EnergyConnect (NSW – Western Section)

Aboriginal Cultural Heritage Strategy

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00003)

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Wentworth Local Government Area

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Executive summary

On 28 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

On the 28 September 2021, under section 5.19 of the EP&A Act, the Minister for Planning and Public Spaces provided Infrastructure Approval to develop the Project EnergyConnect (NSW - Western Section), subject to conditions. In respect to the assessment methodology for Aboriginal heritage condition D29 states the following.

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect Project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal Cultural Heritage Strategy (ACHS) to comply with condition D29 of the Infrastructure Approval.

Condition D29 of the Infrastructure Approval states that the ACHS must:

- 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
- Describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (Code of Practice) (Department of Environment, Climate Change and Water [DECCW] 2010)
- Describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area
- Include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings
- Include an updated Aboriginal cultural heritage assessment report, which:

- is based on the findings of the subsurface testing in condition D29 b) and surveys in condition D29 c)
- describes any potential additional impacts to heritage items
- identifies further mitigation measures, including avoidance or salvage
- includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items
- provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.

Condition E2 of the Infrastructure Approval allows preparation of strategies on a staged basis, with the approval of the Planning Secretary. Where a strategy is staged, the scope of works can be carried out without addressing particular requirements of conditions of approval that are not applicable to the particular stage. This ACHS is staged in accordance with condition E2 as summarised in Table 1-1.

This version (stage) of the ACHS addresses all requirements of condition D29 a) to condition D29 e). The updated Aboriginal Cultural Heritage Assessment Report (ACHAR) required by condition D29 e) has been further staged. Stage 2a addresses approximately half of the EnergyConnect (NSW – Western Section) from Line (L) 1 Tower (T) 138, just east of the Great Darling Anabranch, through to L4 T58 (Murray River). Stage 2b addresses approximately half of the Energy Connect (NSW – Western Section) from L1 T139, just east of the Great Darling Anabranch, through to L4 T58 (Murray River).

Methodologies have been prepared for condition D29 b) (additional subsurface testing) and condition D29 c) (additional Aboriginal heritage surveys) (Everick Heritage 2021a; 2021b). These methodologies have been previously provided to the Project's Aboriginal stakeholders and Heritage NSW for review. The updated Stage 2a ACHAR and updated Stage 2b ACHAR have been provided separately to the Project's Aboriginal stakeholders and Heritage NSW for review.

Table 1-1: Staging of the Aboriginal Cultural Heritage Strategy

Condition	Requirement	How addressed
D29	Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary.	An initial ACHS (Rev 4) was prepared for the project and approved by the Department on 8 March 2022 to consider the requirements of condition D29 a) to D29 d).
		This strategy was staged to allow the commencement of construction in areas that did not require additional survey or test excavation as required by condition D29 c) and D29 b), respectively.
		This strategy has been further staged to prepare the updated Aboriginal Cultural Heritage Assessment Report (ACHAR) required by condition D29 e) to consider two separate ACHARs that are based on a geographic divide of the project alignment.
		An updated ACHS (Rev 5) was prepared for the project and approved by the Department on 29 September 2022. Rev 5 incorporated The Stage 2a ACHAR.
α)	identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete	Mapping has been undertaken as described in section 2.2 and provided in Appendix B. The maps presented in Appendix B identify areas where construction could not commence until further survey and/or test excavation was undertaken as described in Everick Heritage (2021a; 2021b). These maps were included as part of Revision 4 that was approved by the Department on 6 March 2022.
ь)	describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010)	A test excavation methodology has been prepared separately to this strategy and has been provided to the RAPs and Heritage NSW for review and comment. The test excavation methodology is included in Appendix C.
c)	describe additional Aboriginal heritage surveys that will be undertaken where	A survey methodology has been prepared separately to this strategy and has been provided to the RAPs and Heritage NSW for review and comment. The survey methodology is included in Appendix D.

Condition	Requirement	How addressed
	ground disturbance activities are required outside of the heritage survey area	
d)	include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any	Consultation activities will have been documented throughout the consultation process for this strategy and for the survey and test excavation methodologies and during survey and test excavation activities.
	meetings	Consultation activities and logs have been incorporated into the ACHAR Stage 2a (Appendix E).
		Additional consultation activities and logs have been incorporated into the ACHAR Stage 2b (Appendix F), which forms part of this final Aboriginal Cultural Heritage Strategy.
e)	include an updated Aboriginal cultural heritage assessment report, which:	An updated ACHAR (Stage 2a) has been incorporated into this version of the ACHS (Appendix E). ACHAR Stage 2a has been prepared to address the survey and test excavation activities for the eastern portion of the EnergyConnect (NSW – Western Section) from Line 1 Tower 138 (just east of the Great Darling Anabranch) to Line 4 Tower 54 (Murray River).
		An updated ACHAR (Stage 2b) has also been incorporated into this final version of the ACHS (Appendix F). ACHAR Stage 2b has been prepared to address the survey and test excavation activities for the western portion of the EnergyConnect (NSW – Western Section) from Line 1 Tower 138 (just east of the Great Darling Anabranch) to Line 1 Tower 293 at the South Australia / NSW state border.
	• is based on the findings of the	ACHAR Stage 2a
	subsurface testing in b) and surveys in c)	The Stage 2a ACHAR is based on the findings of both subsurface testing and additional surveys. The findings of the subsurface testing are summarised by the following tables and appendices:
		• Table 8-2
		• Table 8-3
		• Appendix D – Aboriginal Archaeological Test Excavation Report.

Condition	Requirement	How addressed
		The findings of additional survey are summarised in the following sections tables and appendices:
		Table 7-1
		• Table 7-2
		Appendix C – Addendum Aboriginal Archaeological Survey Report
		Appendix E – Survey letter reports – additional survey
		ACHAR Stage 2b
		The Stage 2b ACHAR is based on the findings of both subsurface testing and additional surveys. The findings of the subsurface testing are summarised by the following tables and appendices:
		Table 8-2
		• Table 8-3
		• Appendix D – Aboriginal Archaeological Test Excavation Report.
		The findings of additional survey are summarised in the following sections tables and appendices:
		• Table 7-1
		• Table 7-2
		Appendix C – Addendum Aboriginal Archaeological Survey Report
		Appendix E – Survey letter reports – additional survey
	 describes any potential additional impacts to heritage items 	Potential impacts for the identified sites are presented in the following sections and tables:

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Condition	Requirement	How addressed
		ACHAR Stage 2a - Section 12-2 and Table 12-1
		ACHAR Stage 2b - Section 12 and Table 13-1
	 identifies further mitigation measures, including avoidance or salvage 	Recommended mitigation measures are described and summarised in the following sections and tables:
		• ACHAR Stage 2a - Section 12-1 and Table 12-1; Section 13, Table 13-1 and
		Table 13-3
		ACHAR Stage 2b - Section 12-1; Section 13; Table 13-1
	 includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items 	Given the linear nature of the Project area and limitations of the alignment, Aboriginal sites and objects are not possible to totally avoid. Various refinements to the design and construction methodology have avoided some impacts to PADs and Aboriginal sites and objects as described in the following sections:
		ACHAR Stage 2a - Section 12-1; Section 13-1
		ACHAR Stage 2b Section 12-1; Section 13-1
		A description of the impacts (e.g. direct, direct-partial, etc.) is included in the
		following tables:
		ACHAR2a – Table 12-1
		• ACHAR2b – Table 13-1
	 provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction 	An updated consolidated list of sites and relevant mitigation measures (including salvage) is included in the following tables:
	and sites that would be salvaged and	ACHAK Stage 2a - Table 12-1

Condition	Requirement	How addressed
	relocated to suitable alternative locations.	ACHAR Stage 2b - Table 13-1
E1	 The Proponent must review and, if necessary, revise the strategies, plans or programs required under this approval to the satisfaction of the Planning Secretary within 3 months of the: submission of an incident report under condition E6; submission of an audit report under condition E11; or any modification to the conditions of this approval. 	 This ACHS will be reviewed and updated, if required, within three months of the following: submission of an incident report under condition E6 of the Infrastructure Approval; submission of an audit report under condition E11 of the Infrastructure Approval; or any modifications to the Infrastructure Approval. The updated ACHS will be submitted to the Planning Secretary for approval.

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Definitions and abbreviations

ACHS	Aboriginal Cultural Heritage Strategy		
ACHAR	Aboriginal Cultural Heritage Assessment Report		
Addendum CHA	AR Addendum Cultural Heritage Assessment Report		
ASR	Aboriginal Archaeological Survey Report		
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales		
CSSI	critical State significant infrastructure		
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)		
DPE	Department of Planning and Environment		
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)		
Everick Heritage	e Everick Heritage Pty Ltd		
NOHC	Navin Officer Heritage Consultants Pty Ltd		
NSW	New South Wales		
PAD	Potential Archaeological Deposit		
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border		
RAP	Registered Aboriginal Party		
RMMs	revised mitigation measures, identified in Appendix G of the Response to DIE Request for Information		
test excavation methodology Aboriginal archaeological test excavation methodology			

1. Introduction

1.1. Project background and legislative context

On 28 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

On the 28 September 2021, under section 5.19 of the EP&A Act, the Minister for Planning and Public Spaces provided Infrastructure Approval to develop the Project EnergyConnect (NSW - Western Section), subject to conditions. In respect to the assessment methodology for Aboriginal heritage condition D29 states the following.

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect Project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal Cultural Heritage Strategy (ACHS) to comply with condition D29 of the Infrastructure Approval.

1.2. Aims and objectives

Condition D29 of the Infrastructure Approval states that the ACHS must:

- 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 D c) are complete
- Describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (Code of Practice) (Department of Environment, Climate Change and Water 2010)

- Describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area
- Include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings
- Include an updated Aboriginal cultural heritage assessment report, which:
 - is based on the findings of the subsurface testing in condition D29 b) and surveys in condition D29 c)
 - describes any potential additional impacts to heritage items
 - identifies further mitigation measures, including avoidance or salvage
 - includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items
 - provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.

This report addresses these requirements.

1.3. Staging of Aboriginal Cultural Heritage Strategy

Condition E2 of the Infrastructure Approval allows preparation of strategies on a staged basis, with the approval of the Planning Secretary. Where a strategy is staged, the scope of works can be carried out without addressing particular requirements of conditions of approval that are not applicable to the particular stage. This Aboriginal Cultural Heritage Strategy is staged in accordance with condition E2 as summarised in Table 1-1.

The initial version (stage) of the Aboriginal Cultural Heritage Strategy addressed the requirements of condition 29 a) (identify additional risk zones) and was provided to the Project's Aboriginal stakeholders and Heritage NSW for review.

Methodologies have been prepared for condition D29 b) (additional subsurface testing) and condition D29 c) (additional Aboriginal heritage surveys) (Everick Heritage 2021a; 2021b). These methodologies were provided to the Project's Aboriginal stakeholders and Heritage NSW for review concurrently with the initial Aboriginal Cultural Heritage Strategy. These methodologies are incorporated into this version (stage) of this strategy.

Approval was granted by the Planning Secretary on 19 July 2022 to further stage the Aboriginal Cultural Heritage Strategy by providing, in accordance with condition D29 e), two updated ACHARs that cover different geographical parts of the development. Each updated ACHAR will be prepared in consultation with the Aboriginal stakeholders and Heritage NSW.

1.4. Project area

The Project area for the ACHS comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1.

The Stage 2a Project area, which is the subject of the updated ACHAR (Stage 2a) in Appendix E, consists of the eastern portion of the EnergyConnect (NSW – Western Section) from the eastern bank of the Great Darling Anabranch (Line 1 Tower 138) to the Murray River (Line 4 Tower 58). The Stage 2a Project area is depicted in Figure 1-1 of Appendix E.

The Stage 2b Project area, which is the subject of the updated ACHAR (Stage 2b) in Appendix F, consists of the western portion of the EnergyConnect (NSW – Western Section) from the eastern bank of the Great Darling Anabranch (Line 1 Tower 139) to the NSW/South Australia state border (Line 1 Tower 293). The Stage 2b Project area is depicted in Figure 1-1 of Appendix F.

1.5. Previous archaeological investigation

Two previous Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised

mitigation measures (RMMs) identified in Appendix G of the Response to Department Planning and Environment (DPE) Request for Information (Transgrid 2021b).

1.6. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Alison Kriegel (Senior associate, BD Infrastructure) and Rebecca Walker-Edwards (Environmental Approvals, SecureEnergy) provide comment on input and structure.

GIS data analysis and mapping was prepared by Patrick Burke (Principal-GIS, Everick Heritage).

Table 1-1: Staging of the Aboriginal Cultural Heritage Strategy

Condition	Requirement	How addressed
D29	Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary.	An initial ACHS (Rev 4) was prepared for the project and approved by the Department on 8 March 2022 to consider the requirements of condition D29 a) to D29 d).
		This strategy was staged to allow the commencement of construction in areas that did not require additional survey or test excavation as required by condition D29 c) and D29 b), respectively.
		This strategy has been further staged to prepare the updated Aboriginal Cultural Heritage Assessment Report (ACHAR) required by condition D29 e) to consider two separate ACHARs that are based on a geographic divide of the project alignment.
		An updated ACHS (Rev 5) was prepared for the project and approved by the Department on 29 September 2022. Rev 5 incorporated The Stage 2a ACHAR.
α)	identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete	Mapping has been undertaken as described in section 2.2 and provided in Appendix B. The maps presented in Appendix B identify areas where construction could not commence until further survey and/or test excavation was undertaken as described in Everick Heritage (2021a; 2021b). These maps were included as part of Revision 4 that was approved by the Department on 6 March 2022.
ь)	describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010)	A test excavation methodology has been prepared separately to this strategy and has been provided to the RAPs and Heritage NSW for review and comment. The test excavation methodology is included in Appendix C.
c)	describe additional Aboriginal heritage surveys that will be undertaken where	A survey methodology has been prepared separately to this strategy and has been provided to the RAPs and Heritage NSW for review and comment. The survey methodology is included in Appendix D.

Condition	Requirement	How addressed
	ground disturbance activities are required outside of the heritage survey area	
d)	include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any	Consultation activities will have been documented throughout the consultation process for this strategy and for the survey and test excavation methodologies and during survey and test excavation activities.
	meetings	Consultation activities and logs have been incorporated into the ACHAR Stage 2a (Appendix E).
		Additional consultation activities and logs have been incorporated into the ACHAR Stage 2b (Appendix F), which forms part of this final Aboriginal Cultural Heritage Strategy.
e)	include an updated Aboriginal cultural heritage assessment report, which:	An updated ACHAR (Stage 2a) has been incorporated into this version of the ACHS (Appendix E). ACHAR 2a has been prepared to address the survey and test excavation activities for the eastern portion of the EnergyConnect (NSW – Western Section) from Line 1 Tower 138 (just east of the Great Darling Anabranch) to Line 4 Tower 54 (Murray River).
		An updated ACHAR (Stage 2b) has also been incorporated into the final version of the ACHS (Appendix F). ACHAR 2b has been prepared to address the survey and test excavation activities for the western portion of the EnergyConnect (NSW – Western Section) from Line 1 Tower 138 (just east of the Great Darling Anabranch) to Line 1 Tower 293 at the South Australia / NSW state border.
	• is based on the findings of the	ACHAR Stage 2a
	subsurtace testing in b) and surveys in c)	The Stage 2a ACHAR is based on the findings of both subsurface testing and additional surveys. The findings of the subsurface testing are summarised by the following tables and appendices:
		Table 8-2
		• Table 8-3

Condition	Requirement	How addressed	
		Appendix D – Aboriginal Archaeological Test Excavation Report.	
		The findings of additional survey are summarised in the following sections tables and appendices:	
		• Table 7-1	
		• Table 7-2	
		Appendix C – Addendum Aboriginal Archaeological Survey Report	
		Appendix E – Survey letter reports – additional survey	
		ACHAR Stage 2b	
		The Stage 2b ACHAR is based on the findings of both subsurface testing and additional surveys. The findings of the subsurface testing are summarised by the following tables and appendices:	
		Table 8-2	
		• Table 8-3	
		• Appendix D – Aboriginal Archaeological Test Excavation Report.	
		The findings of additional survey are summarised in the following sections tables and appendices:	
		Table 7-1	
		• Table 7-2	
		Appendix C – Addendum Aboriginal Archaeological Survey Report	
		Appendix E – Survey letter reports – additional survey	

Condition	Requirement	How addressed
	 describes any potential additional impacts to heritage items 	Potential impacts for the identified sites are presented in the following sections and tables:
		ACHAR Stage 2a - Section 12-2 and Table 12-1
		ACHAR Stage 2b - Section 12-2 and Table 13-1
	 identifies further mitigation measures, including avoidance or salvage 	Recommended mitigation measures are described and summarised in the following sections and tables:
		• ACHAR Stage 2a - Section 12-1 and Table 12-1; Section 13, Table 13-1 and
		Table 13-3
		ACHAR Stage 2b - Section 12-1; Section 13 and Table 13-1
	 includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items 	Given the linear nature of the Project area and limitations of the alignment, Aboriginal sites and objects are not possible to totally avoid. Various refinements to the design and construction methodology have avoided some impacts to PADs and Aboriginal sites and objects as described in the following sections:
		ACHAR Stage 2a - Section 12-1; Section 13-1
		ACHAR Stage 2b Section 12-1; Section 13-1
		A description of the impacts (e.g. direct, direct-partial, etc.) is included in the
		following tables:
		ACHAR2a – Table 12-1
		ACHAR2b – Table 13-1

Condition	Requirement	How addressed
	• provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.	 An updated consolidated list of sites and relevant mitigation measures (including salvage) is included in the following tables: ACHAR Stage 2a - Table 12-1 ACHAR Stage 2b - Table 13-1
E1	 The Proponent must review and, if necessary, revise the strategies, plans or programs required under this approval to the satisfaction of the Planning Secretary within 3 months of the: submission of an incident report under condition E6; submission of an audit report under condition E11; or any modification to the conditions of this approval. 	 This ACHS will be reviewed and updated, if required, within three months of the following: submission of an incident report under condition E6 of the Infrastructure Approval; submission of an audit report under condition E11 of the Infrastructure Approval; or any modifications to the Infrastructure Approval. The updated ACHS will be submitted to the Planning Secretary for approval.



APPENDIX 1 – DEVELOPMENT LAYOUT

Department of Planning, Industry and Environment

Project EnergyConnect (NSW – Western Section) (SSI 10040)

Figure 1-1: The Project area

2. Identification of additional risk zones

2.1. Detailed design and construction methodology

Detailed design and development of the construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

Information redacted for public display

Through the development of detailed design and construction methodology to date, some project works have been identified that are outside of the areas previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (as identified in the Addendum CHAR (NOHC 2021a; Table 12.3)). An overview of these areas is shown in Figure 2-1, Figure 2-2, Figure 2-3 and Figure 2-4.

If any ground disturbance is proposed in additional areas are required outside the area(s) previously subjected to heritage assessment and survey, these areas will require survey and potentially test excavation where PADs are identified as described in the Aboriginal Archaeological Survey Methodology and Aboriginal Test Excavation Methodology (Everick Heritage 2021a; 2021b). Consultation with the RAPs regarding the updates to disturbance areas has been undertaken throughout the survey and test excavation process and resulting reports.

2.2. Areas requiring additional survey

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project

alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey.

The areas requiring additional survey are identified as additional risk zones (Appendix B) where construction must not commence until additional heritage survey has been carried out, and where survey identifies the need, test excavation is complete. The additional survey areas have been assigned as being of low, moderate or high potential archaeological sensitivity. These risk zones are primarily based on:

- The predicted archaeological sensitivity of land systems and landforms as developed by Witter et al (in prep)
- The predicted archaeological sensitivity of land systems as mapped by NOHC (2021b) (Figure 2-5)
- Review of the aerial imagery to establish whether any existing disturbance was present such as access tracks
- Review of the GIS mapping to establish the proximity to additional survey areas of sites or PADs.

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 2-1 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 2-5 (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, has been used to understand the archaeological sensitivity of disturbance areas requiring further survey along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002).

2.3. Aboriginal archaeological survey

2.3.1. Aims and objectives of archaeological survey

In accordance with archaeological best practice as outlined by the Code of Practice the aims and objectives of the archaeological survey were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any additional areas of PAD identified as being directly impacted by Disturbance area A Project works. Where PADs are identified they will be assessed as being of moderate or high archaeological potential and a justification provided for that assessment
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

An Archaeological Survey Methodology (Everick 2021a) is included in Appendix D and will be implemented for all additional areas requiring survey.

The results of the additional archaeological survey are described in the Addendum Archaeological Survey Report (Appendix C of the Stage 2a Aboriginal Cultural Heritage Assessment Report included in Appendix E).

2.3.2. Areas of low archaeological potential

Where additional areas have been surveyed and assessed as being of low archaeological potential, agreement will be sought from the RAPs to enable construction to commence in those areas. To facilitate that process a summary survey advice form along with relevant mapping will be prepared by the archaeologist and presented to the RAPs. A template summary survey advice form is provided in Appendix A.

Key results from the survey, including those select areas of low archaeological potential described above will be presented to the RAPs to allow for ongoing discussion and comment throughout and following the survey.

The results of the survey were discussed with the RAPs on-site and presented at Aboriginal Focus Group meetings or via email. Survey letter reports prepared for the Stage 2a Project area are included in Appendix E of the Stage 2a ACHAR.

A final Archaeological Survey Report is included in Appendix C of the Stage 2a ACHAR.

2.3.3. Areas of moderate to high archaeological potential

Where additional areas have been surveyed and assessed as being of moderate to high archaeological potential, that is where PADs of moderate to high archaeological potential have been identified:

- In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to objects of Aboriginal archaeological significance including PADs
- Where avoidance of impact is not practical or possible test excavation is proposed as per the test excavation by methodology (Everick Heritage 2021b).

2.3.4. Areas where Aboriginal objects and sites are identified

Where additional areas have been surveyed and Aboriginal sites and objects have been identified:

- In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to objects of Aboriginal archaeological significance through movement or adjustments to the disturbance footprints of minor components such as access tracks and bellmouths
- Where avoidance of impact is not practical or possible, a salvage mitigation measure in accordance
 with RMM AH6 will be proposed in discussion and consultation with the RAPs. All portions of artefact
 scatters that are to be directly impacted will require surface collection prior to construction
 commencement in those areas. Additionally, based on the outcomes of the test excavation, items or
 PADs will be subject to surface collection or salvage prior to the commencement of construction in
 those areas. The activities will be documented in a surface collection report.



Figure 2-1: Areas requiring further survey along the Project area – Lake Victoria

Figure 2-2: Areas requiring further survey along the Project area – Anabranch/Darling

Figure 2-3: Areas requiring further survey along the Project area – Buronga substation

Figure 2-4: Areas requiring further survey along the Project area – Murray River

Figure 2-5: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

Table 2-1: Details of re	quired additional	survey by land	<mark>system (after W</mark> i	itter et al in prep)
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Land system name	Code	Archaeological sensitivity	Landforms of archaeological sensitivity	Survey area (square metres)
Anabranch	An	Moderate	Riverside lunettes, channels & banks (terraces), floodplain	119,269
Arumpo	Ар	Low	Interdunal swales	77,860
Belvedere	Be	Moderate	Margins of An, margins of depressions	49,613
Bulgamurra	Bm	Low-modertae	Margins of Cy and Rl, margins of depressions & swamps, linear dunes	792,850
Canally	Су	High	Scalds on sandplains, margin of Anabranch land system, margins of drainage channels	196,699
Darling	DI	High	River & creek margins, scalded plains & levees, floodplain	93,282
Hatfield	Hf	Low	Margins of land systems containing depressions, scalds	65,304
Huntingfield	Hυ	Moderate	Margins of basins, lunettes. Possibility of Pleistocene deposit in lunettes	37,856
Haythorpe	Hy	Low	Margins of sinks or depressions	231,685
Leaghur	Lh	High	Most erosional exposures associated with lunettes, dunes, plains and swamps	15,878
Mandleman	Mm	Low	None known	72,990
Menilta	Mt	Moderate	Margins of depressions in Cy, margins of Darling, particularly dunes	48,241

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Land system name	Code	Archaeological sensitivity	Landforms of archaeological sensitivity	Survey area (square metres)
Overnewton	Ov	Moderate	Scalded sandplain at margin of An, sandy rises near An	65,190
Riverland	RI	Moderate	River & creek margins, scalded plains & levees, floodplain	3,763
Roo Roo	Rr	High	Sandy rises and dunes adjacent to lacustrine and riparian land systems. Erosional surfaces in inter- lake areas and margins of depressions and pans, sandy rises and dunes. Middens are likely to occur on the crests of dunes and within 400 m of depressions or pans	19,422
Trelega	Те	Low	Localised claypans and depressions	48
Wentworth	We	Moderate	Margins of swamps and along the margins of adjacent floodplain land systems, isolated source bordering dunes	24,534
Total				1,807,141

3. Programme for Aboriginal Cultural Heritage Strategy

Table 3-1 provides an indication of the programme of activities associated with this ACHS.

