACHA is valid for a period of 6 months and must be maintained after this by the Proponent for it to remain continuous and comply with Consultation Requirements (Department of Environment, Climate Change and Water NSW 2010a).
 7. A copy of this report should be forwarded to all Aboriginal stakeholder groups who have registered an interest in the Project.

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14. APPENDICES

APPENDIX A – COMMUNITY COLLECTION METHODOLOGY

In accordance with the ACHA's (Mallee Wind Farm, Arumpo Road, Mallee, NSW) recommendations, community collection of the listed cultural heritage sites to be included in the CHMP for the Project area and be in accordance with Requirement 16 of *the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water NSW 2010b).

Table 14.1 List of sites for community collection

AHIMS Site/Number	Location	Description
Mallee Windfarm ISO10 / 47-1-0069	GDA 94 Zone 54 640817 m E and 6230344 m N	An isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO10 (AHIMS #47-1-0069) is a silcrete flake measuring 20 mm long, 10 mm wide and 2 mm thick. The flake is located in a disturbed paddock.
Mallee Windfarm ISO15 / 46-3-0235	GDA 94 Zone 54 630951 m E and 6228387 m N	An isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO15 (AHIMS #46-3-0235) is a silcrete flaked piece with a smooth texture and a focal platform, measuring 20 mm long, 16 mm wide and 5 mm thick. The flake was located near a disturbed vehicle track.
Mallee Windfarm ISO4 / 46-3-0232	GDA 94 Zone 54 634580 m E and 6235323 m N	An isolated artefact situated on a flat within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO4 (AHIMS #46-3-0232) is a silcrete longitudinal flake measuring 15 mm long, 10 mm wide and 5 mm thick. The artefact was exposed in a disturbed vehicle track.
Mallee Windfarm ISO7 / 47-1-0067	GDA 94 Zone 54 639551 m E and 6231827 m N	An isolated artefact situated on a plain within the Project Area and the proposed Disturbance Footprint. Mallee Windfarm ISO7 (AHIMS #47-1-0067) is a silcrete flake measuring 60 mm long, 20 mm wide and 15 mm thick. The flake was located within a disturbed paddock.

COMMUNITY COLLECTION METHODOLOGY

Austral has developed a community collection strategy that is proposed to be utilised for the collection of a surface artefact scatter that has been previously identified within the Disturbance Footprint.

The objectives of the community collection are to relocate the known artefacts identified within the sites. The community collection will also collect and relocate any previously unidentified artefacts associated with the listed sites.

Community collection will be conducted with selected Registered Aboriginal Parties (RAPs) in attendance.

The collection will conform with the final CHMP and Requirement 26 of the Code of Practice (DECCW 2010). Specifically, Requirement 26 of the Code of Practice stipulates procedures for stone artefact

disposition after community collection strategy and requirements for the reburial of the artefacts close to their original locations (DECCW 2010:35). The method employed during the survey will be aimed at recording all evidence of Aboriginal land use that is visible on the surface and mitigating the damage from infrastructure construction.

A linear transect survey will be completed within 10 m of the artefact location to locate any previously identified and unidentified Aboriginal artefacts. These transects will aim to ensure that all artefacts that are associated with these sites are collected. All survey data will be collected using Global Positioning System (GPS) enabled devices and the Map Grid of Australia (94) coordinate system.

When an artefact is identified during the survey, the location of the artefact will be flagged. Once the survey has been completed, the artefacts will be recorded. Recording during the survey will consist of both photographic and written recording techniques. Photographs of the artefacts and the overall context of the scatter will be taken, all photographs will include a graded metric scale. Aboriginal objects identified during the survey will each be photographed, and their GPS location recorded (as per requirements 18, 19 and 20 of the Code of Practice). Once artefacts have been recorded, they will be collected and placed in a good-quality Ziplock bag.