Activity	Concurrent actions	Current status
Presentation of ACHS to RAPs	 Provide Survey and Test Excavation Methodologies for review Provide risk mapping for review as required in condition D29 a) 	This activity is complete. The initial ACHS was drafted and provided to RAPs for review and comment. The initial ACHS (Rev 4) was approved by the Planning Secretary on 8 March 2022.
Presentation of Survey and Test Excavation Methodologies to RAPs	 Document all comment and advice from RAPs Update Survey and Test Excavation Methodologies and finalise RAP roster for survey and test excavation 	This activity is complete. The survey and test excavation methodologies were presented to RAPs for review and comment. Finalised methodologies were incorporated into the initial ACHS (Rev 4) that was approved by the Planning Secretary on 8 March 2022.
Undertake archaeological survey	• Prepare summary advice forms	The primary survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. Additional small survey areas for traffic signage, traffic entry points, existing access tracks and the Wentworth camp and laydown area were identified during the test excavation program and undertaken as required.
Present summary survey advice forms to RAPs for discussion and comment	 Document all comment and advice from RAPs Progressively enable the commencement of construction in areas where additional survey is no longer required, and no test excavation has been identified Prepare and submit Aboriginal Site Recording Forms 	In distinct areas where no sites were found, or if sites were found and they would not be impacted, then letter reports were prepared. The results of the survey in these areas were discussed with the RAPs on-site and presented at Aboriginal Focus Group meetings or via email. Survey letter reports prepared for the Project are included in Appendix E of the

Table 3-1:	Programme	of activities
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Activity	Concurrent actions	Current status
		Stage 2a ACHAR and Appendix E of the Stage 2b ACHAR.
Prepare draft archaeological survey report and present to RAPs for final discussion and comment	 Prepare final archaeological survey report 	This activity is complete. The Addendum Archaeological Survey Report was prepared and consulted on and approved by the RAPs following an Aboriginal Focus Group meeting and a 28 day review period.
Undertake test excavation of PADs identified by NOHC (2021b) and by additional survey	 Prepare weekly updates for RAPs Undertake recording of any stone artefacts Prepare Aboriginal Site Recording Forms or Aboriginal Site Impact Recording Forms Undertake periodic consultation to determine significance of sites identified and mitigation measures for identified sites which would be impacted Undertake consultation to understand and document the cultural values associated with the landscape and sites 	This activity is complete. Test excavation for both Stage 2a and 2b was conducted between 10 February and 28 June 2022. Regular consultation was undertaken throughout on-site test excavation activities and during periodic Aboriginal Focus Group meetings.
Prepare test excavation report	 Undertake analysis of Aboriginal cultural material discovered during test excavation Submit samples for dating Prepare final test excavation report and present to RAPs for final discussion and comment on significance 	This activity is complete. The Aboriginal Archaeological Test Excavation Report for Stage 2a is included in Appendix D of the Stage 2a ACHAR. The Aboriginal Archaeological Test Excavation Report for Stage 2b is included in Appendix D of the Stage 2b ACHAR.
Prepare revised ACHAR	 Summarise survey and test excavation undertaken Document all consultation Document assessed archaeological significance and recorded cultural values Prepare impact and cumulative impact assessment 	This activity has been staged. The Stage 2a ACHAR has been prepared to document survey and test excavation activities undertaken in the eastern portion of the EnergyConnect (NSW – Western Section) extending from the Murray River (Line 4 Tower 58) to the eastern banks of the Great Darling Anabranch (Line 1 Tower 138).
Activity	Concurrent actions	Current status
------------	---	--
	Provide mitigation measures in consultation with RAPs	The Stage 2b ACHAR has been prepared to document survey and test excavation activities undertaken in the western portion of the EnergyConnect (NSW – Western Section) extending from the eastern banks of the Great Darling Anabranch (Line 1 Tower 139) to the NSW/South Australia state border (Line 1 Tower 293).
Final ACHS	 Finalised ACHS will be lodged with DPE for approval Finalised ACHS will enable the commencement of construction in all areas once any required mitigation measures (e.g. surface collection, salvage, exclusion fencing) have been implemented 	This activity has been staged. This final version (stage) of the ACHS has been revised to incorporate both Stage 2a ACHAR and Stage 2b ACHAR.

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Soil Conservation Service of NSW 1991. Land Systems of Western New South Wales. Technical Report No. 25.

Transgrid 2021a. EnergyConnect (NSW-Western Section) Amendment Report.

Transgrid 2021b. Response to DPIE Request for Information -7 May and subsequent discussions. Memorandum to Department of Planning, Industry and Environment.

Appendix A – Summary survey advice form

PROJECT ENERGY CONNECT (NSW-WESTERN SECTION)			
Survey area/s			
Date surveyed			
Archaeologist			
Participants			
Landsystem /archaeological sensitivity			
Landforms			
Exposure type and percentage			
Vegetation type and coverage			
Disturbance			
Aboriginal sites or PADs located			
Proposed works and recommendation			

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Appendix B – Additional risk zone mapping

Information redacted for public display

Appendix C – Test excavation methodology

EnergyConnect (NSW – Western Section)

Aboriginal Archaeological Test Excavation Methodology

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00002)

October 2021

Wentworth Local Government Area

Report Reference:

Edmonds V. and R. Mazlin 2021. *EnergyConnect (NSW – Western Section): Aboriginal Archaeological Test Excavation Methodology.* Everick Heritage Pty Ltd unpublished report prepared for SecureEnergy.



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3	V. Edmonds and R. Mazlin	Final	All	20.10.21	T. Robins

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Executive summary

On 29 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW section of Project EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

The Environmental Impact Assessment (EIS) for the NSW – Western Section (the Project) of EnergyConnect was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) the Project is yet to be determined by the Australian Minister for the Environment.

AH4 of the RMMs from the Response to DPIE Request for Information (Transgrid 2021b) states that:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the test excavation methodology for the applicable potential archaeological deposit (PAD) areas.

The Project area for this test excavation methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This test excavation methodology applies to those PADs/sites identified in Table 5-1.

The primary aims of this test excavation methodology are to:

- Inform a test excavation program based on the results of the Addendum CHAR and RMMs
- Provide the test excavation methodology to the registered Aboriginal parties and Heritage NSW for the Project for discussion, comment and agreement.

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the test excavation methodology, in particular:
 - Whether mechanical test excavation would be an option to use (section 6.7.2)
 - Discussion of a temporary repository (section 6.9)
 - Long term care and management of recovered archaeological materials (section 6.9)
- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

This test excavation methodology also provides background information on the previous Aboriginal cultural heritage assessments undertaken (section 4.2), land system sensitivity modelling (sections 4.3 and 4.4) and a summary of the impact assessment of the current design and construction methodology on PADs/sites requiring test excavation (section 5). The methodology offers a test excavation strategy (section 6.2), sampling strategy (section 6.5), methodology (section 6.7) and requirements for reporting on test excavation (section 6.8).

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers).

Disturbance area A works are varied in size and shape, as are the PAD, therefore it is proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy has been informed through the proposed disturbance footprint within previously identified PADs. For the purposes of explanation, the sampling strategy has been calculated for:

- tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks from existing roads) (Table 6-1)
- access tracks between tower sites (Table 6-2).

In all instances the aim of the sampling strategy is to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area. Although the current sampling has only been applied to those PADs identified in AH4 of the RMMs, the sampling strategy would be applied to all future PADs identified through further survey required by AH3. The sampling strategy and processes described in this methodology would also be applied to Disturbance area A (centreline clearing) and Disturbance area B within PADs once the nature and extent of these activities has been defined.

Table 6-1 calculates the proposed total excavation area for towers sites, aggregated by PAD. For greater detail on the exact excavation area for each tower site see Appendix B.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHA	R Addendum Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATER	Archaeological Test Excavation Report
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Red	quirementsAboriginal cultural heritage consultation requirements for proponents2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
Draft Conditions	s Draft Conditions of Approval Revision 3 (August 2021)
EIS	Environmental Impact Assessment
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)

EPBC Act Environment Protection and Diversity Conservation Act 1999 (Cth)

Everick Heritage Everick Heritage Pty Ltd

the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
OEH	Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border
RAP	Registered Aboriginal Party
RMMs	revised mitigation measures
S	means section
SNI	South Australia and New South Wales Interconnector
STP	Shovel test pit(s)
test excavation r	nethodology Aboriginal archaeological test excavation methodology
ТР	Test pit(s)

1. Introduction

1.1. Project background and legislative context

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the Project) (and to which this methodology relates)
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Diversity Conservation Act 1999 (Cth)* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The Environmental Impact Assessment (EIS) was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the EPBC Act the Project is yet to be determined by the Australian Minister for the Environment.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological test excavation methodology (test excavation methodology).

1.2. Project area

The Project area for this test excavation methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This test excavation methodology applies to those identified areas of potential archaeological deposit (PAD) impacted by Disturbance areas A (see section 5.2) within the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b).

1.3. Previous archaeological investigation

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised mitigation measures (RMMs) identified in Appendix G of the Response to DPIE Request for Information (Transgrid 2021b). AH4 of the RMMs states that:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

1.4. Aims and objectives

The primary aims of this test excavation methodology are to:

- Inform a test excavation program based on the results of the Addendum CHAR and RMMs and refined design and construction methodology
- Provide the test excavation methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This test excavation methodology has been prepared in line with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

This test excavation methodology will be conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Vanessa undertook previous surveys along an earlier version of the transmission line corridor (South Australia - NSW Interconnector) in conjunction with some of the Aboriginal stakeholders identified for the current Project area and has a comprehensive understanding of the archaeological and cultural landscape of the Project area. Vanessa has also undertaken numerous Aboriginal cultural heritage assessments within the Project region having owned and operated her own consulting practice based in Dareton and Mildura for 22 years.

Robbie Mazlin (Archaeologist, Everick Heritage) provided input into the calculations for the sampling strategy wording and mapping. Upload of GIS data and analysis was undertaken by Patrick Burke (Principal-GIS, Everick Heritage).

APPENDIX 1 – DEVELOPMENT LAYOUT



Figure 1-1: The Project area

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2. Legislative context

2.1. Commonwealth legislation

2.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.2. State legislation and codes of practice

2.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

2.2.2. National Parks and Wildlife Regulation 2009 (NSW)

2.2.2.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

Establish the requirements for undertaking test excavation as a part of an archaeological investigation
without an AHIP. If these requirements are complied with and harm is done to an Aboriginal object
when undertaking test excavations, those actions will be excluded from the definition of harm and as
such will not be considered as committing an offence of harm to an Aboriginal object. Although no
AHIP is required for this Project the intention would be to conduct test excavations generally in line
with the Code of Practice.

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW Act*. The Code of Practice also states that for test excavation Aboriginal consultation must be completed to the stage described in subclause 80C(5c) of the *NPW Regulation*.

2.2.2.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, changes to design and construction methodology require that steps 2-4 are repeated. The test excavation methodology would be presented at Stage 2.

2.2.2.3. Aboriginal Cultural Heritage Assessment

Division 2 s 61 of the NPW Regulation, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. An Aboriginal cultural heritage assessment report (ACHAR) is a written report detailing the results of the assessment and recommendations for actions to

be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment. For the purposes of this Project the ACHAR will support any mitigation measures or recommendations where harm cannot be avoided.

3. Consultation strategy

3.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodviersity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process through to March 2021. It must be noted if there has been a lapse of 12 months in the consultation process for a Project, Heritage NSW may expect the process to be recommenced from Stage 1 of the Consultation Requirements (section 2.2.2.2).

3.2. Registered Aboriginal Party engagement

As part of AH2 of the RMMs, it is stated that engagement with RAPs will consist of the following:

test excavation activities (AH4) – review of proposed methodologies and involvement in the test excavation activities in the field (NOHC 2021: Table 11.1).

Consequently, this test excavation methodology will be presented to the RAPs listed in section 3.1 for discussion and comment. Any comments arising from the discussion will be incorporated into the final test excavation methodology.

3.3. Consultation process

Open, honest and ongoing communication between Transgrid, SecureEnergy, the RAPs and the Project archaeologists is vital to the success of the Project. To comply with Stage 4 of the Consultation Requirements this draft test excavation methodology will be presented to the RAPs for discussion and comment. Any comments arising from the discussion will be incorporated into the final test excavation methodology.

Virtual or in person meetings are proposed to be held in the region to present the Aboriginal Cultural Heritage Strategy. It is proposed that this test excavation methodology would be provided with the survey methodology (Everick Heritage in prep). Following receipt of the methodologies and at some stage during the 28 day review period it is proposed that a stakeholder meeting of the RAPs be held to:

- Re-engage the RAPs with the Project
- Present the methodologies
- Engage with the RAPs
- Provide a venue for discussion and comment.

Where key individuals or representatives of key organisations are unable to attend meetings, or where Covid restrictions are still in place, virtual meeting options will be implemented, with the Environmental team and Everick to present the methodologies and record comments. There is also potential for up to three meetings to be held within the Project region to accommodate stakeholder travel and time constraints if virtual meetings are not possible.

The proposed process for consultation with RAPs is as follows:

- Provide test excavation and survey methodologies
- Follow up with phone calls to RAPs to ascertain availability for stakeholder meeting and preferred venue (likely to be Dareton, Wentworth, Buronga, Mildura)
- Send meeting invites and agenda for stakeholder meeting(s)
- Follow up with phone calls to RAPs to ascertain attendance at meeting or alternate one on one meeting requirement
- Hold virtual or in person stakeholder meeting(s) providing resources such as a powerpoint presentation in addition to roll out maps relating to the areas across which the methodologies relate
- Finalise survey and test excavation methodologies incorporating any comments or recommendations from the RAPs and send out to RAPs.

Whilst this process is likely to take a maximum 28 day period it is anticipated that by approaching RAPs on an individual basis where necessary either in person or by phone the process may be able to be shortened.

3.4. Consultation aims

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the test excavation methodology, in particular:
 - Whether mechanical test excavation would be an option to use (section 6.7.2)
 - Discussion of a temporary repository (section 6.9)
 - Long term care and management of recovered archaeological materials (section 6.9)
- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

4. Archaeological context

This section provides a brief summary of the archaeological landscape as background to the test excavation methodology. Note that an updated Aboriginal Heritage Information Management System (AHIMS), in accordance with Requirement 1b, is not considered necessary at this stage of the Project. Transgrid has provided the AHIMs Aboriginal Site Recording Forms (ASRF) as prepared by NOHC (2021a; 2021b) for all newly recorded sites.

4.1. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes 55 kilometres (km) to the north of the Project. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

4.2. The Project area

Two Aboriginal Cultural Heritage Assessment Reports have been prepared for the Project by NOHC (2021a; 2021b). The following sections 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6 provide a summary of the assessment, survey methodology and results.

4.2.1. Predictive modelling

NOHC (2021a) conducted background studies across a one km wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and the

NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 4-2. This suggested that:

- The largest and most dense archaeological sites correlate to freshwater resources (lakes, rivers, claypans and swamps)
- Sand bodies including lunettes and dunes, are of high sensitivity due to their association with Aboriginal burials
- Transitional zones between plant communities may be a predictor for Aboriginal occupation
- Aeolian sands commonly obscure surface sites within the region, and ground exposure and visibility should be considered where assessing site significance as well as subsurface potential.

4.2.2. Field survey

Field survey of the survey area was undertaken between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Relocate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian survey of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission

corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

4.2.3. RAP field representatives

The following Aboriginal representatives participated in the field survey:

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4.2.4. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 4-1). NOHC (2021a) state that:

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Table 4-1: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

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4.2.5. Results

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Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: figure 8.8)

4.2.6. Recommendations

NOHC (2021b: Table 11.1) recommended that in developing the detailed design and construction methodology, the construction contractor would review the location of all identified PADs and aim to avoid and/or minimise direct impacts to the identified PADs. Where direct impacts cannot be avoided, then test excavation programs would be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations would be to determine the presence or absence and significance of subsurface archaeological deposits. These test excavations would be carried out in accordance with a methodology that is presented to and consulted

on with the RAPs and test excavation addendum report/s to the ACHAR would be prepared for each test excavation program(s) to detail findings of the test excavation activities

4.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 4-3 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 4-2 and Table 4-1 although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, has been used to understand the requirement and potential for test excavation within the disturbance areas of PADs along the Project, particularly with regard to the nature of the sediments potentially encountered and likely archaeological deposit (Table 6-1).

It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002).

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Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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Table 4-3: Land systems, landforms and archaeological sensitivity based on Witter et al (in prep) and Edmonds (2002)

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4.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

4.4.1. Shell middens

Shell middens dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the freshwater snail (*Vivipara notopala hamelyi*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

4.4.2. Open campsites

Open campsites or surface scatters containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

4.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences or in groups forming hearth complexes. They are generally found close to drainage features in the landscape.

4.4.4. Ancestral human remains

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¹ That is 1950

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4.4.5. Isolated artefacts

Isolated Artefacts comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

4.4.6. Culturally scarred trees

Scarred trees generally consist of River Red Gums (Eucalyptus camaldulensis) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

5. Impact assessment

5.1. Mitigation measures

The revised RMMs are provided in Table 5-1 which identified 26 PADs potentially directly impacted resulting in total or partial loss. These PADs are described in Table 5-2.

Furthermore, Table G-1 (AH1) (Transgrid 2021b) states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

Table 5-1: Revised mitigation measures from	Table G-1	(AH4) of the	Response to	DPIE Request f	or
Information (Transgrid 2021b)					

Reference	Mitigation measure	Timing	Applicable locations
AH4	In developing the detailed design and	Detailed design and pre-construction impacts to sites/features/ PADs	PEC-W-6, PEC-
	construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.		W-11, PEC-W-
			12, PEC-W-15,
			PEC-W-17,
	Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.		PEC-W-18,
			PEC-W-27,
			PEC-W-31,
			PEC-W-36,
			PEC-W-37,
	Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs. Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will:		PEC-W-45,
			PEC-W-47,
			PEC-W-50,
			PEC-W-51,
			PEC-W-55,
	 detail findings of the test excavation activities 		PEC-W-63, PEC- W-100, PEC-W-
	 outline how the detailed design has been further developed to avoid or minimise 		102, PEC-G-/

Reference	Mitigation measure	Timing	Applicable locations
	impacts to the identified		PEC-PAD1
	 as applicable, detail any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing for these to be implemented 		through PEC- PAD14, PEC-
			PAD-16 through PEC-PAD26, and PEC-PAD- 28
	• be presented to the RAPs for comment.		
	Final reports will be provided to RAPs and to Heritage NSW prior to the commencement of construction that impacts these locations. The addendum report(s) may be staged to enable progressive commencement of construction. Any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing of implementation, will be included with the Construction Environmental Management Plan and implemented accordingly.		

Further survey as required by RMM AH3 may lead to the identification of additional new PADs or to the extension of existing PADs. Any new PADs or extensions to existing PADs will be assessed with regard to their potential impact from Disturbance areas A and B and where impacted will be subject to test excavation as under the methodology proposed here.

Table 5-2: Details of PADs and sites. PAD significance, potential and justification and associated sites as identified by the Amendment Report

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5.2. Direct and indirect impacts

Potential impacts and the total or partial loss of heritage value were assessed in the Addendum CHAR based on the Amendment Report design and proposed construction methodology. The type of impacts attributable to construction described in the Addendum CHAR include:

- Direct impacts: impacts that move or physically alter items, objects, or features of a site. This includes, but is not limited to, direct physical impacts to midden/shell, hearths, stone artefacts, and scarred trees. Also, as impacts that directly and physically disturb the sediments and deposits of potential archaeological deposit (PADs).
- Indirect impacts: potential impacts identified for sites located outside the disturbance area include, the physical disturbance from surface water drainage or other mechanism

Direct impacts were grouped into disturbance areas and are described below and illustrated in Figure 5-1:

- Disturbance area A this is the area where ground disturbance would be required. It refers to an area around the transmission towers in which all vegetation would be removed during construction. It would include potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. This area would also be subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire).
- Disturbance area A (centreline clearing) Refers to a 10 m wide area along the centreline alignment between the proposed transmission towers in which all vegetation would be removed during construction to ground however topsoil materials and ground material would be retained, where possible and would not likely result in sub-surface impacts in these locations. Plant and equipment movements would occur through the centreline, particularly during vegetation clearing activities, however, this is not the primary means of access. The area would be subject to ground disturbance where tree removal is necessary and vegetation root-balls are required to be removed. This area would also be subject to ongoing maintenance during operation (ie removal to ground level) for operational and safety requirements (including bushfire).
- Disturbance area B Refers to a 60 m wide area from the centreline alignment between and around transmission towers in which removal of vegetation (including trees) would be undertaken where they have the potential to exceed vegetation clearance heights. The removal (which may include the removal of vegetation root-balls) may result in temporary ground disturbance. Plant and equipment movements would occur in this area during vegetation clearing activities.



Figure 5-1: Schematic of Disturbance areas A and B

5.3. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

- used existing access tracks where possible (many of which are located outside the previously surveyed areas)
- located temporary construction areas away from identified Aboriginal objects where possible
- avoided PAD27 through re-design of the disturbance area at Buronga substation
- relocated access tracks around PAD19 and PAD25 (access tracks are now outside of the previously surveyed areas).

Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the test excavation described in this methodology).

The RMMs state that where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being

removed). Disturbance area A locations on PAD sites which have been included in the test excavation sampling strategy have been identified as:

- Tower locations including tower laydown areas
 - For the self supporting towers, footings are located approximately 20 m inside of the four corners of the permanent tower pads. The associated piles would be at a depth of between 9 m and 16 m and located at the footings.
 - For the guyed towers, footings are located approximately 5 m inside of the four corners of the tower pads and at the centre of the tower pad. The associated piles would be at a depth of between 7.5 m and 16 m and located at the footings
 - Depth of disturbance is approximately 300 mm across the tower assembly area.
- Brake and winch sites depth of disturbance is approximately 300 mm
- Parking areas depth of disturbance is approximately 300 mm
- Access tracks and bellmouths depth of disturbance is likely to be approximately 300 mm

The three tower site layouts as explained above are presented in Figure 5-2 to Figure 5-4.

Disturbance area A (Centreline clearance) is between 0 m and 5 m on either side of the centreline (10 m in total). Generally, this area would be slashed, however trees would need to be removed which would result in ground disturbance from root removal. Disturbance area A (centreline clearance) and Disturbance area B activities are yet to be fully defined and these areas are not included in the test excavation sample provided in Table 5-3 or Table 6-1.

Following verification of the nature and extent of disturbance within the Centreline clearance in consultation with SecureEnergy and an analysis of where this intersects with identified PADs the test excavation methodology and the sampling strategy can be rolled out to those areas.

Table 5-3 provides the impact details of Disturbance area A to each PAD along with other pertinent details. This table shows that through the refinement of design and construction methodology, impact to four of the applicable areas, that is PEC-W-PAD9, PEC-W-PAD13, PEC-W-PAD19 and PEC-W-PAD25, will now be avoided although it must be noted that disturbance from access tracks and Centreline clearance impacts may occur and the test excavation methodology provided here would still apply.



Figure 5-2: Example of guyed tower layout

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Figure 5-3: Example of light suspension tower layout

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Figure 5-4: Example of light angle strain brake/winch tower layout

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Table 5-3: Details of PADs and proposed disturbance

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6. Test excavation

6.1.1. Preamble

Project EnergyConnect is being assessed under Division 5.2, Part 5 of the *Environmental Planning & Assessment Act (NSW).* Under section 5.23 of the *EP&A Act (NSW)*, the following authorisations are not required under other legislation for the Project:

• Aboriginal heritage impact permits under section 90 of the *National Parks and Wildlife Act 1974* (*NSW*).

Consequently, where Requirement 14 of the Code of Practice states that an AHIP is necessary for test excavation within 50 m of a rock shelter, shell midden or earth mound, this will not apply to the Project area.

The RMMs from Table G-1 (AH4) of the Response to DPIE Request for Information (Transgrid 2021b) states:

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Table 6-1 and Table 6-2 provides a list of those PADs requiring test excavation for Disturbance area A (excluding centreline clearing) activities. This list would need to be verified and updated on a regular basis against the spatial data and any further refinements to design and construction methodology.

6.2. Test excavation strategy

In accordance with the Infrastructure Approval, Condition D29 requires preparation of an Aboriginal Cultural Heritage Strategy as outlined below:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010)

This test excavation methodology will inform the Aboriginal Cultural Heritage Strategy to satisfy Condition D29 b).

6.3. Aims and objectives of test excavation

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation would be to:

- Establish if subsurface archaeological deposit is present within those PADs identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation would be limited to those PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B. The test excavations will be undertaken with representatives of the RAPs. Any cultural knowledge and/or management recommendations recorded for Aboriginal cultural heritage during the excavation would be recorded and incorporated where appropriate into an Archaeological Test Excavation Report.

6.4. Research questions

Research questions provide a framework for undertaking test excavation and ensure that the information collected during the program contributes to the knowledge of sites locally and within the regional archaeological record. The test excavations will attempt to address the following research questions:

- Do stratified in situ deposits exist within those PAD potentially impacted by the Project works?
- How does any subsurface archaeological deposit relate to associated AHIMS registered sites in the vicinity?
- How does the nature of any archaeological deposit compare with other excavated archaeological sites in the region?
- Are there features such as hearths (as represented by lenses of ash and charcoal) present?
- Are stone artefacts present and if so, what is the nature of the stone artefact assemblage?
- If shell midden exists what is the nature and composition of the deposit?
- Is it possible to determine the age of the archaeological deposit?
- How does the nature of any archaeological deposit present fit any predictive model developed for the Project?
- What is the scientific and cultural significance of the archaeological deposit?
- What are the best mitigation measures to prevent further harm to archaeological deposit from the Project works?

6.5. Sampling strategy

The Code of Practice (2010a: 25) states that a test excavation sampling strategy must be developed and must do the following:

- provide a framework for sampling all PAD that are at risk of harm (within the subject area)
- describe the differentiation of the PAD to be test excavated from the surrounding archaeological landscape (i.e explain why the PAD is anticipated to be of higher significance than the continuous distribution of archaeological material in which it exists²), and:

 $^{^{\}rm 2}$ This has been established by NOHC 2021b: see Table 5-2 this report.

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- test those areas of PAD that have no archaeological exposure or visibility, or
- test the boundaries of known sites (where appropriate)
- confirm areas of low potential (where relevant)
- comply with the methods described in the Code of Practice
- describe how the sampling area relates to the area that is proposed to be impacted by the proposed activity.

The strategy developed here provides a framework for the sampling of all PADs that will be impacted by Disturbance area A activities across the Project. Although the current sampling has only been applied to those PADs identified in AH4 of the RMMs, the sampling strategy would be applied to all future PADs identified through further survey required by AH3. The sampling strategy and processes described in this methodology would also be applied to Disturbance area A (centreline clearing) and Disturbance area B within PADs once the nature and extent of these activities has been defined.

The Code of Practice (2010a: 26) states that:

ii) the maximum surface area of all test excavation units must be no greater than 0.5% of the area – either PAD or site – being investigated.

Disturbance area A works are varied in size and shape, as are the PAD, therefore it is proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy has been informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy has been calculated for:

- tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks from existing roads) (Table 6-1)
- access tracks between tower sites (Table 6-2).

In all instances the aim of the sampling strategy is to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Table 6-1 calculates the proposed total excavation area for towers sites, aggregated by PAD. For greater detail on the exact excavation area for each tower site see Appendix B.

6.6. Notification

In accordance with Requirement 15c of the Code of Practice at least 14 days notice in writing will be provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject are
- Name and contact details of the legal entity with overall responsibility for the Project
- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations.

A copy of the sampling strategy for this test excavation would also be provided although it is anticipated that earlier discussions will have taken place with Heritage NSW with regard this test excavation methodology.

Table 6-1: Total proposed tower excavation area and methodology by PAD, land system and landform

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6.7. Test excavation methodology

6.7.1. Manual test excavation units

Test excavation will comprise a combination of $1 \text{ m} \times 1 \text{ m}$ Test Pits (TP) and $0.5 \text{ m} \times 0.5 \text{ m}$ Shovel Test Pits (STP) that will would proceed to an archaeologically sterile layer. For example, to achieve a total excavation area of approximately six square metres (e.g., Tower 249), $5 \times 1 \text{ m} \times 1 \text{ m}$ TPs and a further $2 \times 0.5 \text{ m} \times 0.5 \text{ m}$ STPs may be completed, or $1 \times 1 \text{ m} \times 1 \text{ m}$ TP and $22 \times 0.5 \text{ m} \times 0.5 \text{ m}$ STP.

Alternately, test excavation units may be combined depending on the circumstances being investigated for example:

- 2 m x 1 m test excavation trenches
- 3 m x 1 m test excavation trenches
- 6 m x 0.5 m test excavation trenches
- other irregular shaped excavations as fit for purpose (eg a 2 m x 1 m trench with a 0.5 m x 0.5 m square on each end etc.).

Test excavation units of 120-250 mm in diameter are also proposed for testing the depth and extent of archaeological deposit (specifically midden deposit) along archaeologically sensitive linear landforms in PADs within the Anabranch and Darling land systems. Manual augering would be used supplement the results from controlled test excavations units:

to provide additional spatial information when tracing the extent and characteristics of certain lenses or layers identified in the test pits. (Aboriginal Victoria nd)

Each landform in would be first investigated first by 1 x 1 m x 1 m TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units. This size of test excavation unit was considered preferential because of the generally shallow deposits expected across the sandplains and dunefields and also to provide greater coverage for what is predicted to be low density subsurface archaeological deposit, such as artefact scatters, as per Way (2017).

The exact location of test excavation units would be determined in the field in consultation with the RAPs. The location of these will need to be flexible to allow for minor adjustment in the field to avoid any

obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

Requirement 16a of the Code of Practice states that '...Any test excavation point must be separated by at least 5 m...'. It must be noted that the test excavation of Disturbance A areas is constrained by the size of the disturbance area and the sampling size of 15 per cent. Where distance between excavation units is constrained, the option will be to combine the units to appropriately test the disturbance area while maintaining the five metre separation. It is noted that the Code of Practice requires that the maximum continuous surface area of a combination of test excavation units at any single excavation point must be no greater than three square metres.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD would be excavated in 50 millimetre (mm) spits (vertical depth). Sediments within any further excavation units may be excavated in 100 mm spits depending on the results of the initial excavation unit.

Test excavation will be predominantly undertaken manually by trowel, shovel, mattock or other manual instrument such as a hand augur. Excavation would proceed to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture.

Test excavation would cease where:

- Human skeletal remains are uncovered (see section 6.10)
- Enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

6.7.2. Mechanical test excavation units

Mechanical test excavation is not excluded from the definition of harm by the Code of Practice. Aside from floodplain or dune landforms it is likely that sediments across the Project landscape will generally be shallow and less than 500 mm in depth. However, where there are PADs located in the Alluvial Plains geomorphic unit, that is within the Anabranch, Darling and Riverland land systems, it will be necessary to consider forms of mechanical test excavation due to the dry, concreted and potentially deep alluvial sediments, particularly the grey cracking floodplain clays (Table 6-1; Table 6-2). Mechanical excavation would not be used in the Sandplains geomorphic unit which generally comprise shallow duplex soils. The fragile nature of the duplex soils and their tendency to erode on destabilisation require that manual excavation only is utilised to avoid indirect impacts to adjacent sites/PAD. Similarly, although the

Dunefields geomorphic unit has potentially deeper sediments on the crests and slopes of dunes, these sediments would require manual excavation to minimise avoid deflation across the surface (Table 6-1; Table 6-2).

Two forms of mechanical excavation should be considered for the Project as follows:

6.7.2.1. Mechanical augering

Mechanical augers are useful for reaching depths beyond that of a manual auger, when the sediments are too hard for a manual auger or to determine the linear extent of archaeological deposit, specifically shell midden deposit. They can also be of assistance in guiding the use of machine excavation under limited circumstances.

6.7.2.2. Mechanical trench excavation

Using appropriate machines, operators should be able to excavate in a controlled manner, that is in even, horizontal scrapes, utilising the stratigraphic basis that has been established previously either through a manual TP or manual or mechanical augur. Any Aboriginal cultural heritage material found through sieving should be able to be provenanced to the appropriate stratigraphic layer and approximate horizontal location. should be carried out in a controlled manner.

Mechanical excavation should be conducted in a manner that will assist in determining the nature, extent and significance of any Aboriginal cultural heritage that may be impacted by the proposed activity. Where occupation deposits or features are encountered, an attempt must be made to uncover and assess these through controlled manual excavation.

All excavated deposits would be sieved wherever possible.

6.7.3. Sieving

Dry sieving with hand held or table sieves will be employed. Wet sieving is not an appropriate method of sieving in the semi-arid region due to the difficulty of containing water runoff which can damage unexcavated archaeological deposit and surface scatters as well as the potential of water trucks to further damage archaeological sites and PADs.

Excavated deposit will be placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments will be sieved through 5 mm mesh onto tarps and the spoil will be used to backfill test pits manually following recording. All excavation units will be closed on completion and no excavation units will be left open overnight. Three millimetre sieves may also be employed where sandy or fine silt sediments occur or where there is potential for micro-debitage.

6.7.4. Recording

6.7.4.1. Test excavation units

The location of each excavation unit would be recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit would be given a unique identification number. A context sheet for each excavation unit would be completed in the field. Details recorded will include date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings will be prepared for a representative sample of excavation units. A photograph will be recorded of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating would be collected and curated appropriately if discovered during excavation.

All cultural material retrieved from test excavation would be given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker will be used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont [™] Tyvek ® paper.

6.7.4.2. Freshwater shell middens and stone artefacts

Freshwater mussel shell is fragile and is likely to become highly fragmented during the excavation and sieving process. This will impact on the quality and type of information that can be retrieved from shell during test excavation.

All midden material subject to excavation will be subject to scientific analysis including;

- Taxonomic identification to determine species diversity/ diet breadth
- Shell weight by species
- Degree of fragmentation

- Occurrence of worked shell and potential shell tools
- Presence and weight of charcoal.

Retrieved faunal remains other than freshwater mussel are likely to be rare. All faunal remains where recovered from the test excavation will be analysed using the following method:

- Minimum number of individual (MNI) animals represented in each spit and/or layer
- Minimum number of elements (MNE) represented in each discrete area and on site overall.
- Number of species (NISP) represented in each discrete area and on site overall.
- Dimensions of each element
- Butchery/heat marks
- Pathologies.

Suitable raw material for stone artefact manufacture is moderately rare in the region and stone artefacts tend to present as isolated or low density occurrences. Key attributes of all stone artefacts recovered from the test excavation will be recorded as follows:

- Raw material
- Artefact type
- Platform type
- Termination type
- Dimensions.

A photographic record will be taken for all retrieved stone artefacts and a representative sample of faunal material. All artefacts and other material would be given a unique number and stored in double resealable snap lock bags. A permanent marker will be used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont TM Tyvek ® paper.

All recorded information would be entered into a Microsoft Excel table with detail linked to the provenance of the material. Once entered into the Excel table, the data can be readily supplied with the test excavation report to the AHIMS database and RAPs in both electronic and hard-copy form.

6.8. Reporting

6.8.1. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) would be submitted as soon as is practicable to the AHIMS database to document the test excavation results where archaeological deposit was found and a site identified.

6.8.2. Archaeological Test Excavation Report

As part of AH4 of the RMMS, it is stated that:

Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will:

> detail findings of the test excavation activities

> outline how the detailed design has been further developed to avoid or minimise impacts to the identified constraints/features of significance/PADs

> as applicable, detail any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing for these to be implemented

> be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Heritage NSW prior to the commencement of construction that impacts these locations. The addendum report(s) may be staged to enable progressive commencement of construction.

The results of the test excavation program will be documented in an Archaeological Test Excavation Report (ATER) to be provided as an appendix to an updated ACHAR in accordance with the D29 of the Conditions of Approval.

The ATER would provide details on the established extent and scientific significance of each of the PAD/sites investigated and would provide recommendations regarding the necessity of further archaeological investigations. If a PAD/site is assessed as demonstrating low archaeological significance, no further archaeological investigation would be recommended although surface salvage may be an option. If a PAD/site is assessed as demonstrating moderate-high archaeological significance, further archaeological work, such as salvage excavation may be required.

The ATER will provide detail on:

- RAP consultation and results
- Test excavation justification
- Test excavation location, methodology and results including a representative sample of stratigraphic drawings and photos
- Results from the analysis of recovered archaeological material
- Significance re-assessment
- Conclusions regarding archaeological sensitivity of the landscape and discussion of past Aboriginal utilisation of the landscape in light of the data
- Mitigation measures and recommendations for any further archaeological assessment or salvage
- Inclusion of all data in tables as appendices

The draft ATER would be presented to the RAPs for discussion and comment particularly around the cultural significance of PADs/sites, appropriate mitigation measures and any requirement for further archaeological assessment and/or salvage.

6.9. Management of recovered archaeological material and objects after

excavation

As identified in the mitigation measures in the Response to DPIE Request for Information (Transgrid 2021b) the following requirements need to be addressed for salvaged Aboriginal artefacts.

In the short term, archaeological material and objects recovered from the test excavation will be stored in a secure location on Country (Wentworth/Dareton/Buronga) temporarily for recording and analysis purposes. If this is not satisfactory with the RAPs then options will be explored for secure storage in Wentworth/Dareton/Buronga and analysis will be undertaken there.

A temporary repository will be identified to store any Aboriginal objects and/or non-Aboriginal heritage items or material collected prior to the finalisation of the long-term management approach for each item/material.

Consultation regarding the long-term management of archaeological material and objects recovered during the test excavation program would be undertaken with the RAPs both during and following test excavation.

6.10. Procedure for the discovery of Human Remains

If suspected human remains are discovered during test excavation, the following actions would be undertaken:

- The remains must not be harmed/further harmed
- Immediately cease all works at that particular location
- Secure the area so as to avoid further harm to the remains
- Notify the NSW Police and the Environment Line (Department of Planning, Industry and Environment) on 131 555 as soon as practicable and provide any details of the remains and their location
- Do not recommence any work at that particular location unless authorised in writing by the Aboriginal Heritage Regulation Team, Heritage NSW, Department of Premier and Cabinet.

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. STP can be used to determine the horizontal extent of archaeological deposit across an area.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. TP can be used to determine the vertical extent of possible features (such as shell middens) in a$

controlled excavation of 50 mm or 100 mm spits. They can also be expanded horizontally to reveal stratified in situ deposit where this is evident in the stratigraphy.

Appendix B – Total proposed excavation area by tower

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Appendix D – Survey methodology

EnergyConnect (NSW – Western Section)

Aboriginal Archaeological Survey Methodology

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00001)

October 2021

Wentworth Local Government Area

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Ver.	Author(s)	Review Type	Sections Edited	Date	Authorised
1	V. Edmonds and R. Mazlin	Draft to SecureEnergy	All	01.10.21	T. Robins
2	V. Edmonds and R. Mazlin	Draft to Transgrid	All	05.10.21	T. Robins
3	V. Edmonds and R. Mazlin	Final	All	20.10.21	T. Robins

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Executive summary

On 29 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

The Environmental Impact Assessment (EIS) for the NSW – Western Section (the Project) of EnergyConnect was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) the Project is yet to be determined by the Australian Minister for the Environment.

AH3 of the RMMs from the Response to DPIE Request for Information (Transgrid 2021b) states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

The Project area for this survey methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100

metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b) (Figure 1-2).

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Cultural Heritage Assessment Report (CHAR) and Addendum CHAR (NOHC 2021a; 2021b), RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology provides background information on the previous Aboriginal cultural heritage assessments undertaken (section 4.2), land system sensitivity modelling (sections 4.3 and 4.4) and a summary of the impact assessment of the current design and construction methodology on areas requiring further survey (section 5). The methodology offers an Aboriginal consultation strategy (section 3), a survey strategy and methodology (sections 6.3 and 6.4) and requirements for reporting on survey (section 6.5).

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance areas

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology.

The broad aims and objectives of the Aboriginal consultation strategy (section 3.4) will be:

- To re-establish RAP connection with the Project and introduce the SecureEnergy team
- To establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads, if no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- To organise roster of available RAP field participants and their contacts
- To discuss how RAP engagement is to be managed by the Project
- To agree on process and timing for further consultation and communications.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHA	AR Addendum Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Ree	quirementsAboriginal cultural heritage consultation requirements for proponents2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
Draft Conditions	s Draft Conditions of Approval Revision 3 (August 2021)
EIS	Environmental Impact Assessment
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Diversity Conservation Act 1999 (Cth)

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Everick Heritage Everick Heritage Pty Ltd

GPS	Global Positioning System
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OEH	Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border
RAP	Registered Aboriginal Party
RMMs	revised mitigation measures, identified in Appendix G of the Response to DIE Request for Information
Response to DPIE Request for Information the 'additional letter dated 10 August 2021'	
	reterenced in the definition section of the Intrastructure Approval, document is also titled EnergyConnect (NSW – Western Section) Response to DPIE Request for Information
S	means section
SNI	South Australia and New South Wales Interconnector
STP	Shovel test pit(s)

test excavation methodology Aboriginal archaeological test excavation methodology

TP Test pit(s)

1. Introduction

1.1. Project background and legislative context

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the Project) (and to which this methodology relates)
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Diversity Conservation Act 1999 (Cth)* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The Environmental Impact Assessment (EIS) was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the EPBC Act the Project is yet to be determined by the Australian Minister for the Environment.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

1.2. Project area

The Project area for this survey methodology comprises the EnergyConnect NSW – Western Section – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b) (Figure 1-2).

1.3. Previous archaeological investigation

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised mitigation measures (RMMs) identified in Appendix G of the Response to DPIE Request for Information (Transgrid 2021b). AH3 of these RMMs states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

1.4. Aims and objectives

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Addendum CHAR, RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology has been prepared in line with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

This survey methodology will be conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in

cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Vanessa undertook previous surveys along an earlier version of the transmission line corridor (South Australia - NSW Interconnector) in conjunction with some of the Aboriginal stakeholders identified for the current Project area and has a comprehensive understanding of the archaeological and cultural landscape of the Project area. Vanessa has also undertaken numerous Aboriginal cultural heritage assessments within the Project region having owned and operated her own consulting practice based in Dareton and Mildura for 22 years.

Robbie Mazlin (Archaeologist, Everick Heritage) provided input into the calculations for the sampling strategy wording and mapping. Upload of GIS data and analysis was undertaken by Patrick Burke (Principal-GIS, Everick Heritage).





Figure 1-1: The Project area



Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria



Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling



Figure 1-4: Areas requiring further survey along the Project area – Buronga substation



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2. Legislative context

2.1. Commonwealth legislation

2.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.2. State legislation and codes of practice

2.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

2.2.2. National Parks and Wildlife Regulation 2009 (NSW)

2.2.2.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by

specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW* Act.

2.2.2.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, changes to design and construction methodology require that steps 2-4 are repeated. The survey methodology would be presented at Stage 2.

2.2.2.3. Aboriginal Cultural Heritage Assessment

Division 2 s 61 of the NPW Regulation, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. A cultural heritage assessment report is a written report detailing the results of the assessment and recommendations for actions to be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment.

3. Consultation strategy

3.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process through to April 2021. It must be noted if there has been a lapse of 12 months in the consultation process for a Project, Heritage NSW may expect the process to be recommenced from Stage 1 of the Consultation Requirements (section 2.2.2.2).

3.2. Registered Aboriginal Party engagement

As part of AH2 of the RMMs it is stated that engagement with RAPs will consist of the following:

Aboriginal heritage site surveys (AH3) – review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas).

Consequently, this survey methodology will be presented to the RAPs listed in section 3.1 for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

3.3. Consultation process

Open, honest and ongoing communication between Transgrid, SecureEnergy, the RAPs and the Project archaeologists is vital to the success of the Project. To comply with Stage 4 of the Consultation Requirements this draft survey methodology will be presented to the RAPs for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

Virtual or in person meetings are proposed to be held in the region to present the Aboriginal Cultural Heritage Strategy. It is proposed that this survey methodology would be provided to the RAPs with the test excavation methodology (Everick Heritage in prep). Following receipt of the methodologies and at some stage during the 28 day review period it is proposed that further virtual or in person meetings with the RAPs will be held to:

- Re-engage the RAPs with the Project.
- Present the methodologies
- Engage with the RAPs
- Provide a venue for discussion and comment.

Where key individuals or representatives of key organisations are unable to attend meetings, or where Covid restrictions are still in place, virtual meeting options will be implemented, with the Environmental team and Everick to present the methodologies and record comments. There is also potential for up to three meetings to be held within the Project region to accommodate stakeholder travel and time constraints if virtual meetings are not possible.

The proposed process for consultation with RAPs is as follows:

- Provide survey and test excavation methodologies together
- Follow up with phone calls to RAPs to ascertain availability for stakeholder meeting and preferred venue (likely to be Dareton, Wentworth, Buronga, Mildura)
- Send meeting invites and agenda for stakeholder meeting(s)
- Follow up with phone calls to RAPs to ascertain attendance at meeting or alternate one on one meeting
- Hold virtual or in person stakeholder meeting(s) providing resources such as a powerpoint presentation in addition to roll out maps relating to the areas across which the methodologies relate
- Finalise survey and test excavation methodologies incorporating any comments or recommendations from the RAPs and send out to RAPs.

Whilst this process is likely to take a maximum 28 day period it is anticipated that by approaching RAPs on an individual basis where necessary either in person or by phone the process may be able to be shortened.

3.4. Consultation aims

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads like Milpara Road, no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

4. Archaeological context

This section provides a brief summary of the archaeological landscape as background to the survey methodology in accordance with Requirement 1-4 of the Code of Practice. Note that an updated Aboriginal Heritage Information Management System (AHIMS), in accordance with Requirement 1b, is not considered necessary at this stage of the Project. Transgrid has provided the AHIMs Aboriginal Site Recording Forms (ASRF) as prepared by NOHC (2021a; 2021b) for all newly recorded sites.

4.1. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes 55 kilometres (km) to the north of the Project. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

4.2. The Project area

Two Aboriginal Cultural Heritage Assessment Reports have been prepared for the Project by NOHC (2021a; 2021b). The following sections 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6 provide a summary of the assessment, survey methodology and results.

4.2.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and

the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 4-2. This suggested that:

- The largest and most dense archaeological sites correlate to freshwater resources (lakes, rivers, claypans and swamps)
- Sand bodies including lunettes and dunes, are of high sensitivity due to their association with Aboriginal burials
- Transitional zones between plant communities may be a predictor for Aboriginal occupation
- Aeolian sands commonly obscure surface sites within the region, and ground exposure and visibility should be considered where assessing site significance as well as subsurface potential.

4.2.2. Field survey

Field survey of the survey area was undertaken between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Relocate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian survey of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission

corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

4.2.3. RAP field representatives

The following Aboriginal representatives participated in the field survey:

Information redacted for public display

4.2.4. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 4-1). NOHC (2021a) state that:

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Table 4-1: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

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4.2.5. Results

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Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

4.2.6. Recommendations

NOHC (2020a; 2021b) stated that if following detailed design sections of the proposal are to be located outside the 100 m survey area these areas will be subject to further assessment. This would include a section of the transmission line inaccessible due to landowner access restrictions.

4.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 4-3 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 4-2 and Table 4-1although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, will be used to understand the archaeological sensitivity of disturbance areas requiring further survey along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002).

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Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)
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Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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Table 4-3: Land systems, landforms and archaeological sensitivity (Witter et al in prep)

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4.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

4.4.1. Shell middens

Shell middens dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the freshwater snail (*Vivipara notopala hamelyi*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

4.4.2. Open campsites

Open campsites or surface scatters containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

4.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences or in groups forming hearth complexes. They are generally found close to drainage features in the landscape.

4.4.4. Ancestral human remains

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4.4.5. Isolated artefacts

Isolated Artefacts comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

4.4.6. Culturally scarred trees

Scarred trees generally consist of River Red Gums (Eucalyptus camaldulensis) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

5. Impact assessment

5.1. Mitigation measures

AH3 of the RMMs are provided in Table 5-1. Furthermore, AH1 from the Addendum CHAR (NOHC 2021b: Table 11.1) states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

Reference	Mitigation measure	Timing	Applicable locations
AH3	An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.	Detailed design and construction	All locations
	These surveys will be carried out in accordance with the <i>Code of Practice for Archaeological</i> <i>Investigations of Aboriginal Objects in NSW</i> (2010).		
	If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.		
	Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:		
	• detail findings of the survey activities		
	 detail where test excavation is required in accordance with AH4 to inform detailed design 		
	 outline any additional mitigation strategies beyond those required by AH5 to AH12 		

Table 5-1: Revised mitigation measures from the Addendum CHAR (NOHC 2021b: Table 11.1)

be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations.

5.2. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

- used existing access tracks where possible (many of which are located outside the previously surveyed areas)
- located temporary construction areas away from identified Aboriginal objects where possible
- avoided PAD27 through re-design of the disturbance area at Buronga substation
- relocated access tracks around PAD19 and PAD25 (access tracks are now outside of the previously surveyed areas).

Through the development of detailed design and construction methodology to date, some project works have been identified that are outside of the areas previously surveyed by Navin Officer (as identified in the Addendum CHAR (NOHC 2021a; Table 12.3)) including those noted above and described in this methodology.

Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the additional heritage survey described in this methodology). If any additional areas are required outside the area(s) previously subjected to heritage assessment and survey, these areas will require survey as described in this methodology.

Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology. Consultation with the RAPs regarding the updates to disturbance areas will be undertaken throughout the survey and test excavation process and resulting reports (section 6.5).