ANALYSIS OF COLLECTED MATERIAL

A lithic analysis will be conducted that will aim to identify the nature of culturally modified lithic material within the archaeological record, with a secondary goal of identifying material, tool types and any indicators of in situ reduction that inform depositional integrity. All of the artefacts recovered will be taken to a temporary storage location specified in the CHMP where the artefact analysis will be conducted. Long-term storage of recovered artefacts will be subject to reburial, if possible, with artefacts being reburied after works have been completed, at a location chosen by the RAPs, close to the original artefact sites, but in an area that will not be disturbed by future works. The AHIMS site cards will be updated to reflect the new conditions of the affected sites with an Aboriginal Site Impact Recording Form, and a new site card will be made for the reburial locations.

If reburial within the study area is not possible, the artefacts are to be subject to a care and control agreement in accordance with Section 85A (1)(c) of the NPW Act.

APPENDIX B – CONSULTATION DOCUMENTS

Has not been included due to confidential information

APPENDIX C – SURVEY METHODOLOGY

SURVEY METHODOLOGY FOR MALLEE WIND FARM ACHA, NSW

An archaeological survey will be conducted with selected RAPs in attendance. The date of the field survey is to be advised, however it will occur across 5 consecutive days.

The survey will conform with requirements 5 to 10 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (CoP)* (DECCW 2010). The method employed during the survey will be aimed at recording all (or a representative sample of all) evidence of Aboriginal land use that are visible on the surface. An assessment of the likelihood of material traces of Aboriginal land use being present under the ground surface (potential archaeological deposits) will also be completed. The survey will be completed in accordance with a sampling strategy that will ensure that all landforms that may be impacted by the project were inspected.

Recording during the survey will consist of both photographic and written recording techniques. Representative photographs of survey units and landforms will be taken, all photographs will include a graded metric scale. Where Aboriginal objects are identified during the survey, their diagnostic attributes will be recorded, and each object will be photographed (as per requirements 6 and 7 of the *CoP*). The survey will attempt to relocate AHIMS sites C1 River Margin (AHIMS # 46-1-0105), Buronga Landfill Artefact 3 (AHIMS # 46-3-0205) and PEC-W-135 (AHIMS # 46-3-0206), and a condition assessment of these sites will be undertaken along with a revised recording of the material that is present.

Survey units will be inspected using pedestrian transects following the methodology set out in the Archaeologist's Field Handbook by Burke and Smith (Burke & Smith 2004, pp.74–80) which establishes effective archaeological survey practices. The survey will document the conditions present to assess the effectiveness of the survey. The following aspects of the survey will be recorded:

- Visibility and exposure for each survey unit.
- Landform and general soil location for each survey unit.
- Land surface and vegetation conditions encountered during the survey.
- Survey coverage in accordance with Requirement 9 of the *CoP*.
- Where Aboriginal objects are identified, the spatial extent of direct evidence and the physical boundaries of each site will be determined.
- The extent of disturbances and an assessment of the integrity of known or likely Aboriginal sites.

All survey data will be collected using Global Positioning System (GPS) enabled devices and the Map Grid of Australia (94) coordinate system.

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APPENDIX D – DAILY FIELD LOGS

DAILY FIELD LOGS FOR MALLEE WIND FARM, NSW**SURVEY DAY 1 – MONDAY 18 MARCH 2024**

- One quartzite flaked piece was identified .
- Three pieces of possible burnt clay were also identified and recorded.
- A possible scarred tree was identified, however will need further investigation to determine if it is cultural or natural.
- The ground surface was heavily disturbed by ploughing and livestock grazing.
- The landform was an undulating dunefield/disturbed paddock.
- Visibility was high at approximately 90%. The majority of the survey units were heavily grazed.
- The vegetation consisted of a cleared scrubland with mallee eucalypts, belah pines, rosewood, and cypress pines occurring in pockets that had not been ploughed. The remaining vegetation was chenopod scrubs and grazed crop.
- Carmen and Crystal are to meet with the same RAPs tomorrow at 8:00 am at the same meeting spot.