5.3. Disturbance area A Project works (applicable areas)

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance.

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The following sections briefly describe 'applicable locations' in accordance with Table 5-1, although the individual areas for specific works have not been identified but fall within the overall calculated area requiring survey. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Surveyed areas would be identified in the Archaeological Survey Report described in section 6.5.3.

5.3.1. Transmission line corridor

One section of the transmission corridor approximately 5.4 km in length, south of the Buronga substation (part of Lot 2, DP 1233260) was unavailable for survey due to landowner access restrictions. Disturbance will comprise all Disturbance area A Project works (transmission towers, brake and winch sites, temporary construction /tower laydown areas, parking areas, centreline clearance).

5.3.2. Access tracks

Numerous access tracks and bellmouths have been identified both within and outside those areas previously surveyed. Existing access tracks may also require upgrading or maintenance, generally in the form of grading. A reconnaissance survey by the archaeologists and RAPs (section 6.3) will be undertaken to identify any areas along existing access tracks that require further detailed inspection.

5.3.3. Water supply points

NOHC (2021b) has provided desktop assessments for proposed water supply points and recommended that archaeological survey (as described in this survey methodology) is conducted in areas where ground disturbance is required for pipe infrastructure, as per RMM AH3. Ground disturbance may be required for the following water supply points:

- Alcheringa Road
- Fletchers Lake Drive
- 690 Pomona Road
- Milpara Road
- Wentworth construction compound and accommodation camp.

For any water supply points that require ground disturbance (e.g. installation of a new stand pipe), these areas would be subject to the survey processes defined in this methodology.

Table 5-2: Details of required additional survey by land system

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6. Archaeological survey

6.1. Aboriginal Cultural Heritage Strategy

In accordance with the Conditions of Approval (September 2021), Condition D29 requires preparation of an Aboriginal Cultural Heritage Strategy as outlined below:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;

This survey methodology will inform the Aboriginal Cultural Heritage Strategy to satisfy condition D29 c).

6.2. Aims and objectives of archaeological survey

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of archaeological survey would be to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

6.3. Survey strategy

In accordance with Requirement 5a of the Code of Practice requires a survey sampling strategy to be developed. This would be required in instances where the entire area in question is not surveyed. However, RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously. The archaeological survey will aim to visually inspect 100 per cent of all areas not previously surveyed, as outlined in Figure 1-2, therefore no sampling strategy is required. Survey units will be based on land system and an identification number assigned for each works area surveyed. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology (section 6.4).

A vehicular reconnaissance survey will be undertaken by the archaeologists and RAPs of extensive, previously disturbed access tracks requiring upgrade to establish whether any areas require detailed pedestrian inspection. The timing for this reconnaissance would be in tandem with the archaeological survey program.

Survey will be undertaken for survey units within land systems of lower potential archaeological sensitivity in order to provide letters of clearance for works to commence where there is no archaeological potential (section 6.5.2).

6.4. Survey methodology

6.4.1. Survey teams

Each survey team will comprise one archaeologist and would aim to include two RAP representatives. In the interests of communication and safety, two teams will work in close proximity. Further teams will be employed where necessary to facilitate coverage in a timely manner.

6.4.2. Survey requirements

In accordance with Requirement 5b of the Code of Practice the following survey requirements will be implemented.

The survey will be conducted on foot in accordance with the survey strategy outlined in section 6.3. The methodology will be to undertake a series of pedestrian transects across the entire Project Area to be

subject to further survey targeting ground surface exposures for evidence of Aboriginal sites and objects and landforms of potential archaeological sensitivity which constitute PAD.

One survey team member will have possession of a Global Positioning System (GPS), consequently only one set of transects will be recorded for each team. Start and end points for each survey transect will be taken.

In accordance with Requirement 8 of the Code of Practice, where sites and/or objects are identified during field survey, their location will be recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using the system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes may also be made. A photographic record will be kept of all survey units and landforms where these are informative and appropriate photographic scales will be used.

The following details will be recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

6.4.3. Survey coverage

In accordance with Requirement 9-10 of the Code of Practice, information regarding visibility and exposure in each survey unit will be recorded in order to assess the effectiveness of the survey coverage. This information will be utilised, in conjunction with land system and landform sensitivity to evaluate the

effectiveness of the survey coverage and enable predictions regarding archaeological potential (where visibility and exposure are low) of survey units to provide appropriate management recommendations.

6.4.4. Aboriginal site and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria will be used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD will be identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary. Broad brush PAD boundaries will be avoided wherever possible.

6.5. Reporting

6.5.1. Aboriginal Site Recording Forms

An Aboriginal Site Recording Form (ASRF) would be submitted as soon as is practicable to the AHIMS database to document any Aboriginal objects identified through survey.

6.5.2. Letters of heritage clearance

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

It is proposed that these 'letters' would be in a format downloaded from Field Maps / Survey123 system. The letters would be provided to the RAPs, however agreement will be sought through the consultation process to enable sign off by RAP representatives participating in the field survey.

6.5.3. Archaeological survey report

AH3 of the RMMs from Appendix G of the Response to DPIE Request for Information states that:

Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:

- detail findings of the survey activities
- detail where test excavation is required in accordance with AH4 to inform detailed design
- outline any additional mitigation strategies beyond those required by AH5 to AH12
- be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations

An Addendum Archaeological Survey Report (ASR) detailing the results of the survey would be prepared once fieldwork activities are concluded. The ASR would be completed to the requirements outlined in the Code of Practice Requirement 11 and would include all information contained in the proposed 'letters of heritage clearance'. The draft Addendum ASR will provide mitigation measures for identified sites and PADs and recommendations where further test excavation is required for PADs. The draft Addendum ASR will be presented to the RAPs for comment and discussion.

6.6. Procedure for the discovery of Human Remains

If suspected human remains are discovered during the survey, the following actions would be undertaken:

- The remains must not be harmed/further harmed
- Immediately cease all works at that particular location
- Secure the area so as to avoid further harm to the remains
- Notify the NSW Police and the Environment Line (Department of Planning, Industry and Environment) on 131 555 as soon as practicable and provide any details of the remains and their location
- Do not recommence any work at that particular location unless authorised in writing by the Aboriginal Heritage Regulation Team, Heritage NSW, Department of Premier and Cabinet.

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits$

Appendix E – Aboriginal Cultural Heritage Assessment Stage 2a

EnergyConnect (NSW – Western Section)

Stage 1 (2a) - Aboriginal Cultural Heritage Assessment Report

Prepared for Secure Energy Joint Venture (45860-G-70005-REP-U-00025)

August 2022

Wentworth Local Government Area

Report Reference:

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Executive summary

Background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021 (Appendix A).

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake a) to e) of the conditions in accordance with the Infrastructure Approval and the Revised Mitigation Measures (RMMs) (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

The Project area

EnergyConnect -Western comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Cultural Heritage Assessment Report reports on the additional survey, test excavation, scarred tree assessment and cultural values assessment for Stage 1 (Stage 2a - in line with the Construction Environmental Management Plan [CEMP] staged approach) of EnergyConnect (NSW – Western Section), that is Line (L) 1 Tower (T) 138, just east of the Anabranch, through to Line 4 Tower 58 (Murray River, NSW), a distance of approximately 96 kilometres (km) (Figure 1-1).

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Definitions and abbreviations

ACHAR	Aboriginal Cultural Heritage Assessment Report	
AFG	Aboriginal Focus Group	
AHC	Australian Heritage Council	
Australian Heritage Council Act Australian Heritage Council Act 2003 (Cth)		
AHIMS	Aboriginal Heritage Information Management System	
AHIP	Aboriginal Heritage Impact Permit	
ALR Act	Aboriginal Land Rights Act 1983	
ASR	Aboriginal Archaeological Survey Report	
ASRF	Aboriginal Site Recording Form	
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)	
BP	Before Present (that is 1950)	
CEMP	Construction Environmental Management Plan	
CHL	Commonwealth Heritage List	
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales	
Consultation Re	quirementsAboriginal cultural heritage consultation requirements for proponents2010	
CSSI	Critical State significant infrastructure	
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)	
DPIE	Department of Planning, Industry and Environment (now Department of Planning and Environment	

EIS	Environmental Impact Statement	
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)	
EPBC Act	Environment Protection and BioDiversity Conservation Act 1999 (Cth)	
ESD	Ecologically Sustainable Development	
Everick Heritage Everick Heritage Pty Ltd		
GIS	Geographic Information Systems	
GPS	Global Positioning System	
Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW	
ha	hectares	
km	kilometres	
LALC	Local Aboriginal Land Council	
LGA	means Local Government Area	
L	Line	
m	metres	
mm	millimetres	
MNI	Minimum Number of Individuals	
NISP	Number of Individual Specimens	
NOHC	Navin Officer Heritage Consulting	
NPW Act	National Parks and Wildlife Act 1974 (NSW)	
OEH	(former) New South Wales Office of Environment and Heritage	
PAD	Potential Archaeological Deposit	

Project Area	EnergyConnect (NSW – Western Section) Stage 1 (Stage 2a in line with the CEMP staged approach for the Project)
RAP	Registered Aboriginal Party
RNE	Register of the National Estate
RMMs	revised mitigation measures
RPT	Repatriation Test Pit
S	section
SEARs	Secretary's Environmental Assessment Requirements
STP	Shovel Test Pit
т	Tower
ТР	Test Pit

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Assessment (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Navin Officer Heritage Consulting [NOHC] 2021: Table 11.1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021 (Appendix A). The key condition of approval relating to Aboriginal cultural heritage (D29) specify that:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;

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- b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);
- c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;
- d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and
- e) include an updated Aboriginal cultural heritage assessment report, which:
- is based on the findings of the subsurface testing in b) and surveys in c);
- describes any potential additional impacts to heritage items;
- identifies further mitigation measures, including avoidance or salvage;
- includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
- provides an updated and consolidated list of sites that would be protected and remain insitu throughout construction and sites that would be salvaged and relocated to suitable alternative locations

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake a) to e) of the conditions in accordance with the Infrastructure Approval and the RMMs (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

1.2. The Project area

EnergyConnect (NSW - Western Section) comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Cultural Heritage Assessment Report reports on the additional survey, test excavation, scarred tree assessment and cultural values assessment for Stage 1 (2a) of EnergyConnect (NSW – Western Section), that is Line (L) 1 Tower (T) 138, just east of the Anabranch, through to Line 4 Tower 58 (Murray River, NSW), a distance of approximately 96 kilometres (km) (Figure 1-1).

Stage 2, L1, T138 west through to the South Australian border will be reported on separately. A second ATER and Aboriginal Cultural Heritage Assessment Report (Stage 2b) will be prepared to consider the portion of EnergyConnect (Western Section), that extends from east of the Anabranch, through to the South Australian border.

1.3. Study objectives

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have previously been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (Navin Officer Heritage Consulting 2021b [NOHC] 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

The objectives of this Stage 1 (2a) - Aboriginal Cultural Heritage Assessment Report (ACHAR) are to fulfill condition D29 e) of the Infrastructure Approval and to assess and report on condition D29 a) to d) of the Infrastructure Approval. This ACHAR has been undertaken in accordance with the following approvals, reports and guidelines:

- Infrastructure Approval SSI 10040
- EnergyConnect (NSW Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Department of Environment, Climate Change and Water [DECCW] 2010b).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (the Guide) (Office of Environment and Heritage [OEH] 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a).
- The Burra Charter 2013 (Australia ICOMOS 2013).

1.4. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) directed the survey and test excavations and prepared the cultural values assessment. Vanessa also prepared the body of the ACHAR. Vanessa has a Bachelor of Arts in Australian Prehistory and a Master of Letters in Archaeology and Palaeoanthropology. Vanessa has over 35 years of experience in Aboriginal cultural heritage management nationally and has extensive consulting experience within the Project region.

Mapping and spatial data analysis for this project has been undertaken by Pav Klein (GIS Specialist, Everick Heritage).

1.5. Report structure

Technical reports are provided in the Appendices. The Addendum Aboriginal Archaeological Survey Report (Addendum ASR) is provided in Appendix C and the Aboriginal Archaeological Test Excavation Report (ATER) is provided in Appendix D. Additional survey letter reports are provided in Appendix E and the scarred tree assessment report is provided in Appendix F. The purpose of this report is to document the results of an Aboriginal cultural heritage assessment of the Stage 1 (2a) Project area. As such, the structure of this report includes the following in accordance with the Guide:

- Section 1 Introduction of Project background and location; authors and ACHAR objectives
- Section 2 Description of works
- Section 3 Legislative context with summary description of the key legislation pertaining to Aboriginal heritage and the Project area.
- Section 4 Broadly describes the Aboriginal heritage consultation process relevant to this ACHAR.
- Section 5 Environmental context summarised from the Addendum ASR (Appendix C).
- Section 6 Ethnohistoric and archaeological background summarised from the Addendum ASR (Appendix C) and ATER (Appendix D) as a backdrop to the cultural values assessment.
- Section 7 Archaeological survey, results and discussion summarised from the Addendum ASR (Appendix C).
- Section 8 Test excavation results and discussion summarised from the ATER (Appendix D).
- Section 9 A summary of the arborists scarred tree assessment is provided in this section and the arborists report is provided in (Appendix F).

- Section 10 Cultural values assessment based on consultation and background research.
- Section 11 Scientific and cultural significance assessment.
- Section 12 Impact assessment of the potential impacts
- Section 13 Management and mitigation measures: outlines relevant management and mitigation measures for the Project
- Section 14 Survey maps
- Section 15 Test excavation maps
- References





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2. Description of works

2.1. Disturbance area A

The design of Disturbance area A works for the Project was provided by SecureEnergy in GIS format. Disturbance area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services cross the EnergyConnect corridor

Further descriptions of the proposed works associated with the construction of the development

2.1.1. Transmission towers

The construction of a total of 196 transmission towers, 58 poles on L4 and 138 towers on L1, are proposed to be constructed as a part of the Stage 1 (2a) Project area. The construction of these towers will require the clearance of land across an area of approximately 60 metre (m) x 60 m depending on the type of transmission tower (guyed or self supporting). The tower footprint area is required to be that size to ensure that there is a safe working space for the teams constructing the towers. Clearance will

involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

Tower footings will be located approximately 20 m from the corners of the tower construction areas for self-supporting towers and 5 m for guyed towers. The associated piles would be constructed to a depth of between 7.5 m and 16 m. The tower footings and piles would be constructed with the use of a Soilmec drill rig. Holes will be drilled to the site-specific depth according to the engineered design calculations. Once they have met the required depth, specialised jigs are then installed which hold the foundation steel work. They are then set in place and the holes are filled with concrete.

Each tower construction area will require additional areas up to 70 m x 40 m in size. These areas would be utilised for temporary laydown and storage of tower steel, bolts and accessories and would be cleared where permitted (areas without an exclusion zone). Clearing will involve vegetation removal to ground level utilising a forest mulcher or similar type of plant. Where the proposed alignment changes direction, break and winch sites will be required. These sites would extend up to 200 m from the centre of the tower and require a clearance of a 50 m x 30 m area in addition to a 5 m wide track which will lead to the break and winch location. The brake and winch points will be constructed by clearing all trees in the marked-out area, root balls will be retained. This will provide a location to set out specialized machinery that enables installation of the overhead transmission line cables.

2.1.2. Ancillary tower works

There are several works which will be required in addition to the construction of the transmission towers, including the construction of access tracks, bellmouths (turning circles) and parking areas. The creation of new and upgrade of existing access tracks is proposed along the transmission corridor alignment. These access tracks run parallel to the alignment both within and outside the transmission line corridor as well as into each new transmission tower. The new access tracks will be 4 m wide with passing lanes installed in select locations and formed by grading the ground surface with a grader and / or excavator. Any spoil that is created during access track works will be utilised to form earthen bunds in the vicinity of the tracks as a manner of erosion and sediment control. Where required new fill will be laid down for stability. Any imported fill will be sourced from a registered quarry. Access tracks which provide access directly to the tower location will also be constructed with a bellmouth connecting the two tracks. These bellmouths can be up to a maximum width of 15 m and be utilised as a turning circle.

Parking areas have been proposed at each tower location and will be constructed adjacent to the proposed access tracks. The parking areas are typically 35 m x 10 m in size and will be cleared of vegetation except where exclusion zones exist. As with the tower footprints, clearance will involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

2.2. Centreline, Disturbance area B

Two clearance areas have been proposed which will be subject to vegetation management requirements between the tower locations requiring varying levels of ground disturbance. The Centreline clearance area (CCA) (Disturbance area A - centreline) refers to the centreline of the Project corridor where the draw wires will be pulled from tower to tower with the use of Challenger tractors. This disturbance area comprises a 10 m wide linear area in the centre of the alignment in which vegetation will be cleared and will be used as the main access track for moving the drill rig from to site to site during tower foundation construction and the installation of the draw wire during stringing operations. Vegetation clearance will be completed using mobile plant and equipment that is able to remove vegetation to ground level. Root balls of any removed vegetation will remain in situ to deter soil erosion. The CCA may also be utilized as access across the transmission alignment during construction.

Areas where selective clearing and/or trimming of trees will occur (Disturbance area B) to maintain the minimum vegetation clearance requirements as required by Transgrid when the conductor is at maximum operating conditions. Tree pruning and management associated with Disturbance area B will be completed through the use of mobile plant and equipment with the centreline or access tracks being utilised for accessing the vegetation that requires management. Plant and equipment movements through Disturbance Area B will be limited to what is required to tidy felled trees and potentially for herbicide application.

2.3. Additional works

Several additional works are required for Stage 1 (2a) which do not directly relate to the construction of the transmission line however are ancillary activities required to support the Project. These include:

- Construction of water fill points for provision of both potable water and construction water A series
 of water supply points have been identified as suitable connection points to existing water supply
 pipelines. Establishment for water supply points will comprise installation of an access point /
 driveway, some ground leveling and installation of pipework required for the fill point. The proposed
 water supply points which are to be established and/or used include:
 - Alcheringa Drive, Buronga
 - Modica Crescent, Buronga
 - Fletchers Lake Drive, Dareton
 - 690 Pomona Road, Pomona/Oxley Drive, Pomona
- Construction of the Buronga and Wentworth construction compound (laydown) and accommodation camp. Establishment of the construction compound and accommodation camp requires clearing of vegetation within the disturbance area and clearing and removal of topsoils.
- The Anabranch South laydown area measuring 104,268 square metres north of L1 T127
- Potential undergrounding of existing low voltage overhead powerline crossings. Potential works may
 include installation of new poles on either side of the EnergyConnect corridor and trenching across
 the EnergyConnect alignment. Two areas are proposed for undergrounding:
- east of the Darling within the PEC-W-PAD 23 ex. The northern undergrounding area measures 6,650 square metres and the southern undergrounding area measures 3,226 square metres although it is not expected that the entirety of these areas will be required.
- east and west of the Sturt Highway near L4 T53-T54. The western area measures 13,852 square
 metres and is partially covered by PEC-W-PAD 30, while the eastern measures 14,988 square metres
 and is partially covered by PEC-W-PAD 31. The exact impact areas are not known however it is
 expected that the undergrounding will avoid most of both PADs.

2.4. Broken Hill modification

A short section of the existing Broken Hill to Buronga 220 kV transmission line (Line 0X2) in proximity to the Darling River will be realigned to accommodate the new 330 kV transmission line. This would require two new monopole structures to replace one existing tower structure. The areas for these monopoles form the PEC-W-PAD 20 ext west of the Darling River with one comprising 3,833 square metres and the other comprising 4,212 square metres although it is not expected that all of these two areas will be impacted.

3. Legislative context

3.1. Commonwealth legislation

3.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

3.2. State legislation and codes of practice

3.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act*. Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act*.

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and an AHIP application is not required.

3.3. National Parks and Wildlife Regulation 2009 (NSW)

3.3.1.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW*

Act. Both the additional archaeological survey and test excavation for this Project has been undertaken generally in accordance with the Code of Practice.

3.3.1.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

Stage 1 - Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, the Infrastructure Approval requires that steps 2-4 are repeated. This report fulfils requirements to Stage 4 for Stage 1 (2a) of the Project.

3.3.1.3. The Guide

The Guide (OEH 2011: iii) states:

Anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose.

The investigation and assessment of Aboriginal cultural heritage is undertaken to explore the harm of a proposed activity on Aboriginal objects and declared Aboriginal places and to clearly set out which impacts are avoidable and which are not.

The Guide requires the following input into an ACHAR:

• Review of background information

- Consultation that must adhere to the requirements set out in clause 80C of the NPW Regulation
- Identification and assessment of cultural significance
- Assessing harm
- Developing practical measures to avoid harm
- Management strategies to minimise harm

Section 3 of the Guide also shows how to document findings and compile the report. This ACHAR has been prepared in accordance with the Guide.

4. Consultation

4.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maraura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout the EIS process and by Transgrid through to the handover to SecureEnergy. A consultation log and relevant documentation of consultation is provided in Appendix B.

4.2. Consultation regarding the archaeological survey and test excavation

4.2.1. Archaeological survey and test excavation methodologies

An Aboriginal Archaeological Survey Methodology and Test Excavation Methodology were prepared for the additional survey (Everick Heritage 2021a; Everick Heritage 2021b) and submitted to the RAPs for 28 day review and comment on the 2 November 2021.

During the review period a presentation was provided to RAPs at the Coomealla Club, Dareton on the 4 November 2021 (Aboriginal Focus Group [AFG] meeting 2). Various individual RAPs were also consulted in person and via video conference across early to mid-November 2021 regarding the methodology. The discussions mainly centered on employment aspects of the Project and also on the aspect of artefacts remaining or being returned to Country.

4.2.2. RAP participation in the additional survey and test excavation

Additional survey was conducted across six days from the 14-19 December 2021. The RAPs participated in the additional survey and a list of RAP participants is provided in Appendix B of the Addendum ASR (Appendix B).

Test excavation and further survey was conducted over 108 days from the 10 February through to 28 June 2022. The RAPs participated in the test excavation and further survey on a roster system and a list of RAP participants is provided in Appendix B of the ATER (Appendix D).

4.2.3. Consultation regarding the additional survey and test excavation

5. Environmental context

5.1. Physiography and climate

Physiographically, the Project area lies within the south eastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council 1987). Droughts are common.

5.2. Land systems

Ten land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Stage 1 (2a) Project area (Figure 5-1). These 10 land systems can be placed into three major geomorphic categories as follows:

- Sandplains Bulgamurra, Hatfield, Menilta, Overnewton, Roo Roo
- Dunefields Arumpo, Mandelman
- Alluvial Plains Canally, Darling, Riverland.

A detailed description of the land systems including landforms, vegetation and related archaeological sensitivity is provided in Table 6-3.

5.3. Land use history

The Project area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. As a result of grazing and the subsequent devegetation of the landscape erosion is high and the landscape can be considered as primarily a degrading landscape although aeloian processes also assist in some aggradation with windblow sands. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Recreational use of the riverbanks is common. Until recently however, there has been no large-scale clearance of the land in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas. Section 6.1 discusses contact history of the area in detail.



Figure 5-1: Land systems of the Stage 1 (2a) – Project area



6. Ethnohistoric and archaeological context

6.1. Ethnohistoric context

The central group of Aboriginal people living along the river now known as the Darling called it the Barka, hence the origins of the name Barkindji, a term now used to refer to the cluster of related tribes sharing a common language (Barkandji or Paakantyi) and living along the lower reaches of the Darling (Hardy 1976).

According to Tindale (1974), two Paakantyi speaking tribes have a potential association with the Project Area. These are the Kureinji and the Maraura (or Mararawa). The Kureinji tribe is said to have occupied the Murray River between Euston and Wentworth but very little else is known about this group of people. The Maraura were located along the Murray River between Wentworth and Paringa (South Australia), along the western side of the Darling and from Avoca northwest to Popiltah Lake (Tindale 1974: 130, 197, see also Withers 1989, in Martin 1996). The meaning of the term Maraura has been examined by Martin (1996) who has indicated that the term could have been used to describe a dialect group, part of a dialect group, a cluster of closely related dialect groups or the whole Barkindji language.

Figure 6-1 is thought to be from Tindale (1974) but was sourced from Learning Paakantyi Book 1 (Lindsay 2010). The map clearly indicates that most of the Project area, particularly Stage 2 (2b) is located within Maraura territory and is generally acknowledged as such by most Barkindji/Maraura people.

Tindale (1974: 130-131), worked with a Maraura informant, Robert McKinley, who provided him with accounts of some of his tribe's traditions. The Maraura were, according to McKinley (or McKinlay), an aggressive people who had migrated south down the Darling River. They intermarried with neighbouring hordes from surrounding tribes from both sides of the river (whether Murray or Darling is not stated but assumed to be the Murray) but would not allow their own womenfolk to be taken more than 50 km from their own tribal area (Tindale 1974:131). The influence of the Barkindji also stretched east along the Murray. With their more secure resources of the Murray River frontage tribal areas were smaller and the contrast between tribes greater (Hardy 1976: 4). Most of these tribes, who distinguished the difference between themselves by the word 'no' repeated (eg Latji Latji, Tati Tati) were unfriendly towards the Barkindji, however the Kureinji recognised the Maraura or Barkindji as kinsmen (Hardy 1976: 4).



Figure 6-1: Tribal boundaries (Lindsay 2010)

The lower Anabranch and the lowermost Darling were occupied by the Marawarra group of Paakantyi (Barkindji) people, and the Lower Darling above Burtundy by the southern Paakantyi (Barkindji) group. Between them, these two groups occupied the better watered regions and the entire floodplain. (Local Land Services Western Region nd: 5)

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There appears to be little doubt that historically and through to the present the (Southern) Barkintji tribe shares cultural connections with the Maraura through marriage laws via the Eaglehawk and Crow mythology and various historical and social documentation.

In the early 1830s, it was the Maraura who challenged the Overlanders driving sheep and cattle to South Australia via Lake Victoria, approximately 80 km west of the Project area (Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130). Open warfare between the Maraura and Overlanders ensued between 1838 and 1841 culminating in the famous Rufus River Massacre (Hardy 1976; Hope 1998: 23; Martin 1996). There are different interpretations of why the Maraura so fiercely defended Lake Victoria. Martin (1996: 10) argues it was in defence of the burial areas and/or spiritual significance of the lake, while others claim the Maraura coveted European items of food, clothing and blankets or that the attacks were based on competition for food resources impacted on by the sheep and cattle (Hope 1998: 33).

Colonial settlers quickly realised the importance of the Murray-Darling junction as an area central to trade and began to settle there by the 1840s, driving the local Aboriginal tribes inland. There appears to be no mention of Kureinji in records from the 1840s onwards and Barkindji were the dominant group occupying the Project Area by that time (Thompson 1997: 7).

In 1855, an Aboriginal mission station was established by the Anglicans at Yelta, on the southern bank of the Murray opposite Wentworth, and this mission provided a refuge for many Maraura people. By the 1860s, so many people at the mission had died from diseases that only one family remained and the mission was closed in 1868 (Hardy 1976: 127; Martin 1996: 10). Remnants of the local tribes managed to survive by traditional subsistence methods in the sandhill and mallee country of the hinterland but it is also thought there may have been movement of people downstream to missions at Morunde, near Swan Hill, Manuka, near Mannum and Point MacLeay at the Murray Mouth because they provided rations and a certain degree of safety (Hardy 1976: 109; Martin 1996: 10).

By the early 1860s, those Barkindji tribes along the Darling River frontage were under severe pressure of displacement from their traditional lands by pastoralists. Most Barkindji worked on stations or were employed as trackers for the police. Working on stations meant it was possible for the Barkindji to live a semi-traditional existence with rations supplementing traditional hunting and gathering.

Dependence on Aboriginal labour by squatters lessened during the 1870s, particularly along the river frontages where better transport and communications attracted non-Aboriginal workers. In 1901, there were approximately 40 Aboriginal people camped on the Darling River north of Pooncarie and they were allocated a 640 acre reserve around the main campsite. In 1901, they were joined by descendants of

Nanya's tribe who were brought to the Pooncarie campsite from the Lake Victoria region. Nanya was born on the Darling Anabranch and disappeared into the Mallee west of the Anabranch with two tribal women after an argument with his tribe. Eventually, in 1893, his small tribe were captured by Harry Mitchell (Dareton), Fred William and Dan McGregor who had been hunting dingoes on the back part of Lake Victoria Station. The tribe numbered 12 men, eight women and 10 children. And Nanya was father or grandfather to all of them (Hardy 1976: 168). Nanya's tribe camped out on the Darling near Wentworth and gradually became acclimatised to the 'white fella' ways, however, the authorities were unsure of what to do about them. Eventually, Nanya passed on and the rest of the tribe travelled back and forth between Pooncarie and Anabranch, some moving away and some dying, although it is highly likely there are a few of Nanya's descendant in the Sunraysia region today (Hardy 1976: 170, 171).

Pooncarie Aboriginal Reserve (later known as the Mission), was officially established around 1910 (Hardy 1976: 135, 185). By 1910, displacement from stations was chronic and refugees from southern stations along the Darling came to camp at Pooncarie on the reserve and around the outskirts of Wilcannia. By this time, Barkindji population numbers had severely decreased through starvation caused by displacement and introduced diseases. In1933, the Aborigines Protection Board decided to move all the Pooncarie Mission people to the new Menindee Mission. It was apparently an unhappy place with poor accommodation and rampant tuberculosis. Most people left as soon as they were able. In relation to the Pooncarie Mission:

At least 20 people were in continual residence until 1933 when it was closed down and the people relocated to Menindee. Present day Aboriginal family names with ties to the Pooncarie Mission include; the Quayles, Hunts, Mitchells, O'Donalds, Wymans, Johnsons, Clarkes, Mortons, Bugmys and descendants of the Nanya tribe who were brought to Pooncarie from the Lake Victoria region in the early 1900s. (Kelly 2015: 16)

Granny Nellie Johnston (1878-1948), the daughter of Mary Johnson who was born on Moorara Station, lived and travelled up and down the Darling River in the late 1800s and early 1900s. Demand for Aboriginal labour decreased again after 1920, with the further subdivision of properties. Nellie and her husband Harry Johnston, a Ngiyampaa man, and their fifteen children ended up at Pooncarie Mission and then were shifted to Menindee Aboriginal Station. Nellie and Harry's children married into many other Aboriginal and non-Aboriginal families leaving many descendants, many of whom still live in the region (Nellie Johnston nd).

Life at the Pooncarie Mission and other missions such as Yelta, cemented the bonds through kinship between the Mararura, Barkindji and other tribes such as Ngiyampaa. Certainly, many families identify to various tribes through multiple lines of kinship.

The exception to the subdivision of the larger pastoral holdings were those owned by Kidman who still willingly employed Aborigines (Hardy 1976: 186). Nulla Station and its Outstation, Waterjelly (now Warwick Station), was the home of the Mitchell family from sometime before 1902 until the 1940s. Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren are now Elders in the Barkindji community at Dareton.

In summary, although displacement and disease affected the Barkindji population there are many Barkindji descendants still living in and around Coomealla (Dareton), Buronga and Wentworth and further north along the Darling River. More recently, many live across the Murray in Mildura.

6.2. Archaeological context

6.2.1. Database searches

6.2.1.1. Aboriginal Heritage Information Management System

Geographic Information System (GIS) data for all Aboriginal Heritage Information Management System (AHIMS) within and close to the Project area was provided to Everick Heritage prior to the survey works completed in December 2021. A copy of all the Aboriginal Site Recording Forms (ASRF) for sites registered by NOHC for the Project area were also supplied to Everick Heritage. These sites excluded scarred trees which were to be assessed by an arborist prior to any registration. No further AHIMS search was undertaken prior to the additional survey.

6.2.1.2. Other database searches

The following heritage registers were accessed on the 24 February 2022:

- World Heritage List (Australian Heritage Council/ UNESCO
- The National Heritage List (Australian Heritage Council)
- Commonwealth Heritage List (Australian Heritage Council)
- Register of the National Estate (Australian Heritage Council). The Register of the National Estate (RNE) is a non-statutory list which it retained as archive of the previous listing process
- The State Heritage Register (Heritage NSW)

- Wentworth Local Environment Plan (2011)
- AHIP Public Register (previous 5 years only).

Database search results are provided in Table 6-1. Four Indigenous Places are recorded on the Register of the National Estate for the Wentworth region however information regarding their nature and location is restricted. It is likely these will relate to Lake Victoria.

Table 6-1: Australian Heritage Database search results

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6.2.2. Regional context

Both the Addendum ASR (Appendix C), the ATER (Appendix D) and the ACHAR and Addendum CHAR (NOHC 2021a; 2021b) provide further details on previous studies in the region. The following summarises the most pertinent.

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes, 120 kms to the north of the Project Area. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope et al. 1983). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

These sites share a number of common elements consisting invariably of shell midden with small components of each site being made up of stone artefacts, hearths, hearthstones, and other faunal material. Ancestral Human Remains (burials) are rare in these sites or locations and the only dated burial in the area comes from Mallee Cliffs, 5 km to the east of the Project area (Pardoe 1988). The cultural horizon of each site is generally shallow, although the horizon itself may be buried by as much as one metre of sterile sediment. The exceptions to this generalisation are Red Cliffs, on the south side of the Murray in Victoria, where the shell was stratified through 1.4 m of deposit, and at Gol Gol car park, just west of the Project area where Lance (1993; 1994) found approximately one metre of stratified cultural deposit.

Edmonds (2002a; 2002b; 2003) undertook a number of assessments for the South Australia-NSW Interconnector (SNI) which examined a 100 m wide corridor which in some instances mirrored the current Project area particularly east of the Darling though to Buronga substation (Figure 6-2). Generally, east of the South Australian border to the Darling Edmonds (2002a; 2002b) assessed a corridor slightly to the north of the current Project area.

Across a number of surveys, between 1998 and 2003, Edmonds recorded 66 Aboriginal sites. Along with scarred trees, open campsites and isolated stone artefacts dominated the SNI corridor landscape. Generally, these sites were predominantly composed of hearths with a sparse distribution of stone artefacts. Stone artefacts were mainly manufactured from silcrete with smaller components of chert, quartz, quartzite and sandstone present. Both silcrete and chert occur locally from pedogenic rocks which outcrop in the cliffs along the Murray (chert at Paringa in South Australia and silcrete at Berribee on the Lindsay River in Victoria). Silcrete seams are also widespread throughout the region between Wentworth and Broken Hill (eg at Mungo) but the sources are generally small and widespread. One such seam occurs on Talgarry Station (just south of the Project area) in the vicinity of Lake Victoria (Hope 1998: 342). The quartz, quartzite and sandstones would have come from older metamorphic and volcanic rock outcrops, such as those in the Barrier Ranges to the north and are likely to have been traded into the area through a complex of exchange networks. The artefact assemblage on campsites primarily consisted of unmodified flakes and occasional cores. A small number of retouched and/or utilised flakes and grindstones were noted. There did not appear to be any distinctive patterning of artefact distribution either within or between sites.

Only 17 scarred trees were recorded within or close to Edmonds (2002a; 2002b; 2003) study area. Scar types ranged from canoes through to containers, shields and shelter but there was no observable pattern to the type of scar occurring. Bark removal was predominantly from Black Box trees and is a reflection of the relative abundance of this tree species as compared to River Red Gums in the study area.

Numerous scarred trees were noted along survey transects in the Canally, Darling and Darling/Menilta interface land systems but were not recorded due to the lack of time.

Middens mostly occurred as shallow accumulations of individual shell heaps comprising freshwater mussel shell. The fragmentary nature of much of the shell exposed on the surface of these sites made it difficult to distinguish between lake mussel shell (*Velesunio ambiguus*) and river mussel shell (*Alathyria jacksoni*) although it is most likely that the distribution of river mussel was confined to the river margins whilst the lake mussel was confined to middens found north and west of Lake Victoria (2002b: 43). River snail (*Notopala sublineata*) was only noted at one site, an extensive midden on the riverbank along the western side of the Darling and occurred as single shell lenses or one-off meals within a larger midden complex.

The shell middens recorded in the SNI corridor landscape appeared fall into three main categories:

- extensive but shallow linear accumulations of both scattered and in situ individual shell lenses in a dark grey ashy clay matrix in association with burnt clay hearths and stone artefacts (Anabranch, Darling)
- extensive areas of discrete scattered and in situ shell lenses in a sandy matrix in association with calcrete hearths and, rarely, stone artefacts predominantly located on dunes (Roo Roo)
- small isolated lenses of shell in association with larger open campsites on duplex soils (Roo Roo).

Stone artefacts were occasionally noted in association with the middens but were rare. Ubiquitous in situ and scattered hearths formed a major component of most middens (2002b. There were no vertebrate faunal remains noted in the shell middens recorded along the corridor. Lance (1990) has also commented on the rarity of faunal remains in middens in the Lake Victoria landscape. Hope (1998: 347), however, discovered a wide range of faunal remains during excavations of shell middens at Lake Victoria but these were very fragmented. Therefore, the lack of faunal remains in association with shell middens in the SNI corridor landscape may be a perception related to the highly fragmented nature of the bone. This fragmentation is most likely related to food processing (Hope 1998: 347).

Hearths were a ubiquitous archaeological feature noted on sites along the SNI corridor and were found in association with stone artefact scatters (campsites) and middens, in complexes or as isolated archaeological features and were mostly found near permanent or temporary water sources. Along channel banks in the Anabranch and Darling land systems hearths often formed a linear complex. The hearths located during the SNI survey were composed of heat retainers made from clay, termite nest, ironstone or calcrete (carbonate) depending on the local availability of these materials.

The majority of sites located along or close to the study area are situated adjacent to a water source, such as rivers and creeks, relict lakebeds, depressions, claypans, swamps and scalds. This pattern of site distribution is a reflection of the semi-arid nature of the landscape, that is, limited distribution of water sources with the focus of Aboriginal occupation on or near those sources.

In summary, Edmonds (2002b: 42-43) states the following:

- Sites were located in all land systems occurring along the SNI corridor except Arumpo, Hatfield, Mandleman and Trelega. Within the corridor these land systems comprise extensive sandplains and dunes with few reliable water sources in the semi-arid landscape. Therefore, the evidence for Aboriginal occupation of the Arumpo, Hatfield, Mandleman and Trelega land systems is likely to reflect the transient nature of occupation and be sparse and difficult to detect. It is reasonable to assume that any evidence may consist of a rare isolated hearth and/or isolated artefact.
- The Canally land system contained the highest numbers of sites along the SNI corridor followed by the Darling. The Canally land system along the corridor contains a large number of ephemeral water sources, such as depressions, channels and scalds and as with the Darling River these features would have provided a focus for aboriginal occupation because of the water and food resources found there.
- All of the recorded sites in the Belvedere land system were located around the margins of depressions or where this land system is situated adjacent to the Canally land system.

The survey results indicate there is evidence for Aboriginal occupation across the majority of the SNI corridor and that landforms associated with permanent and ephemeral water sources were a primary focus for Aboriginal settlement. The evidence for occupation along the corridor appeared to represent two different settlement patterns based on seasonal availability of water.

6.2.3. The Project area

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by NOHC (2021a; 2021b). Sections 6.2.3.1 to 6.2.3.5 provide a summary of the assessment, survey methodology and results although further detail can be found in the Addendum ASR (Appendix C).

6.2.3.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and

the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model. This suggested that:

- The largest and most dense archaeological sites correlate to freshwater resources (lakes, rivers, claypans and swamps)
- Sand bodies including lunettes and dunes, are of high sensitivity due to their association with Aboriginal burials
- Transitional zones between plant communities may be a predictor for Aboriginal occupation
- Aeolian sands commonly obscure surface sites within the region, and ground exposure and visibility should be considered where assessing site significance as well as subsurface potential.

6.2.3.2. Field survey

Field survey of the survey area was undertaken by NOHC between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Re-locate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian transects of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission

corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

6.2.3.3. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 6-2). NOHC (2021a) state that:

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6.2.3.4. Results

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6.2.3.5. Recommendations

NOHC (2020a; 2021b) stated that if following detailed design sections of the proposal are to be located outside the 100 m survey area these areas will be subject to further assessment. This would include a section of the transmission line inaccessible due to landowner access restrictions.

6.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, has been used to understand the archaeological sensitivity of disturbance areas requiring additional survey and test excavation along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced

in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002a; 2002b; 2003).
Table 6-3: Land systems, landforms and archaeological sensitivity relevant to Stage 1 (2a) (Witter et al in prep)

7. Archaeological survey

7.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of the archaeological survey as identified by the Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a: Appendix B) were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

An additional aim identified prior to the survey was to reinspect the following AHIMS registered sites which had not been found during the NOHC survey:

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7.2. Timing and personnel

The primary survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. The survey teams comprised one Everick Heritage archaeologist and two or three RAP representatives. A number of Transgrid and SecureEnergy staff also accompanied

the survey teams to assist with land access and orientation. A full list of key survey participants is provided in Appendix B of the Addendum Aboriginal Archaeological Survey Report (Addendum ASR) (Appendix C).

Additional small survey areas for traffic signage, traffic entry points and the Wentworth camp and laydown area were identified during the test excavation program and undertaken as required. The survey strategy, methodology, site and PAD identification and recording were as described below. These small additional surveys are ongoing and being reported on in letter format which are being provided to the RAPs as completed (Appendix D).

7.3. Survey strategy

RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously surveyed areas. The archaeological survey aimed to visually inspect 100 per cent of all areas not previously surveyed, therefore no sampling strategy was required. Areas to be surveyed were confirmed by SecureEnergy prior to the survey and were generally in line with the works described in section 2.2.

7.4. Survey methodology

The survey was conducted on foot and occasionally by vehicle where there were areas of extensive existing tracks in land systems of low archaeological sensitivity. Only one survey team member had possession of a Global Positioning System (GPS), consequently only one set of transects was recorded for each team.

All sites and/or objects were identified during field survey, their location recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using this system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes were also made. A photographic record was kept of all survey units and landforms where these are informative and appropriate photographic scales were used.

The following details were recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

7.4.1. Aboriginal sites and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria was used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD were identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary.

7.4.2. Aboriginal site recording

Aboriginal Site Recording Forms (ASRF) have been submitted to the AHIMS for all Aboriginal objects and sites identified during the survey. Aboriginal sites, objects and PADs identified during the additional survey were numbered sequentially based on the naming and numbering system implemented by (NOHC 2021a; 2021b).

7.5. Survey coverage Stage 1 (2a)

The addendum and additional survey areas for Stage 1 (2a) to date total 1,151,922.5 square metres (115.92 hectares). The majority of the additional survey areas were covered. Notable exceptions include:

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Generally, vegetation cover was very low and ground surface exposure moderate to high affording excellent visibility for the detection of surface Aboriginal sites and objects. Effective coverage has not been assessed for each small area however, it can be confidently stated that given the small size of many of the survey areas and the high exposure and ground surface visibility effective coverage would be around 80 per cent. Following the rains in April and June vegetation cover became a constraint to ground surface visibility for the small areas of additional survey required, and it could be stated that effective coverage was reduced to around 50 per cent.

7.6. Survey results Stage 1 (2a)

Table 7-1: Site gazetteer from survey of Stage 1 (2a) – Project area

8. Test excavation

8.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation were to:

- Establish if subsurface archaeological deposit is present within those PADs and sites identified as being directly impacted by Disturbance area A and Disturbance area B Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation was limited to those areas of PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B (required tree clearance). Test excavation was also undertaken for two sites as identified in by NOHC (2021b) as having high potential for subsurface archaeological deposit:

- PEC-W-G7 (AHIMS ID 39-6-0079)
- PEC-W-102 (AHIMS ID 39-6-0074).

8.2. Timing and personnel

Test excavation for both Stage 1 (2a) and Stage 2 (2b) was conducted between the 10 February to the 28 June 2022. During this time test excavation was supervised by the following Everick Heritage personnel across the test excavation program:

• Vanessa Edmonds (Principal-Project manager)

- Aaron Fogel (Principal)
- Roark Muhlen-Schulte (Principal-Field supervisor)
- Cailtin Marsh (Senior Archaeologist)
- Mitch Cleghorn (Senior Archaeologist)
- Andrew Wilkinson (Senior Archaeologist)
- Liam Neill (Senior Archaeologist)

Test excavation teams generally comprised two archaeologists and four RAP representatives, although that number fluctuated across the life of the test excavation program. RAP representatives participated in test excavation through a rostering system and a list of RAP participants and other Everick Heritage personnel are provided in Appendix B of the ATER (Appendix D – this report).

8.3. Sampling strategy

A sampling strategy was developed for test excavation of the Project area as part of the test excavation methodology prepared by Everick Heritage (2021b). Disturbance area A and Disturbance area B works are varied in size and shape, as are the PADs, therefore it was proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy was informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy had been calculated for:

- Disturbance area A tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks between tower sites (centreline) and from existing roads
- Disturbance area B, the latter based on an arborists's assessment for the requirement for tree removal.

In all instances the aim of the sampling strategy was to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Test excavation for Disturbance area B was calculated by Catherine Curlewis (Senior Environmental Advisor, SecureEnergy) based on the following application:

- Extent of disturbance factor 50 per cent impact in B4
- Extent of disturbance factor 25 per cent impact in B10
- Extent of disturbance factor 10 per cent impact in hazard tree area for centreline.

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Test excavation was increased for some areas of PAD during test excavation based on the following:

- Increased excavation required to determine extent of site
- Increased excavation due to the requirement for one or more repatriation test pits (RTP) (see section 5.6.2)
- Increased excavation required to follow the extent of an archaeological feature.

The sample achieved is considered to be adequate for determining the nature of all PADs subject to test excavation and where test excavation was not considered adequate or was not conducted across the entire PAD these areas remain PADs.

8.4. Notification

In accordance with Requirement 15c of the Code of Practice notice in writing was provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject area
- Name and contact details of the legal entity with overall responsibility for the Project

- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations
- Test excavation methodology (Everick Heritage 2021b: Appendix C).

8.5. Constraints

Weather was a major constraint to the test excavation program. From February through to the end of March, temperatures were extreme and often in the region of 40 degrees Celsius which slowed progress and the ability to work long days in the field. From mid April on unseasonable wet weather delayed fieldwork with roads being closed to vehicle traffic and access into some area such as adjacent to the Darling River not being possible.

Access was constrained by the need to provide adequate notice to landholders for access which in conjunction with rain delays exacerbated timeframes. Covid struck the teams, both archaeologists and RAPs, in the first few months of fieldwork and led to a decrease in team numbers.

8.6. Test excavation methodology

Test excavation followed the methodology that was prepared by Everick (2021b: Appendix C) and approved by the RAPs. The methodology employed is summarised below.

8.6.1. Test excavation units

Test excavation comprised a combination of 1 m x 1 m Test Pits (TP) and 0.5 m x 0.5 m Shovel Test Pits (STP) that proceeded to an archaeologically sterile layer. Test excavation units were combined where required. Each landform was first investigated first by $1 \times 1 \text{ m x } 1 \text{ m}$ TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units.

The exact location of test excavation units within the disturbance zones were determined in the field in consultation with the RAPs and in accordance with the sampling strategy. The location of these needed

to be flexible to allow for minor adjustment in the field to avoid any obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD was excavated in 50 millimetre (mm) spits (vertical depth). Dependent on the results of the initial excavation unit sediments were then excavated in 100 mm spits.

Test excavation was undertaken manually by trowel, shovel or mattock. Excavation proceeded to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture and was agreed on in consultation with the RAPs.

Test excavation of PADs ceased where enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

8.6.2. Repatriation Test Pits

Based on early consultation with the RAPs it was determined that all archaeological material excavated or salvaged would be placed back on Country as close as possible to the area from which they originated. In the selection of a location for repatriation of excavated and collected cultural material, Transgrid needed to consider the following future disturbances:

- Construction (if relocated prior to completion of construction),
- Operational vegetation maintenance of the easement and/or operational access routes,
- Operational maintenance of transmission line infrastructure (towers, footings, guys, earthing, conductor, earth wire),
- Maintenance of operational access tracks, and
- Landowner activities, such as access tracks, fences, cultivation (noting that management of landowners activities are not under Transgrid's control unless they specifically have a potential to impact on Transgrid's assets or require consultation/approval from Transgrid under the provisions of the *Electricity Supply Act 1995* or Transgrid easement guidelines, Living and working with electricity transmission lines).

It was therefore determined the optimal location for relocation/repatriation of cultural material, without factoring in specific in field infrastructure locations and any landform/topographic constraints, is considered to be on the edge of the transmission line easement in the 1st or 4th quarter and sufficiently

distant from transmission line and other infrastructure to avoid potential harm from operational activities (Figure 8-1).

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Figure 8-1: Not to scale. Showing the recommended exclusion zones and offsets for transmission lines (220 kV and above) from Living and working with electricity transmission lines (Transgrid 2021), which details restrictions for land owners in relation to transmission line easements and infrastructure

A Repatriation Test Pit (RTP) measuring 1 m x 1 m was excavated within the exclusion zone in PADs where test excavation recovered cultural materials, or where it was determined that surface collection would require reburial. All material from the RTPs was sieved and any cultural material recorded and bagged as above.

8.6.3. Sieving

Excavated deposit was placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments were dry sieved through 5 mm mesh onto tarps and the spoil was used to backfill test pits manually following recording. All excavation units were closed on completion.

8.6.4. Recording

8.6.4.1. Test excavation units

The location of each excavation unit was recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit was given a unique identification number. A context sheet for each excavation unit was completed in the field. Details recorded included date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings were prepared for a representative sample of excavation unit. A photograph was taken of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating were collected and curated appropriately when encountered during excavation.

All cultural material retrieved from test excavation was given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont [™] Tyvek ® paper.

8.6.4.2. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) has been submitted to the Aboriginal Heritage Information Management System (AHIMS) database to document the test excavation results where archaeological deposit was uncovered and a site identified or existing site updated.