SURVEY DAY 2 – TUESDAY 19 MARCH 2024

- Potential hearth material identified.
- The ground surface was heavily disturbed by ploughing and livestock grazing.
- The landform was an undulating dunefield/disturbed paddock.
- Visibility was high at approximately 90%. The majority of the survey units were heavily grazed.
- The vegetation consisted of a cleared scrubland with mallee eucalypts, belah pines, rosewood, and cypress pines occurring in pockets that had not been ploughed. The remaining vegetation was chenopod scrubs and grazed crop.
- Some issues regarding the methodology (pedestrian transects). BMEET and DLALC wanted to conduct vehicle transects and focus on area/landforms they felt had archaeological potential
- Mutthi Mutthi expressed that they didn't like that BMEET and DLALC did not participate or want to participate in pedestrian transects. Discussed the issue at morning tea, with Mutthi Mutthi agreeing to vehicle transects for the rest of the day with areas/landforms considered less disturbed and the possibility of archaeological potential surveyed on foot.
- Crystal and Carmen talked to Dr Amanda Markham in the evening, and we will survey on foot for the remainder of the survey and inform BMEET and DLALC that it is a requirement under the code, however, if they do not wish to walk they can follow us in the car.
- Carmen has contacted Ned Byrnes to inform him that we have finished surveying his property
- Carmen attempted to contact David Linklater to inform him that we will be on his property tomorrow until likely mid-next week, however, he didn't answer and Carmen left a message
- Carmen and Crystal are to meet with the same RAPs tomorrow at 8:00 am at the same meeting spot.

SURVEY DAY 3 – WEDNESDAY 20 MARCH 2024

- Possible human remains were found at the entrance to the property. This site was recorded and several photos were taken.

- At approximately 8:30 am, Carmen left the site to contact Dr Amanda Markham about possible human remains that we found.

SURVEY DAY 4 – THURSDAY 21 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 80% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing.
- Three isolated silcrete artefacts were identified within the study area.
- One PAD was identified within the study area.

SURVEY DAY 5 – FRIDAY 22 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 50% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing (of wheat and pea crops).
- One isolated silcrete artefact was identified within the study area.
- One hearth was identified within the study area.

SURVEY DAY 6 – MONDAY 25 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 10% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing (of wheat crops).
- Five isolated silcrete artefacts were identified within the study area.
- One hearth was identified within the study area.

SURVEY DAY 7 – TUESDAY 26 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 10% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing (of wheat crops).
- Two isolated silcrete artefacts were identified within the study area.
- Potential hearths were identified within the study area.
- Jason Smith raised the issue about walking the transect through the wheat field and feels it is not necessary. We informed him, that he doesn't have to walk and may drive his car. He continued to walk.

SURVEY DAY 8 – WEDNESDAY 27 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 10% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing (of wheat crops).
- One isolated silcrete artefacts were identified within the study area.
- 1 Potential hearth was identified within the study area.
- 1 Hearth was identified within the study area.
- Jason Smith did not arrive on site today.
- The option was raised to complete the rest of the survey via vehicle transects, and to target areas of high archaeological sensitivity on foot.
- The RAPs all agreed with this methodology in the field, and after following up with the RAPs throughout the day, they continued to agree with the methodology.
- Verna Pappin mentioned to John Smith that a CHMP will be prepared, including monitoring.

SURVEY DAY 9 – THURSDAY 28 MARCH 2024

- The visibility and exposure was much the same as the other survey units (Visibility ranging between 10% and 90%) and exposure at approximately 70%.
- Disturbances include livestock grazing, vehicle tracks and agricultural ploughing (of wheat crops).
- Potential hearth materials was identified within the study area.
- The survey continued to progress as vehicle transects, after confirming the methodology with the RAPs.



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