8.6.5. Management of recovered archaeological material and objects after excavation

8.7. Analyses

8.7.1. Stone artefact analysis



Figure 8-2: Project area (blue), landscape features and assemblage locations (red)

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Table 8-1: Results of radiocarbon dating of shell samples taken from Stage 1 (2a)

8.8. Results

Table 8-3: Summary of results of the test excavation for Stage 1 (2a)

9. Scarred tree assessment

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

Consulting arborists, ENSPEC, were engaged by Everick Heritage on behalf of SecureEnergy to conduct the assessment of those trees recorded by NOHC (2021a; 2021b) and those newly recorded by Everick Heritage (2022a). ENSPEC arborists have extensive experience in the assessment and salvage of cultural scarred trees (<u>https://arboriculture.org.au/sponsors/enspec</u>). Their final report is provided in Appendix F. The assessment methodology of scars or modifications was based on the following:

- the visible feature, such as a wound, scar or manipulation of the tree form
- position of the feature
- shape and size of the feature
- visible tool marks
- location of the tree
- species of tree
- growth characteristics of the tree species
- age of the feature as judged by reactive growth of the tree and degradation of exposed wood.

Most of the trees are old, and 24 of them are dead. As a result, some trees or features were too degraded to make an effective assessment (ENSPEC 2022: 4).

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Figure 9-1: Assessment of scarred trees across Project Area (ENSPEC 2022: Table 1)

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Table 9-1: Summary of arborists assessment of scarred trees in Stage 1 (2a) based on ENSPEC 2022: Table 6, Table 9. Vegetation management required for those trees highlighted

10. Cultural values assessment

10.1. Cultural landscapes

Cultural landscapes are defined as:

A place or area valued by an Aboriginal group (or groups) because of their long and complex relationship with that land. It expresses their unity with the natural and spiritual environment. It embodies their traditional knowledge of spirits, places, land uses, and ecology. (US/ICOMOS 1996 in Andrews et al 2006).

Andrews et al (2006) suggest the following guiding principles for evaluating Aboriginal cultural landscapes.

- The long associated Aboriginal group or groups have participated in the identification of the place and its significance, through the consultation process. This principle ensures that Aboriginal peoples will be consulted, involved and participate in the identification of frameworks and sites
- Spiritual, cultural, economic, social and environmental aspects of the group's long attachment with the identified place, including continuity of use and traditions, social and kinship relationships, intimate knowledge of the area, and spiritual affiliations illustrate its cultural value.
- The interrelated cultural and natural attributes of the identified place make it a valued cultural landscape. Recognising the integrated nature of Aboriginal relationship to place, including the inseparability of cultural and natural values. Tangible evidence may be largely absent, with the attributes primarily in oral and spiritual traditions and in activities related to the place. However, there could be tangible attributes which include natural resources, archaeological sites, burials/graves, material culture, and written or oral records.

This guiding principle also recognises natural components such as ecosystem, climate, geology, topography, water, soils, views, and dominant and culturally significant fauna and flora in the context of the associated Aboriginal people's relationship to the place.

 The cultural and natural attributes that embody the significance of the place are identified through traditional knowledge of the associated Aboriginal group(s) including traditional environmental knowledge, narratives, place names, language, traditional uses, rituals, and behaviour related to the identified place. It recognises that some knowledge cannot be shared, but available knowledge must be sufficient to demonstrate the significance of the place in the culture of the associated group.

• The cultural and natural attributes that embody the significance of the place may be additionally understood through academic studies such as histories, including oral history and ethno-history, archaeology, anthropology, and environmental sciences.

Aboriginal cultural knowledge was traditionally bequeathed through oral traditions from generation to generation. Within all Aboriginal communities there was a time of dislocation and upheaval associated with the arrival of colonial settlers. This widespread disruption resulted in much of the detailed knowledge and understanding of many of the elements of the cultural landscape being lost from the Aboriginal community, nonetheless many Aboriginal people maintain a strong connection to the land of their ancestors and collectively possess a wealth of knowledge passed down through the generations.

10.2. Methodology

The cultural assessment in this report includes information collected through background research, and from consultation undertaken with the RAP representatives during the survey and test excavation programs and during consultation periods for the RAP review. This information was collected by and Vanessa Edmonds (Principal, Everick Heritage). To provide a greater perspective on cultural values this assessment covers both Stages 1 and 2 of the Project Area.

10.3. Identified Aboriginal cultural heritage values

The following cultural values have been identified through background research. Comments on cultural heritage values by the RAPs will be incorporated into this section following the RAP review.

Cultural heritage value and theme	Description	Source
Dareton Places where Aboriginal people live and work	Focus of settlement and residence for Aboriginal people in the region	<u>http://www.wentworth.nsw.gov.au/3</u> <u>-heritage-of-the-wentworth-</u> <u>shire.aspx</u>
Namatjira Avenue, Dareton Places where Aboriginal people live	Established in 1968 Namatjira Avenue was characterised by numerous improvised dwellings built by itinerant Aboriginal labourers who worked as fruit pickers. Once a small group of weatherboard homes and shanty dwellings. Now more permanent,	https://www.theage.com.au/nationa l/dark-days-on-namatjira-avenue- 20021223-gduyz9.html

Table 10-1: Identified Aboriginal cultural heritage values

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Cultural heritage value and theme	Description	Source
	better built homes can be found in this area. The Dareton Aboriginal settlement at Namatjira Drive, supports a large population of descendants of local tribal communities.	
River Murray Area of high archaeological significance demonstrating antiquity of Aboriginal occupation	There is archaeological evidence for continuous Aboriginal occupation of the River Murray Mallee Zone for the last 22,000 years	See Table 5-1 Appendix E
Darling River, Old Pooncarie Mission (Murleeka) Places where Aboriginal people lived and worked	Established along the Darling River north of Pooncarie somewhere between 1910-1913. Old Pooncarie Mission is proposed to be registered as an Aboriginal Place	Michael (Mick) Kelly - Old Pooncarie Mission (Murleeka) Aboriginal Place Nomination (OEH 2015)
	Many families lived at the reserve which became known as the 'Mission'. At least 20 people were in continual residence until 1933 when it was closed down and the people relocated to Menindee.	
	Present day Aboriginal family names with ties to the Pooncarie Mission include; the Quayles, Hunts, Mitchells, O'Donalds, Wymans, Johnsons, Clarkes, Mortons, Bugmys and descendants of the Nanya tribe who were brought to Pooncarie from the Lake Victoria region in the early 1900s. (Kelly 2015/16: 16)	
	The river provided the Barkintji/Paakantiji people with an extensive range of resources including plants and animals. Old Pooncarie Mission represents a broader significant cultural landscape which links a series of river bends and lagoons within southern Barkintji/Paakantiji country. (Kelly 2015: 16)	

Cultural heritage value and theme	Description	Source
Darling River	Bourke to Wentworth is listed as an Indicative Place for its natural values. The Statement of Significance is as follows:	Australian Heritage Database – Register of the National Estate – Place ID 17418
	The least disturbed river section in the Murray-Darling basin. The most significant river traversing the semiarid zone in Australia, and as a riverine environment that has both representative and unusual examples of geomorphic features and processes, especially clay dunes and anabranch systems of past and present river systems.	
Fletchers Lake Area of high cultural and archaeological significance Places where Aboriginal people lived	Fletchers Creek is an ephemeral creek system that connects to Tuckers Creek from the Murray River during very high flows. It is located midway between Wentworth and Dareton. In past years there was a small Aboriginal community living in improvised dwellings around the southern end of the lake. Jason Smith's family was one of those living there.	Jason Smith (Dareton LALC)
	BMEET rangers integrate traditional and contemporary ecological knowledge in conjunction with Elders and partners, to restore and enhance the biodiversity of the wetland are also involved in the in the identification and protection of their cultural sites.	<u>https://www.niaa.gov.au/indigenou</u> <u>s-affairs/environment/barkindji-</u> <u>maraura-rangers</u> Dameion Kennedy (Damos Family Dream)
	The area around Fletchers Lake is of extremely likely to possess significant archaeological sites, particularly along the outlet creek and is culturally important to the Barkindji Maraura people.	Hassell Planning Consultants 1989
Barkindji Maraura Elders Environmental Team Aboriginal employment – Working on Country	Established in 2011 to address problems such as drugs, alcoholism and unemployment for young Aboriginal people in the community BMEET works on many Working on Country programs	Arthur Kirby, Malcom King (BMEET Elders) https://www.abc.net.au/pm/content /2014/s4014164.htm

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Cultural heritage value and theme	Description	Source
	such as monitoring ecology and water flows at Fletchers Lake. The Barkindji Maraura Rangers carry out ecological assessments and on-ground works at wetland sites in the Fletchers Lake Reserve.	<u>https://www.indigenous.gov.au/saving-fletchers-lake-helps-turn-lives-around</u>
	Identification and protection of their cultural sites.	
Nulla Station	Nulla was the home of the Mitchell family from sometime before 1902 until the 1940s. Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren and great grandchildren are part of the Dareton Aboriginal community.	Hardy 1976: 186
Places where Aboriginal people lived and worked		
Lake Victoria/Rufous River (80 km west of the Project Area)	Maraura challenged the Overlanders driving sheep and cattle to South Australia. Open warfare occurred between Aboriginal people and Overlanders between 1838 and 1841	Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130.
Conflict between Aboriginal people and early settlers		

Group interviews were conducted during the test excavation program based on broad questions. The questions and some of the broader answers are provided below:

What do you like about working on this project?

- Getting to work on Country
- Working together in a team to protect our culture
- Getting to see places and cultural heritage on areas we have not been able to get to before
- Working with the archaeologists/new people and learning new things
- Seeing all the different coloured rocks (artefacts) along Renmark Road
- Helping record and protect our heritage
- Holding those stone artefacts in your hands and feeling how the old people might have used them.

What do you least like about working on this project?

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- Knowing the cultural heritage is going to be destroyed
- Wont get a chance to get back out on this Country

What do you consider the most important sites we have found?

• All sites are as important as each other

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Who do you mostly identify as, Barkindji or Maraura?

• For the most part the RAPs immediately answered Barkindji although some gradually agreed to also being Maraura

What areas would you most like salvaged?

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10.4. Statement of cultural values

Based on the research and discussions with the RAPs the Project area is assessed as being of high cultural value. During all stages of the Project the RAP field representatives reiterated how important it was for them to be able to walk over Country they had not previously been able to access, to see and record the diverse range of archaeological values present and connect with their Ancestors.

¹ Outside the Project boundary

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11. Significance assessment

11.1. Significance assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide (OEH 2011: 10) provides guidelines for identification and assessment of cultural significance assessment with reference to the Burra Charter (Australia ICOMOS 2013) and the NSW Heritage Office guidelines (2001):

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

Scientific values should be further considered in light of the following criteria (OEH 2011: 10) and rated low, moderate or high:

- 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, landuse, 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?

11.2. Scientific significance assessment

A summary of the scientific significance for all new Aboriginal sites and objects identified by the ASR and the ATER for Stage 1 (2a) is provided in Table 11-1. Most of the site types such as isolated artefacts, artefact scatters, isolated hearths and hearth complexes and shell midden are well represented in the landscape and generally of low scientific significance due to their contents, structure and representativeness. Consequently, most of these sites are of low or low-moderate scientific significance. Culturally scarred trees are a much rarer site type although do not offer much in the way of research value but are rated as moderate-high significance because of their representative and educational value for the Aboriginal community. They also represent a tangible link to the recent past. size, structure and diversity (Table 11-1). Principally these comprise:

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11.3. Social significance assessment

All of the archaeological sites recorded within and adjacent to the Project area are of high social significance to the Aboriginal community. This has been communicated by the RAP representatives throughout fieldwork. Perhaps the highest social significance was indicated through the group interviews in the field which reiterated that area of the Project west of the Darling, that is:

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11.4. Historic significance assessment

Due to access to the Project area being restricted through Western Lands Pastoral leases there is no historic significance recorded for any of the Stage 1 (2a) archaeological sites.

11.5. Aesthetic significance assessment

All of the archaeological sites have high aesthetic significance not only due to their location in predominantly uncleared land, and particularly those east and west of the Darling near Sturts Billabong. RAP representatives often remarked on how beautiful the landscape settings were during fieldwork.

11.6. Summary statement of significance

All of the archaeological sites have high social and aesthetic significance but no known historical significance. The majority of the sites are of low scientific significance being isolated hearths and stone artefacts, however there are at least nine sites which are of high archaeological significance and offer further potential for providing information regarding the nature of past Aboriginal occupation of the Project area and region.

Table 11-1: Summary of scientific significance of Stage 1 (2a) sites recorded by Everick Heritage. Only NOHC (2021a; 2021b) sites reassessed through test excavation by Everick Heritage are included. It should be noted that NOHC 2021b) significance was based on a sites potential to contain subsurface deposit

12. Impact assessment

12.1. Minimisation of impact

Key issue conditions in the Infrastructure Approval relating to avoidance and salvage of cultural heritage specify the following:

D30 The Proponent must implement all reasonable and feasible measures to avoid and minimise harm to heritage items and potential archaeological deposits (PADs) identified in the EIS and the Aboriginal Cultural Heritage Strategy required by condition D29, prior to carrying out any development that could harm the items or deposits.

Additionally, in accordance with AH1 of the RMMs:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

SecureEnergy has made refinements to the design and construction methodology and succeeded in minimising impacts by:

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12.2. Impacts to archaeological sites

NOHC (2021b: 15) provide the following definition of direct and direct Project impacts:

Direct impacts can be defined as impacts that move or physically alter items, objects, or features of a site. This includes, but is not limited to, direct physical impacts to midden/shell, hearths, stone artefacts, and scarred trees. Also, as impacts that directly and physically disturb the sediments and deposits of PADs.

Area A disturbance would directly impact all items, objects, or features of a site and or PAD located in this area.

Area A centreline clearing would directly impact all scarred trees, as well as directly impacting archaeological deposits associated with surface sites and/or PADs when removing vegetation root-balls that are above or have the potential to grow above four metres in height, that are located in this area. Furthermore, there is the risk of potential direct impacts from heavy machinery to all known items, objects, or features that are not fenced and marked on maps. Vegetation management methodologies should be developed in the heritage management subplan, so as to minimise ground disturbance in PADs during vegetation clearance.

Area B disturbance would directly impact all scarred trees, as well as directly impacting archaeological deposits associated with surface sites and/or PADs when removing vegetation root-balls that are above or have the potential to grow above four metres in height, that are located in this area. Furthermore, there is the risk of potential direct impacts from heavy machinery to all known items, objects, or features that are not fenced and marked on maps. Vegetation management methodologies should be developed in the heritage management subplan, so as to minimise ground disturbance in PADs during vegetation clearance.

Indirect impacts for areas A and B can be defined as impacts that alter the relationship of an item to other site features and/or its position in the natural landscape. For example, if a site was fenced, but then the landscape around it was subject to significant cut and fill land

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forming, this site would be assessed as having been subject to indirect impacts. Depending on site type, site context, and its archaeological and cultural significance, indirect impacts to a site may or may not result in a loss of heritage value.

Area A disturbance is unlikely to have significant indirect impacts on sites, except where sites extend across disturbance areas A and B. In this case, the direct impacts of features/objects within Area A would indirectly affect the portions of the site that extend into area B, as these impacts would alter the relationship of an item to other site features and/or its position in the natural landscape.

Area A centreline clearing has the potential to indirectly impact midden/shell, hearths, stone artefact sites, and PADs, located in areas that have not been subject to significant vegetation clearance historically. Vegetation clearance in these areas may indirectly impact the relationships of such sites with the broader landscape and would likely result in changes in erosion and accretion of sediments, with the potential of destabilising some sites.

Area B disturbance has the potential to indirectly impact midden/shell, hearths, stone artefact sites, and PADs, located in areas that have not been subject to significant vegetation clearance historically. Vegetation clearance in these areas may indirectly impact the relationships of such sites with the broader landscape and would likely result in changes in erosion and accretion of sediments, with the potential of destabilising some sites.

In essence any construction or construction related activity that creates even the shallowest amount of ground surface activity has the potential to directly or indirectly impact on surface and subsurface sites.

Given the linear nature of the Project area and inability for the tower alignment to move to the north or south, Aboriginal sites within the Disturbance area A are not able to be totally avoided. Those PADs which will be impacted have been subject to test excavation of the Disturbance area A and Disturbance area B locations and in some cases assessed as being either a site or not being a PAD. Impacts have been minimised wherever possible and exclusion zone fencing will be erected either where sites occur near works zones or where partial impact occurs to protect that part of the site not impacted.

Table 12-1: Assessment of impacts to archaeological sites within and adjacent to the Project boundary and RMMs for sites and objects identified during the NOHC (2021a; 2021b) survey, Everick Heritage (2022a) additional survey and test excavation (Everick Heritage 2022b)

12.3. Ecologically sustainable development principles

The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) specifies that Ecological Sustainable Development (ESD) principles must be considered when assessing harm and recommending mitigation measures in relation to Aboriginal objects.

The following relevant ESD principles are outlined in Section 3A of the EPBC Act:

- Decision-making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations (the 'integration principle')
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the Precautionary Principle)
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the Principle of Intergenerational Equity).
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making (Conservation of Biodiversity).
- Improved valuation, pricing and incentive mechanisms should be promoted (Improved Valuation, Pricing and Incentive).

OEH (2011: 13) states that consideration of these principles should result in:

- An understanding of the cumulative impact of the proposal on Aboriginal objects or places in relation to other identified sites in the region.
- Ascertaining how wherever possible or practicable harm to significant Aboriginal objects or places can be avoided.
- Establishing and assessing the risks and consequences of various options.
- Assessing the costs and benefits of various options for future generations.
- Suggesting actions proposed to help promote intergenerational equality.

12.3.1. The Integration Principle

The Aboriginal heritage values of the Project area have been fully considered in the Aboriginal Cultural Heritage Strategy (Everick Heritage 2022c), the Addendum ASR (Everick Heritage 2022a), the ATER (Everick Heritage 2022b), the CHAR and Addendum CHAR (NOHC 2021a; 2021b) and this ACHAR. These values have been considered with regard to the planning and approvals process for the Project area and therefore, comply with the integration principle by considering long term and short term environmental and social effects.

12.3.2. The Precautionary Principle

The combination of background research and test excavation (2a) results have been used to assess the probable nature of the archaeological nature of the Stage 1 (2a) Project area as described in this ACHAR. Exclusion zones, surface salvage of stone artefacts and salvage excavation of larger more scientifically significant sites has been recommended as mitigation against loss of scientific and cultural information. Of high importance is the relatively low need for impact assessments for large scale or even small scale developments in the region and the combined studies for this Project provide a window of opportunity to investigate past Aboriginal land use for the benefit of the current and future Aboriginal population as well as other member of the scientific and non-scientific community.

12.3.3. The Principle of Intergenerational Equity

The principle of intergenerational equity has been addressed through the assessments undertaken by NOHC (2021a; 2021b) and Everick Heritage (2022b; 2022c). These assessments ensure that information regarding the Project area is available for future generations. In addition, salvage of selected sites across the Project area will provide an educational opportunity for the Aboriginal community and additional information which will benefit the Aboriginal community for future generations.

12.3.4. Conservation of Biodiversity

Cultural values associated with biodiversity are interwoven with the lives of Aboriginal people and their use of the landscape. To this end the arborists assessment of tree removal requirements has significantly reduced the requirement for tree clearance along the Project area. Where there is a requirement for tree removal it has been recommended that the stump is retained in situ where possible to avoid ground disturbance and erosion of sediments through wind and water runoff.

12.3.5. Improved Valuation, Pricing and Incentive

Both Transgrid and SecureEnergy are committed to cultural heritage protection as a key component of project development. The costs and time required to ensure these high standards of assessment and protection measures have been implemented from the commencement of the Project. Transgrid through SecureEnergy have striven to comprehensively assess impacts, avoid impacts (where feasible), work with the Aboriginal community, and implement mitigation and management measures which strike a balance between meeting the state's critical infrastructure needs and protecting Aboriginal heritage values, for the betterment of all.

12.3.6. Summary statement of ecologically sustainable principles

The likelihood of impact from the project on Aboriginal sites and objects is high. For the most part where impact is unavoidable, the sites mostly comprise isolated hearths or stone artefacts of low scientific significance. Some larger sites with stratified archaeological deposit will be partially impacted. The principle of intergenerational equity has been addressed through the assessments undertaken by NOHC (2021a; 2021b) and Everick Heritage (2022b; 2022c) and will also be addressed through salvage. The combination of background research and test excavation results have been used to assess the probable nature of the archaeological nature of the Stage 1 (2a) Project area as described in this ACHAR. Exclusion zones, surface salvage of stone artefacts and salvage excavation of larger more scientifically significant sites has been recommended as mitigation against loss of scientific and cultural information.

The linear nature of the Project ensures that only a sample of the biodiversity in the landscape will be impacted across a narrow corridor and there is a commitment to avoid tree clearance wherever possible.

12.4. Cumulative impact

A cumulative impact is the combined effects of environmental or social impacts that occur because of a range of activities or developments within a particular local area or region that impact on Aboriginal cultural heritage. Ideally cumulative impacts should be assessed from a baseline of data relating to the incremental impact of the actions of a development when added to other past, present and reasonably foreseeable future impacts.

NOHC (2022b) provided a cumulative impact assessment for the project based on the following comparable developments proposed and existing within the region:

Copi Mineral Sands Mine - The Copi Mineral Sands Mine proposes to develop an open cut mineral sands mine and associated infrastructure to extract and process up to 1.5 mega tonnes per annum for up to six years, transporting the heavy mineral concentrate via road for off-site processing; and progressively rehabilitating the site. The development is currently at 'prepare EIS stage' and is located about 25 km north of the Project area. The preliminary environmental assessment (R.W. Corkery 2018) cited a due diligence assessment by Landskape (2015) that was focussed on drilling exploration. The report states that no archaeological material was present, nor was there a likelihood of buried archaeological material within the landscape of the development.

Buronga Solar Farm - The Buronga Solar Farm is a proposal to develop a 400 megawatt solar farm with energy storage and associated infrastructure. The EIS for the development is currently under preparation and would be located about directly adjacent to the Buronga Substation portion of the proposal. The preliminary environmental assessment (Renew Estate 2018) suggests that an AHIMS basic search found five Aboriginal sites within the proposed development area.

Buronga – Gol Gol residential expansion - Buronga and Gol Gol have been outlined as residential growth areas for communities of the Wentworth Shire, with subdivisions for approximately 500 residential housing allotments planned. There are no set timeframes for the proposed developments. The urban release area mapping from the Wentworth LEP (2011) show the allotments are located between 400 to 1,500 m from the northern banks of the Murray River. Not taking into consideration existing impacts at these locations, from an Aboriginal heritage perspective these areas would be predicted to have moderate to high archaeological sensitivity (NOHC 2021b: 133).

In addition to those developments cited by NOHC 2021b) above, another major comparable project is the River Murray to Broken Hill Pipeline (Anderson et al 2017). The archaeological assessment was undertaken across four separate studies the most pertinent section for the current Project area being the Murray River to River Murray to Chainage 111500 (approximately 50 km north of the Anabranch dissecting the current Project area along the Silver City Highway at approximately Chainage 30000). Forty-two Aboriginal sites were located in or immediately adjacent to the Activity Area for this assessment. Thirty Aboriginal sites were directly impacted and result in total harm. Three Aboriginal sites were directly and partially harmed.

In summary, NOHC (2021b: 133) state that:

As cumulative impacts apply to this proposal, the arid and semi-arid nature of the landscape traversed has not historically been subject to high levels of impact from residential, commercial, or government development. The linear nature of the proposal, as well as the large spans between power infrastructure impacts (around 500 metres) would result in impacts being spread across landforms. Impacts to PADs and many sites would be partial in most cases, rather than total, resulting in many impacted sites being partially preserved within the new transmission easement.

Wherever the direct impacts do occur in the proposal study area, there are likely to be numerous similar landforms win the surrounding landscape that would be retained and preserved. Therefore, the cumulative impacts from the proposal on the Aboriginal heritage of the region are assessed as low.

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Probably the greatest cumulative impact on Aboriginal cultural heritage in the region is the unassessed impacts that past and current non-Aboriginal land use has had on the archaeological sites in the region. Middens are known to have been impacted by both access tracks and construction of fencelines on Nulla Station and across the Renmark Road upgrade. Increased irrigated crops further from the Murray and Darling Rivers has led to increased clearing of native vegetation and disturbance of ground. Culturally scarred trees have been destroyed east of the Darling and devegetation and increased salinity due to livestock grazing pressures, in conjunction with drought and periods of high surface water runoff are likely to have had a far greater cumulative impact on Aboriginal cultural heritage than any major development in the region.

Salvage excavation is often presented as a mitigation of harm, however, archaeological excavation, whether test or salvage, is a form of harm. What test and salvage excavation can do is mitigate against a total loss of potential scientific and cultural information regarding those sites impacted. That can mitigate against the cumulative impact on Aboriginal cultural heritage in light of loss of cultural and archaeological values through land use.

13. Management and mitigation measures

The following management and mitigation measures were based on consideration of:

- The results of the background research and archaeological survey results
- The currently known nature of impacts of the Project
- Infrastructure Approval conditions
- The Revised Mitigation Measure
- The results and recommendations provided in the ATER (Appendix D).

Condition D31 of the Infrastructure Approval states

The Proponent must ensure the development does not cause any harm to heritage items identified for avoidance in the approved Aboriginal Cultural Heritage Strategy or any Aboriginal heritage items located outside the approved development footprint.

Avoidance of impact to Aboriginal cultural heritage is the preferred option in all instances, however it is acknowledged that where existing disturbance occurs within the Project area it is often preferable to minimise further disturbance to the landscape and potentially to as yet unidentified Aboriginal cultural heritage. Section 12.1 provides information on how impacts to PADs and sites in the Stage 1 (2a) Project area have been minimised. Table 12-1 provides a list of sites identified during the Addendum ASR (Appendix C), additional survey (Appendix F) and the ATER (Appendix D), their significance, potential impact and summary mitigation measures with particular reference to the RMMs. Wherever possible impacts to sites and PADs would be avoided and an exclusion zone would be implemented as the preferred mitigation measure (AH7).

Where avoidance is not possible the recommended management measure is for salvage – either surface collection of stone artefacts (AH6) or salvage excavation of sites possessing high archaeological significance. Where isolated hearths and small, sparse scatters of shell are present no salvage is recommended. Isolated hearths and scatters of burnt clay heat retainers are ubiquitous in the Project area landscape and there is little detailed information to be gained from their excavation.

13.1. Minimisation of impact

AH1 of the RMMs states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

In addition, AH4 of the RMMs states:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

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Given the linear nature of the Project area and inability for the tower alignment to move to the north or south, Aboriginal sites within the Disturbance area A are not possible to totally avoid. Those PADs which will be impacted have been subject to test excavation and in some cases assessed as being either a site or not being a PAD. Impacts have been minimised wherever possible and exclusion zone fencing will be

erected either where sites occur near works zones or where partial impact occurs to protect that part of the site not impacted.

13.2. Aboriginal consultation

AH2 of the RMMs states:

Aboriginal stakeholder consultation will be carried out in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a).

Engagement with Registered Aboriginal Parties (RAPs) will consist of the following:

- > Aboriginal heritage site surveys (AH3) review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas)
- > test excavation activities (AH4) review of proposed methodologies and involvement in the test excavation activities in the field
- > review of the draft addendum report/s (relating to surveys (AH3), test excavations (AH4) and scar trees (AH5)), and consultation on the draft reports which will typically be in the form of a RAP meeting
- > provision of final addendum

report/s will be provided to RAPs (AH3, AH4, AH5)

> involvement in establishment of Aboriginal heritage exclusion zones prior to construction commencing (AH7).

Further cultural information will be gathered during consultation undertaken in association with these activities. All addendum reports to the Aboriginal Cultural Assessment Report (CHAR) will be provided to RAPs for comment, and input will be considered, and actioned wherever practicable

In accordance with AH2, representatives from the RAPs identified in section 4.1 participated in the additional survey and test excavation and are currently involved in surface collection and exclusion zone fencing. The results of the addendum and additional survey as well as preliminary test excavation results have been presented to Aboriginal Focus Group (AFG) meetings and other informal meetings.

This ACHAR has been provided to the RAPs for 28 day review and during that time two further AFG meetings (AFG 4 and AFG 5) have been held to discuss the results of the test excavation, scarred tree

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assessment, cultural values assessment and salvage excavation methodology (Appendix B). This final ACHAR incorporates any RAP inputs from the review and AFG.

13.3. Clearance to proceed

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

The proposed staging approach for the Aboriginal Cultural Heritage Strategy (required in accordance with condition D29 of the Infrastructure Approval) was approved by the Planning Secretary on 1 February 2022. The staging approach identifies that construction may commence in additional survey areas, outside of PADs and sites once the Addendum ASR has been prepared and consulted with RAPs and Heritage NSW. The Addendum ASR (Appendix C) is now complete and has been consulted on and approved by the RAPs following an AFG and 28 day review period.

The staging approach also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas (Appendix E). Based on the results of the additional survey presented in the Addendum ASR (Appendix C) and survey letter reports (Appendix E), clearance to proceed with Project works is allowed in additional survey areas excluding those areas identified as PADs or extended PADS. Therefore, in accordance with AH3 of the RMMs construction can proceed within those additional survey areas outside of any identified PADs or sites identified in Table 7-1 and Table 7-2 and with reference to the maps provided in section 14. The results of the Addendum ASR, the ATER and this ACHAR will continue to inform design refinements for the Project.

It is acknowledged that Aboriginal heritage items may be found anywhere along the Project corridor even in areas of low archaeological sensitivity. Therefore, SecureEnergy has developed an Unexpected Heritage Finds Procedure EnergyConnect (NSW-Western Section) which would be implemented should unexpected Aboriginal cultural heritage items be found during construction in areas identified for clearance. This procedure is provided in Figure 12-1. In addition, SecureEnergy (2021) has developed a Discovery of Suspected Human Remains Procedure EnergyConnect (NSW-Western Section) for the approved Stage 1 (2a) Heritage Management Plan which would be implemented should suspected human remains be discovered during construction in areas identified for clearance (Figure 12-2).

13.4. Additional survey

AH3 of the RMMs states:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Further refinements to the design and construction methodology may be required and may result in part from the outcomes of this additional heritage survey. In accordance with AH3 of the RMMs if works to any additional areas outside those previously subjected to heritage assessment and survey, these areas will require survey as described in the Aboriginal Archaeological Survey Methodology (Appendix C). This mitigation measure also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas (Appendix E).

13.5. Scarred trees

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

13.6. Surface collection

AH6 of the RMMs states:

All portions of artefact scatters that are to be directly impacted will require surface collection prior to construction commencement in those areas.

Additionally, based on the outcomes of the test excavation, items or PADs will be subject to surface collection or salvage prior to the commencement of construction in those areas.

The activities will be documented in a surface collection report.

All surface stone artefacts directly impacted by the Stage 1 (2a) Project will be subject to surface collection prior to construction in those areas as part of the salvage process. For the most part surface artefacts identified during the additional survey are isolated finds or small low-density scatters which are of low scientific significance. However, there are a number of larger, denser surface scatters across sites. Applicable locations are provided in Table 12-1.

13.7. Aboriginal heritage exclusion zones

AH7 of the RMMs states:

Aboriginal heritage exclusion zones will be established to protect

- > known features/items of significance that have been identified to remain in-situ throughout construction (and not subject AH6)
- > scarred trees that are to remain in-situ.

Suitable controls will be identified in the heritage management sub-plan, which may include site fencing and sediment control. Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the RAPs prior to the commencement of construction at each location.

Areas of PADs that are located within areas of vegetation clearance where ground disturbance will not occur will be managed through construction methodologies and will not be delineated as exclusion zones. These methodologies will be developed in the heritage sub-plan.

Table 12-1 lists those sites that require exclusion zone fencing to assist in either full or partial impact avoidance. Exclusion zone fencing in conjunction with the RAPs has commenced along the Project area outside of PADs.

13.8. Salvage excavation

within the tower pad footprint be subject to salvage through open area excavation based on the assumption that the installation of the transmission towers will require considerable ground disturbing activity. The recommended salvage methodologies for each site type or site feature are provided in Table 13-2.

13.9. No further salvage

The salvage methodology for surface sites comprising hearths and shell scatters, or partly in situ hearths and small low density shell middens will be subject to further discussions with the RAPs. This site type is very common in the Project area and they are of low scientific significance because little information can be gained from their salvage. In addition, it must be considered that it would be almost impossible to salvage every burnt clay heat retainer and fragment of shell impacted. No soil will be removed from the Project area and therefore the remnants of these sites will remain on Country close to where they originated from. Important information has already been gained from the knowledge of where these sites occur in the landscape. A full list of the Aboriginal sites which have been recommended for salvage and their prescribed salvage methodology is provided in Table 13-3.

13.10. Repatriation of cultural material

13.11. Cultural heritage awareness training

The RAPs have requested that cultural heritage awareness training for all employees, contractors and sub-contractors working on Country be undertaken by RAP representatives. This would be a discussion topic between SecureEnergy and the RAPs.

13.12. Areas of potential archaeological deposit

It is recommended that the remaining sections of PAD across the Project area are registered on AHIMS to avoid future potential direct and indirect impact to these without test excavation.

13.13. Monitoring

During AFG 4 and AFG 5 the RAPs requested monitoring of all ground disturbing works across the whole of the Project (Stage 1 (2a) and Stage 2 (2b)). The RAPs are particularly interested in monitoring the excavation of tower foundations. Any requirement for monitoring would be negotiated between Transgrid, SecureEnergy and the RAPs.

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Heritage Management Procedure UNEXPECTED HERITAGE FINDS PROCEDURE



Figure 13-1: Unexpected Heritage Finds Procedure (SecureEnergy 2022)

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Figure 13-2: Discovery of Suspected Human Remains Procedure (SecureEnergy 2022)

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Table 13-1: Preliminary salvage recommendations and mitigation measures for PADs identified during the NOHC (2021a; 2021b) survey, Everick Heritage (2022a) additional survey and test excavation

Table 13-2: Recommended salvage methodologies for each site type

Table 13-3: Salvage recommends and research questions for impacted sites in Stage 1 (2a)

14. Survey maps

15. Test excavation maps

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Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.
Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. Shovel Test Pits were used to determine the presence and extent of archaeological deposit in a controlled excavation of 100 mm spits

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

EV.1240 EnergyConnect (NSW – Western Section) | Stage 1 (2a) - Aboriginal Cultural Heritage Assessment (45860-G-70005-REP-U-00025) | Prepared for SecureEnergy Joint Venture | Page 168

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits$

Appendix A – Infrastructure Approval

EV.1240 EnergyConnect (NSW – Western Section) | Stage 1 (2a) - Aboriginal Cultural Heritage Assessment (45860-G-70005-REP-U-00025) | Prepared for SecureEnergy Joint Venture | Page 170

Infrastructure approval

Section 5.19 of the Environmental Planning & Assessment Act 1979

I grant approval to the application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- provide for regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Minister for Planning and Public Spaces

	Sydney	28 September 2021
SCHEDULE	1	
Application Number:	SSI 10040	
Proponent:	TransGrid	
Approval Authority:	Minister for Planni	ing and Public Spaces
Land:	Land in Wentwort as described in development layo	th Shire local government area, the EIS and shown on the ut plans
Development:	Project EnergyCon Development of transmission line transmission netw and upgrading th between Buronga Victoria border	nnect (NSW – Western Section). a new 330 kilovolt (kV) connecting the NSW and SA vorks (via Buronga substation) ne existing transmission line a substation and the NSW /
Critical State Significant Infrastructure:	Development for NSW Electricity I Clause 15 of Sch <i>Planning Policy (S</i> 2011	Project EnergyConnect (SA to nterconnector) as described in edule 5 of <i>State Environmental</i> <i>itate and Regional Development</i>)



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DEFINITIONS

The definitions below apply to terms used in this approval, unless otherwise stated or the context indicates otherwise.

Term	Definition	
Aboriginal object	The same meaning as in the National Parks and Wildlife Act 1974 (NSW)	
Aboriginal stakeholders	Registered Aboriginal Parties (RAPs) from the EIS	
Ancillary facility	A temporary facility for construction of the development including an office, accommodation, and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory and material stockpile area	
AS	Australian Standard	
BCA	Building Code of Australia	
BC Act	Biodiversity Conservation Act 2016	
BCS	Biodiversity, Conservation and Science Directorate of the Department of Planning, Industry and Environment	
Conditions of this approval	Conditions contained in Schedules 1 to 2 inclusive	
Construction	All physical works to enable the operation, including but not limited to the construction of transmission infrastructure and ancillary facilities carried out before the commencement of operation, excluding pre-construction minor works, road upgrades and operation of the accommodation camps.	
Council	Wentworth Shire Council	
Decommissioning	 The deconstruction and removal of the: ancillary facilities; existing 220 kV transmission line between Buronga substation and the NSW / Victoria border (Line 0X1); and the temporary bypass transmission line between Tower 1 and Tower 19 of existing transmission line 0X1. 	
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site	
Department	NSW Department of Planning, Industry and Environment	
Development	The development as generally described in Schedule 1 of this approval, the carrying out of which is approved under the terms of this approval	
Development area	The area subject to disturbance and/or development, as shown on the development layout plans and depicted in the EIS	
Development layout plans	The area of the development as depicted on the figures in Appendix 1	
DPI	Department of Primary Industries	
DPIE Water	The Department's Water Division	
EIS	 The Environmental Impact Statement titled EnergyConnect (NSW – Western Section, Environmental Impact Statement), prepared by WSP Australia Pty Limited, dated October 2020, including the Proponent's: EnergyConnect (NSW – Western Sections) Submissions Report, dated April 2021; EnergyConnect (NSW – Western Sections) Amendment Report, dated April 2021; additional information letter dated 10 August 2021; Biodiversity Development Assessment Report dated 10 August 2021; and Biodiversity offset strategy summary letter dated 10 August 2021. 	
EMF	Electric and Magnetic Fields	
EMS	Environmental Management System	

Term	Definition	
EP&A Act	Environmental Planning and Assessment Act 1979	
EP&A Regulation	Environmental Planning and Assessment Regulation 2000	
EPA	NSW Environment Protection Authority	
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999	
EPL	Environment Protection Licence under the POEO Act	
Feasible	Means what is possible and practical in the circumstances	
FRNSW	Fire and Rescue NSW	
GPS	Global Positioning System	
Heavy Vehicle	As defined under the Heavy Vehicle National Law (NSW), but excluding light and medium rigid trucks and buses no more than 8 tonnes and with not more than 2 axles	
Heritage Act	Heritage Act 1977	
Heritage item	An Aboriginal object, an Aboriginal place, or a place, building, work, relic, moveable object, tree or precinct of heritage significance, that is listed under any of the following: the <i>National Parks and Wildlife Act 1974,</i> the State Heritage Register under the Heritage Act 1977, a state agency heritage and conservation register under section 170 of the Heritage Act 1977, a Local Environmental Plan under the EP&A Act, the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), or anything identified as a heritage item under the conditions of this approval	
Heritage NSW	Heritage Division within the Department of Premier and Cabinet	
ICNIRP	International Commission on Non-Ionizing Radiation Protection	
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance Note: "material harm" is defined in this approval	
Land	Has the same meaning as the definition of the term in Section 1.4 of the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedule 2 of this approval where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval	
Landowner	Has the same meaning as "owner" in the <i>Local Government Act 1993</i> and in relation to a building means the owner of the building	
Material harm	 Is harm that: (a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment). This definition excludes "harm" that is authorised under either this approval or 	
Maximise	any other statutory approval	
	specified outcome	
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development	
Minister	NSW Minister for Planning and Public Spaces, or delegate	

Term	Definition	
Non-associated residence	 Means: a residence on privately-owned land in respect of which the owner has not reached an agreement with the Proponent in relation to the development (as provided by this approval); or a residence on privately-owned land in respect of which the owner has reached an agreement with the Proponent in relation to the development (as provided by this approval), but the agreement does not cover the relevant impact; or the performance measure for such impact under that agreement has been exceeded. 	
Non-compliance	An occurrence, set of circumstances or development that is a breach of this approval	
NSW	New South Wales	
OEMP	Operational Environmental Management Plan	
Operation	The carrying out of the approved purpose of the development upon completion of construction, but does not include commissioning trials of equipment or use of temporary facilities. Note: There may be overlap between the carrying out of construction and operation if the phases of the development are staged. Commissioning trials of equipment and temporary use of any part of the development are within the definition of construction.	
POEO Act	Protection of the Environment Operations Act 1997	
Planning Secretary	Secretary of the Department of Planning, Industry and Environment	
Pre-construction minor works	 Includes: i) the following activities: surveys building and road dilapidation surveys; investigative drilling, excavation or salvage; establishing temporary site office (in locations meeting the criteria identified in the conditions of this approval) installation of environmental impact mitigation measures, fencing, enabling works; ii) construction of minor access roads and minor adjustments to services/utilities, etc, for the activities identified in i) above; and iii) minor clearing or translocation of native vegetation for the activities identified in i) and ii) above. 	
Privately-owned land	Land that is not owned by a public agency or publicly-owned commercial entity (or its subsidiary)	
Proponent	The person identified as such in Schedule 1 of this approval and any other person carrying out any part of the development from time to time	
Public infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc	
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements	
Residence	Existing or approved dwelling at the date of grant of this approval	
RFS	NSW Rural Fire Service	
SA	South Australia	
SEPP	State Environmental Planning Policy	
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011	
Site	All land to which the development application applies as shown in Appendix 1	

Term	Definition
Standard construction hours	7 am to 6 pm Monday to Friday, and 8 am to 1 pm on Saturdays
TfNSW	Transport for NSW
Upgrades and Upgrading	The carrying out of works in accordance with the conditions of this approval (including replacing plant, equipment or machinery and updating relevant technology) to improve the efficiency of the development or to enable or enhance its continued operation, and the carrying out of maintenance works (excluding road upgrades)
Watercourse	A river, creek or other stream, including a stream in the form of an anabranch or tributary, in which water flows permanently or intermittently, regardless of the frequency of flow events. In a natural channel, whether artificially modified or not, or in an artificial channel that has changed the course of the stream. It also includes weirs, lakes and dams

SUMMARY OF REPORTING REQUIREMENTS

Reports and notifications that must be provided to the Planning Secretary under the terms of this approval are listed in the following table. Note that under condition A5 of this approval the Proponent may seek the Planning Secretary's agreement to a later timeframe for submission (other than in relation to the immediate written notification of an incident required under condition E6).

Condition	Report / Notification	Timing ¹	Purpose
Part A – Administrative			
A15	Community Communication Strategy	Prior to commencing construction Information	
A16	Appointment of Environmental Representative	Prior to commencing the development Approval	
A19	Environmental Representative Responsibilities	From commencing the development Information / App until commencing operation	
Part B - Co	nstruction Environmental Mana	agement	
B1	CEMP	Prior to commencing construction	Approval
B2	CEMP Sub-Plans	Prior to commencing construction	Approval
Part C - Op	eration Environmental Manage	ment	•
C1	OEMP or EMS	Prior to commencing operation	Approval
Part D – Ke	ey Issues		•
Noise and	Vibration		
D3	Out-of-Hours Work Protocol	Prior to commencing out-of-hours Approval	
D10	Operational Noise Review	Within 12 months of this Approval	Approval
D10	Appointment of Noise Expert	Prior to appointment of noise expert	Endorsement
D11	Operational Noise Monitoring	Within 6 months of commencing operation	Information
Heritage			•
D29	Aboriginal Cultural Heritage Strategy	Prior to commencing construction Approval	
D34	Appointment of Heritage Expert	Prior to appointment of heritage expert Endorsement	
Traffic and	Transport		
D37	Traffic Strategy	Prior to commencing construction	Approval
D39	Pre-construction Dilapidation Report	Prior to commencing construction Approval	
D39	Post-construction Dilapidation Report	Within 1 month of completion of construction, upgrading or decommissioning	Approval

¹ Where a development is staged, all required approvals must be obtained before the commencement of the relevant stage.

Condition	Report / Notification	Timing ¹	Purpose	
Bushfire Sa	Bushfire Safety			
D47	Emergency Plan	Prior to commencing construction	Information	
Other				
D52	Accommodation Camp Management Plan	Prior to establishing the Information		
D53	Local Business and Employment Strategy	Prior to commencing construction	Information	
Part E – Environmental Management, Reporting and Audit				
E2	Staging strategy, plan or program	Prior to commencing construction (or operation if proposed) of the first of the proposed stages	Approval	
E3	Notification of commencement of construction, operations, upgrading or decommissioning	Prior to commencing the relevant Information		
E4	Final Layout Plans	Prior to commencing construction	Information	
E5	Work as Executed Plans	Prior to commencing operations	Information	
E6	Notification of Incident	Immediately upon becoming aware of the incident	Information	
E7	Notification of Non- Compliance	Within seven days upon becoming aware of any non-compliance	Information	

SCHEDULE 2

PART A

ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A1 In meeting the specific performance measures and criteria of this approval, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction, operation, rehabilitation, upgrading or decommissioning of the development.

TERMS OF APPROVAL

- A2 The development may only be carried out:
 - a) in compliance with the conditions of this approval;
 - b) in accordance with all written directions of the Planning Secretary;
 - c) generally in accordance with the EIS; and
 - d) generally in accordance with the Development Layout in Appendix 1.
- A3 The Proponent must comply with any requirement/s of the Planning Secretary arising from the Department's assessment of:
 - a) any strategies, plans or correspondence that are submitted in accordance with this approval;
 - b) any reports, reviews or audits commissioned by the Department regarding compliance with this approval; and
 - c) the implementation of any actions or measures contained in these documents.
- A4 The conditions of this approval and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(d). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c) or A2(d), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.
- A5 Any document that must be submitted within a timeframe specified in or under the terms of this approval may be submitted within a later timeframe agreed with the Planning Secretary. This condition does not apply to the immediate written notification required in respect of an incident under condition E6.

LAPSE OF APPROVAL

A6 This approval will lapse if the Proponent does not physically commence the development within 5 years of the date on which it is granted.

EVIDENCE OF CONSULTATION

- A7 Where conditions of this approval require consultation with an identified party, the Proponent must:
 - a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and
 - b) provide details of the consultation undertaken including:
 - (i) the outcome of that consultation, matters resolved and unresolved; and
 - (ii) details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed the matters not resolved.

PROTECTION OF PUBLIC INFRASTRUCTURE

- A8 Unless the Proponent and the applicable authority agree otherwise, the Proponent must:
 - a) undertake any works on or in the vicinity of public infrastructure in consultation with the applicable public authority or service provider responsible for that public infrastructure;
 - b) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
 - c) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

This condition does not apply to any damage to roads caused as a result of general road usage which is expressly provided for in the conditions of this approval.

9

DEMOLITION

A9 The Proponent must ensure that all demolition work on site is carried out in accordance with AS 2601-2001: The Demolition of Structures (Standards Australia, 2001).

STRUCTURAL ADEQUACY

A10 The Proponent must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA; and where the BCA is not applicable, to the relevant Australian Standard.

Notes:

- Under Part 6 of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the development.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.

COMPLIANCE

A11 The Proponent must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this approval relevant to activities they carry out in respect of the development.

OPERATION OF PLANT AND EQUIPMENT

- A12 All plant and equipment used on site, or in connection with the development, must be:
 - a) maintained in a proper and efficient condition; and
 - b) operated in a proper and efficient manner.

APPLICABILITY OF GUIDELINES

- A13 References in the conditions of this approval to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this approval.
- A14 However, consistent with the conditions of this approval and without altering any limits or criteria in this approval, the Planning Secretary may, when issuing directions under this approval in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

COMMUNITY COMMUNICATION STRATEGY

A15 Prior to the commencement of construction, the Proponent must prepare a Community Communication Strategy to provide mechanisms to facilitate communication between the Proponent and the community (including adjoining affected landowners) during construction.

The Community Communication Strategy must:

- a) identify landowners for potentially impacted receivers;
- b) ensure that the landowners identified in (a) are consulted during construction;
- c) set out procedures and mechanisms for the regular distribution of information to the wider community;
- d) establish a public liaison officer(s) to engage with the local community; and
- e) set out procedures and mechanisms:
 - through which the community can discuss or provide feedback to the Proponent;
 - through which the Proponent will respond to enquiries or feedback from the community; and
 - to resolve any issues and mediate any disputes that may arise in relation to construction of the development.

The Proponent must implement the Community Communication Strategy for the duration of construction.

ENVIRONMENTAL REPRESENTATIVE

- A16 Prior to commencing the development, an Environmental Representative (ER) must be approved by the Planning Secretary and engaged by the Proponent.
- A17 The Planning Secretary's approval of an ER must be sought no later than one (1) week before commencing the development.

- A18 The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the documents listed in condition A2, and is independent from the design and construction of the development. The ER must meet only the requirements set out in section 2.2, 2.3,2.4 and 3 in the *Environmental Representative Protocol* (Department of Planning and Environment, October 2018).
- A19 From commencing the development, until commencing operation, or as agreed with the Planning Secretary, the approved ER must:
 - a) review the documents identified in conditions A15, B1, B2, D3, D10, D11, D29, D37 D47, D52 and D53, and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:
 - (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or
 - (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Department for information or are not required to be submitted to the Department);
 - b) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; and
 - c) consider any minor amendments to be made to the plans / strategies in conditions A15, D11, D52, D53, E3, E4, E5, E6, E7 that involve updating or are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure they are consistent with the terms of this approval and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval.
- A20 The Proponent must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in condition A19, as well as the complaints register for any complaints received (on the day they are received).

PART B

CONSTRUCTION ENVIRONMENTAL MANAGEMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- B1 Prior to commencing construction, a Construction Environmental Management Plan (CEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the EIS will be implemented and achieved during construction to the satisfaction of the Planning Secretary.
- B2 The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan in Table 1.

	Required CEMP Sub-plan	Relevant government agencies and stakeholders to be consulted for each CEMP Sub-plan
(a)	Noise and Vibration	Council
(b)	Soil and Water	DPIE Water Council
(c)	Biodiversity	BCS Council
(d)	Heritage	Heritage NSW Aboriginal stakeholders
(e)	Traffic and Transport	TfNSW Council

Table 1: CEMP Sub-plans

- B3 Details of all information requested by an agency to be included in a CEMP Sub-plan as a result of consultation must be provided with the relevant CEMP Sub-Plan.
- B4 Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event prior to commencing construction.
- B5 Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, must be implemented for the duration of construction. Where construction of the development is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been approved by the Planning Secretary.

Management Plan Requirements

- B6 The CEMP and CEMP Sub-plans required under this approval must be prepared by suitably qualified and experienced persons in accordance with relevant guidelines, and include where relevant:
 - a) a summary of relevant background or baseline data;
 - b) details of:
 - (i) the relevant statutory requirements (including any relevant approval or licence conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - c) any relevant commitments or recommendations identified in the EIS;
 - d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
 - e) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development (including a table summarising all the monitoring and reporting obligations under the conditions of this approval); and
 - (ii) effectiveness of the management measures set out pursuant to paragraph d);
 - f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - g) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - h) a protocol for managing and reporting any:
 - (i) incident, non-compliance or exceedance of any impact assessment criterion and performance criterion;
 - (ii) complaint; or
 - (iii) failure to comply with other statutory requirements;

- i) set out the procedures that would be implemented to:
 - (i) keep the local community and relevant agencies informed about the construction and environmental performance of the development;
 - (ii) receive, handle, respond to, and record complaints;
 - (iii) resolve any disputes that may arise;
 - (iv) respond to any non-compliance;
 - (v) respond to emergencies; and
- j) a description of the roles and environmental responsibilities, authority and accountability for all relevant employees, as well as training and awareness; and
- k) a protocol for periodic review of the CEMP and associated Sub-plans and programs.

The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

PART C

OPERATIONAL ENVIRONMENTAL MANAGEMENT

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

- C1 An Operational Environmental Management Plan (OEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures made and identified in the EIS will be implemented and achieved during operation. This condition (condition C1) does not apply if condition C2 of this approval applies.
- C2 An OEMP is not required for the development if the Proponent has an Environmental Management System (EMS) or equivalent as agreed with the Planning Secretary, and demonstrates, to the satisfaction of the Planning Secretary, that through the EMS:
 - a) the performance outcomes, commitments and mitigation measures, made and identified in the EIS, and specified relevant terms of this approval can be achieved;
 - b) issues identified through ongoing risk analysis can be managed;
 - c) there is a clear plan depicting all the monitoring to be carried out in relation to the development, including a table summarising all the monitoring and reporting obligations under the conditions of this approval;
 - d) there is a strategic framework for environmental management of the development;
 - e) the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development is clear; and
 - f) procedures are in place for:
 - keeping the local community and relevant agencies informed about the operation and environmental performance of the development;
 - receiving, handling, responding to, and recording complaints;
 - resolving any disputes that may arise;
 - responding to any non-compliance; and
 - responding to emergencies.
- C3 Prior to commencing operation, the OEMP or EMS or equivalent as agreed with the Planning Secretary must be prepared to the satisfaction of Planning Secretary.

PART D

KEY ISSUE CONDITIONS

NOISE AND VIBRATION

Construction Hours

- D1 Road upgrades, construction, upgrading and decommissioning activities may only be undertaken between:
 - a) 7 am to 6 pm Monday to Friday;
 - b) 8 am to 1 pm Saturdays; and
 - c) at no time on Sundays and NSW public holidays;

unless the Planning Secretary agrees otherwise.

- D2 The following construction, upgrading and decommissioning activities may be carried out outside the hours specified in condition D1 above:
 - a) the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons;
 - b) emergency work to avoid the loss of life, property or to prevent material harm to the environment; or
 - c) works carried out in accordance with the hours and noise limits specified in any negotiated agreements with sensitive receivers (owners and occupiers), provided the negotiated agreements are in writing and finalised before the commencement of works.
- D3 An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of works which are outside the hours defined in conditions D1, D2, and D7 The Protocol must be approved by the Planning Secretary before commencing works. The Protocol must:
 - a) be prepared in consultation with Council;
 - b) provide a process for the consideration of out-of-hours works against the relevant noise and vibration criteria, including the determination of low and high-risk activities;
 - c) provide a process for the identification of mitigation measures for potential impacts, including respite periods in consultation with any affected receivers;
 - d) provide a process for the identification of out-of-hours works undertaken by third parties in the vicinity of the site, and coordination of out-of-hours works with these third parties to achieve respite periods in locations where receivers may be affected by concurrent activities;
 - e) identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where:
 - low risk activities can be undertaken without the approval of the Planning Secretary and with the approval of the ER; and
 - high risk activities that are approved by the Planning Secretary; and
 - f) identify Department, Council and community notification arrangements for approved out of hours work.

Construction and Decommissioning

- D4 The Proponent must take all reasonable and feasible steps to minimise the construction, upgrading or decommissioning noise of the development in the locations where the noise is audible to sensitive receivers, including any associated traffic noise.
- D5 The Proponent must implement mitigation measures:
 - a) to ensure that the noise generated by any construction, upgrading or decommissioning activities is managed in accordance with the requirements for construction 'noise affected' management levels established in accordance with *Interim Construction Noise Guideline* (DECC, 2009); and
 - b) with the aim of achieving the road traffic noise assessment criteria for residential land uses from *NSW Road Noise Policy* (DECCW, 2011).
- D6 The Proponent must comply with the following vibration limits:
 - a) vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);
 - b) BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"; and
 - c) vibration limits set out in the *German Standard DIN 4150-3*: *Structural Vibration effects of vibration on structures* (for structural damage).

- D7 Blasting may only be carried out on the site between 9 am and 5 pm Monday to Friday and between 9 am to 1 pm on Saturday. No blasting is allowed on Sundays or public holidays.
- D8 The Proponent must ensure that any blasting carried out on the site does not exceed the criteria in Table 2.

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Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
	120	10	0%
Any non- associated residence	115	5	5% of the total number of blasts or events over a rolling period of 12 months

Table 2: Blasting criteria

Operation

- D9 The Proponent must implement all reasonable and feasible measures with the aim of ensuring that the noise generated by the operation of the development does not exceed 40 dB(A) LAeq,15min, at the reasonably most affected point of the residence, in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence.
- D10 Within 12 months of the date of this approval, the Proponent must prepare an Operational Noise Review to confirm noise predictions and control measures that would be implemented for the operation of the development. The Review must:
 - a) be prepared by a suitably qualified and experienced person whose appointment has been endorsed by the Planning Secretary;
 - b) be prepared in consultation with the landowner of impacted residences;
 - c) identify residences predicted to experience noise levels that exceed 40 dB(A) LAeq,15min at the reasonably most affected point of the residence, determined in accordance with the NSW Noise Policy for Industry (EPA, 2017);
 - d) detail the noise mitigation measures to achieve the noise criteria identified, including the timing of implementation;
 - e) provide evidence of consultation with affected landowners;
 - f) include a consultation strategy to seek feedback from directly affected landowners on the noise mitigation measures; and
 - g) identify procedures for the management of operational noise complaints.

The Proponent must implement any identified mitigation measures prior to the commencement of operation.

Operational Noise Monitoring

- D11 Within 6 months of the commencement of operations (or the commencement of operation of a stage, if the development is to be staged), the Proponent must:
 - a) undertake noise monitoring to determine whether the development is complying with the relevant conditions of this approval; and
 - b) submit a copy of the monitoring results to the Department.
- D12 The Proponent must undertake further noise monitoring of the development if required by the Planning Secretary.

Noise and Vibration CEMP Sub-Plan

- D13 The Noise and Vibration CEMP Sub-Plan required under condition B2 must:
 - a) ensure the requirements in conditions D1 to D12 are complied with;
 - b) include a description of the reasonable and feasible measures that would be implemented to minimise noise and vibration impacts of the development;
 - c) include a detailed description of the noise and vibration management system for the development;
 - d) include a protocol for the identification, notification and management of works that exceed the noise management levels; and
 - e) include a monitoring program that evaluates and reports on the effectiveness of the noise and vibration management system.

AIR QUALITY

- D14 In addition to the performance outcomes, commitments and mitigation measures specified in the EIS, the Proponent must take all reasonable steps to:
 - a) minimise the off-site dust, fume, blast emissions and other air pollutants of the development; and
 - b) minimise the surface disturbance of the site.

SOIL AND WATER

Water Supply

D15 The Proponent must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply. Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Proponent is required to obtain the necessary water licences for the development.

Erosion and Sedimentation

- D16 The Proponent must:
 - a) minimise erosion and control sediment generation; and
 - ensure all land disturbances have appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater - Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater – Soils and Construction Volume 2C Unsealed Roads (DECC, 2008);

Pollution of Waters

- D17 Unless otherwise authorised by an EPL, the Proponent must ensure the development does not cause any water pollution, as defined under Section 120 of the POEO Act.
- D18 The Proponent must:
 - a) ensure that appropriate components of the concrete batching plants and substation are suitably bunded; and
 - b) minimise any spills of hazardous materials or hydrocarbons, and clean up any spills as soon as possible after they occur.
- D19 The Proponent must ensure that any groundwater dewatering activities do not discharge to watercourses.

Riparian Areas

- D20 The Proponent must ensure:
 - a) all activities on waterfront land are constructed in accordance with the *Guidelines for Controlled* Activities on Waterfront Land (2012), unless DPIE Water agrees otherwise; and
 - b) the geomorphic condition of the major rivers and distributary channels crossed by the development is not impacted.

Flooding

- D21 The Proponent must ensure that the development:
 - a) does not materially alter the flood storage capacity, flows or characteristics in the development area or off-site; and
 - b) is designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site,

unless otherwise agreed by Council.

Acid Sulfate Soils

D22 The Proponent must ensure that any construction activities in identified areas of acid sulfate soil risk are undertaken in accordance with the *Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998).*

Salinity

D23 The Proponent must ensure that any construction activities in identified areas of moderate to high salinity are undertaken in accordance with the *Salinity Training Manual* (DPI, 2014) and *Book 4 Dryland Salinity: Productive use of Saline Land and Water* (NSW DECC, 2008).

Soil and Water CEMP Sub-Plan

- D24 The Soil and Water CEMP Sub-Plan required under condition B2 must include provisions for:
 - a) ensuring the requirements in conditions D15 to D23 are complied with;
 - b) managing flood risk during construction;
 - c) investigating, assessing and managing contaminated land, soils and groundwater in the development area;
 - d) investigating, assessing and managing the potential for asbestos and other hazardous materials in the development area; and
 - e) managing any unexpected and / or suspected contaminated land, asbestos and unexploded ordinance excavated, disturbed or otherwise discovered during construction.

BIODIVERSITY

Restrictions on Clearing and Habitat

D25 Unless otherwise agreed with the Planning Secretary, the Proponent must:

- a) ensure that no more than:
 - 19.6 hectares (ha) of BC Act listed Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW Southwestern Slopes bioregions;
 - 0.04 ha of habitat for BC Act listed flora species Acacia acanthoclada (Harrow Wattle);
 - 0.32 ha of habitat for BC Act and EPBC Act listed flora species Atriplex infrequens (A saltbush);
 - 1.51 ha of habitat for BC Act listed flora species Austrostipa nullanulla (A spear-grass);
 - 14 individuals of BC Act listed Santalum murrayanum (Bitter Quandong); and
 - 6.91 ha of habitat for BC Act and EPBC Act listed fauna species *Polytelis anthopeplus monarchoides* (Regent Parrot) (eastern subspecies);
 - is cleared for the development; and
- b) minimise:
 - the impacts of the development on hollow-bearing trees;
 - the impacts of the development on threatened bird and bat populations; and
 - the clearing of native vegetation and key habitat.

Biodiversity Offset Package

- D26 Prior to carrying out any development that would impact on biodiversity values, the Proponent must prepare a Biodiversity Offset Package (Package) that is consistent with the EIS, in consultation with BCS and to the satisfaction of the Secretary in writing. The Package must include, but not necessarily be limited to:
 - (a) details of the specific biodiversity offset measures to be implemented and delivered in accordance with the EIS;
 - (b) the cost for each specific biodiversity offset measure, which would be required to be paid into the Biodiversity Conservation Fund if the relevant measure is not implemented and delivered (as calculated in accordance with Division 6 of the Biodiversity Conservation Act 2016 (NSW) and the offsets payment calculator that was established as at 29 July 2021);
 - (c) the timing and responsibilities for the implementation and delivery of the measures required in the Package; and
 - (d) confirmation that the biodiversity offset measures will have been implemented and delivered no later than 31 December 2023.

Following approval, the Proponent must implement and deliver the Biodiversity Offset Package.

D27 Prior to carrying out any development that could impact the biodiversity values requiring offset, the Proponent must establish an escrow account and pay into that account \$48 million, in accordance with the Deed of Agreement with the Planning Secretary executed on 13 September 2021. The Proponent must comply with the terms of the Deed.

Note: this condition provides security to the Minister for the performance of the Proponent's obligations under this approval in relation to biodiversity offsets and release funds for payment into the Biodiversity Conservation Trust in the event that the biodiversity offsets (either in whole or part) are not delivered in accordance with the Package by the Proponent.

Biodiversity CEMP Sub-Plan

a)

- D28 The Biodiversity CEMP Sub-Plan required under condition B2 must include:
 - a description of the measures that would be implemented for:
 - minimising the amount of native vegetation clearing within the approved development footprint;
 - minimising the loss of key fauna habitat, including tree hollows;
 - minimising the impacts on fauna on site, including undertaking pre-clearance surveys;
 - minimising the potential indirect impacts on threatened flora and fauna species, migratory species and 'at risk' species;
 - rehabilitating and revegetating disturbance areas;
 - protecting native vegetation and key fauna habitat outside the approved disturbance area;
 - maximising the salvage of resources within the approved disturbance area including vegetative and soil resources – for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
 - collecting and propagating seed (where relevant);
 - controlling weeds;
 - controlling erosion; and
 - bushfire management;
 - b) details of the Proponent's commitment to make a one off \$150,000 funding contribution targeted at further scientific study into the impacts of electric and magnetic fields on birds in Australia;
 - c) preparation and implementation of a two year bird impact monitoring program at the commencement of operations; and
 - d) a detailed program to monitor and report on the effectiveness of these measures.

HERITAGE

- D29 Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:
 - a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;
 - b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);
 - c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;
 - d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and
 - e) include an updated Aboriginal cultural heritage assessment report, which:
 - is based on the findings of the subsurface testing in b) and surveys in c);
 - describes any potential additional impacts to heritage items;
 - identifies further mitigation measures, including avoidance or salvage;
 - includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
 - provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.

Avoidance and Salvage

- D30 The Proponent must implement all reasonable and feasible measures to avoid and minimise harm to heritage items and potential archaeological deposits (PADs) identified in the EIS and the Aboriginal Cultural Heritage Strategy required by condition D29, prior to carrying out any development that could harm the items or deposits.
- D31 The Proponent must ensure the development does not cause any harm to heritage items identified for avoidance in the approved Aboriginal Cultural Heritage Strategy or any Aboriginal heritage items located outside the approved development footprint.
- D32 Prior to carrying out any activity that could harm heritage items, the Proponent must salvage and relocate all heritage items identified for salvage and relocation in the updated and approved Aboriginal Cultural Heritage Strategy to a suitable alternative location, in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010).

D33 The Proponent must ensure the development does not cause any harm to heritage items PEC-W-H-1 and PEC-W-SE-H1.

Heritage CEMP Sub-Plan

- D34 The Heritage CEMP Sub-Plan required under condition B2 must:
 - a) be prepared by a suitably qualified and experienced person whose appointment has been endorsed by the Planning Secretary;
 - b) include a description of the measures that would be implemented for:
 - addressing the outcomes of the additional assessment, testing and surveys identified in condition D29;
 - protecting the heritage items identified in conditions D31 and D33, including fencing off the heritage items (where required) prior to carrying out any development that could harm the heritage items, and protecting any items located outside the approved development corridor;
 - salvaging and relocating the heritage items identified in condition D32;
 - minimising and managing the impacts of the development on heritage items within the development corridor, including:
 - a strategy for the long-term management of any heritage items or material collected during the test excavation or salvage works;
 - a contingency plan and reporting procedure if:
 - heritage items outside the approved disturbance area are damaged;
 - previously unidentified heritage items are found; or
 - Aboriginal skeletal material is discovered;
 - ensuring workers on site receive suitable heritage inductions prior to carrying out any development on site, and that records are kept of these inductions; and
 - ongoing consultation with Aboriginal stakeholders during the implementation of the plan; and
 - c) include a program to monitor and report on the effectiveness of these measures and any heritage impacts of the development.

TRAFFIC AND TRANSPORT

Designated Heavy and Over-Dimensional Vehicle Routes

D35 All over-dimensional vehicles associated with the development must only travel to and from the site via the Primary Access Routes described in the EIS, as identified in the figure in Appendix 2, unless the Planning Secretary agrees otherwise.

Notes:

- The Proponent is required to obtain relevant permits under the Heavy Vehicle National Law (NSW) for the use of over-dimensional vehicles on the road network.
- D36 All heavy and light vehicles associated with the development:
 - a) must travel to and from the site via the Primary Access Route described in the EIS, as identified in the figure in Appendix 2; and
 - b) may travel to and from the site via the Secondary Access Routes and Water Supply Routes, subject to the requirements in conditions D37 and D38, to the satisfaction of the relevant roads authority, unless the Planning Secretary agrees otherwise.

Traffic Strategy

- D37 Prior to commencing construction, the Proponent must prepare a Traffic Strategy, in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary, which:
 - a) for all access routes:
 - identifies the location and type of any necessary road upgrades (including roads, intersections, crossing points and access points), including consideration of relevant amenity impacts;
 - ensures that any road upgrades comply with the Austroads Guide to Road Design (as amended by TfNSW supplements), unless the relevant roads authority agrees otherwise;
 - includes a detailed assessment of potential impacts of any necessary road upgrades (such as heritage and biodiversity impacts), including consideration of appropriate mitigation measures;
 - identifies whether intersections, crossing points and access points would be permanent or temporary; and
 - includes measures for notifying, seeking feedback from and addressing the concerns of impacted residents along the routes;
 - b) for Secondary Access Routes and Water Supply Routes:

- provides detailed usage of the routes, including maximum daily numbers of heavy and light vehicles and approximate durations of use;
- includes an assessment of dust impacts to any residences along the routes and identifies mitigation measures to minimise any impacts; and
- identifies any residences along the routes that would experience road traffic noise above the relevant assessment criteria from Table 3 in NSW Road Noise Policy (DECCW, 2011) due to project-related traffic and identifies mitigation measures to minimise impacts.
- D38 Prior to commencing construction, the proponent must implement the road upgrades and the mitigation measures identified in the Traffic Strategy in condition D37, to the satisfaction of the relevant roads authority and the Planning Secretary, respectively.

Road Maintenance

- D39 The Proponent must:
 - a) undertake an independent dilapidation survey to assess the:
 - existing condition of all local roads on the transport route (including local road crossings) prior to construction, upgrading or decommissioning works; and
 - condition of all local roads on the transport route (including local road crossings):
 - within 1 month of the completion of construction, upgrading or decommissioning works, or within a timeframe agreed to by the relevant roads authority;
 - on an annual basis during construction, or within a timeframe agreed to by the relevant roads authority;
 - b) repair (or pay the full costs associated with repairing) any damage to local roads on the transport route (including local road crossings), if dilapidation surveys identify that the road has been damaged by the development during construction, upgrading or decommissioning works;
 - in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary.

Traffic and Transport CEMP Sub-Plan

D40 The Traffic and Transport CEMP Sub-Plan required under condition B2 must include:

- a) details of the transport route to be used for all development-related traffic;
 - b) details of the road upgrade works required by condition D38 of this approval;
 - c) details of the measures that would be implemented to:
 - minimise traffic safety impacts of the development and disruptions to local road users during construction, upgrading or decommissioning works, including:
 - a description of the proposed dilapidation surveys required by condition D39 of this approval;
 - a description of the proposed measures for managing traffic flow around the work sites, construction compounds and accommodation camps;
 - temporary traffic controls, including detours and signage;
 - procedures for stringing cables and transmission lines across roads;
 - notifying the local community about development-related traffic impacts;
 - procedures for receiving and addressing complaints from the community about development- related traffic;
 - minimising potential cumulative traffic impacts with other projects in the area;
 - minimising potential conflict between development-related traffic and rail services, stock movements and school buses, in consultation with local schools, including preventing queuing on the public road network;
 - implementing measures to minimise development-related traffic on the public road network outside of standard construction hours;
 - minimising dirt tracked onto the public road network from development-related traffic;
 - details of the employee shuttle bus service (if proposed), including pick-up and drop-off points and associated parking arrangements for construction workers, and measures to encourage employee use of this service;
 - encouraging car-pooling or ride sharing by employees;
 - scheduling of haulage vehicle movements to minimise convoy length or platoons;
 - responding to local climate conditions that may affect road safety such as fog, dust, wet weather and flooding;
 - ensuring loaded vehicles entering or leaving the site have their loads covered or contained;
 - responding to any emergency repair or maintenance requirements;
 - provisions for maintaining emergency vehicle access at all times;
 - a traffic management system for managing over-dimensional vehicles; and
 - fatigue management.
 - comply with the traffic conditions in this approval;
 - d) include a drivers code of conduct that addresses:
 - travelling speeds;
 - procedures to ensure that drivers to and from the development adhere to the designated overdimensional and heavy vehicle routes;

- procedures to ensure that drivers to and from the development implement safe driving practices; and
- include a detailed program to monitor and report on the effectiveness of these measures and the code of conduct; and
- a flood response plan detailing procedures and options for safe access to and from the site in the e) event of flooding.

VISUAL AMENITY

Visual Impact Mitigation

Unless the Planning Secretary agrees otherwise, for a period of 2 years from the commencement of D41 operations, the owners of R1489, R2022 and R2023 may ask the Proponent to implement visual impact mitigation measures on their land to minimise the visual impacts of the development on their residence (including its curtilage).

Upon receiving such a written request from the owner of these residences, the Proponent must implement appropriate mitigation measures (such as landscaping and vegetation screening) in consultation with the owner.

These mitigation measures must be reasonable and feasible, aimed at reducing the visibility of the transmission line and towers from the residence and its curtilage, and commensurate with the level of visual impact on the residence.

All agreed mitigation measures must be implemented within 12 months of receiving the written request, unless the Planning Secretary agrees otherwise.

If the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution.

To avoid any doubt, mitigation measures are not required to be implemented to reduce the visibility of transmission lines and towers from any other locations on the property other than the residence and its curtilage.

Visual Appearance

- D42 The Proponent must:
 - take reasonable steps to minimise the off-site visual impacts of the development; and a)
 - b) not mount any advertising signs or logos on site, except where this is required for identification or safety purposes.

Lighting

- D43 The Proponent must:
 - take all reasonable steps to minimise the off-site lighting impacts of the development; and a) b)
 - ensure that any external lighting associated with the development:
 - is installed as low intensity lighting (except where required for safety or emergency purposes);
 - does not shine above the horizontal; and
 - complies with Australian/New Zealand Standard AS/NZS 4282:2019 Control of Obtrusive Effects of Outdoor Lighting.

HAZARD AND RISK

Dangerous Goods

The Proponent must ensure that the storage, handling, and transport of dangerous goods is undertaken in D44 accordance with the relevant Australian Standards and guidelines, particularly AS1940 The storage and handling of flammable and combustible liquids and AS/NZS 1596:2014 The storage and handling of LP Gas, the Dangerous Goods Code, and the EPA's Storing and Handling of Liquids: Environmental Protection - Participants Manual.

Electric and Magnetic Fields

The Proponent must ensure that the design, construction and operation of the development is managed to D45 comply with the applicable electric and magnetic fields (EMF) limits in the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to time-varying electric and magnetic fields (1Hz – 100kHz) (ICNIRP, 2010).

BUSHFIRE SAFETY

Operating Conditions

- D46 The Proponent must:
 - a) minimise the fire risks of the development, including managing vegetation fuel loads on-site;
 - b) ensure that the development:
 - complies with the relevant asset protection requirements in the RFS's *Planning for Bushfire Protection* 2019 (or equivalent) and Standards for Asset Protection Zones;
 - is suitably equipped to respond to any fires on site, including provision of a 20,000 litre water supply tank fitted with a 65 mm Storz fitting and a FRNSW compatible suction connection located at each of the construction compounds and accommodation camps;
 - incorporates the recommendations of a fire risk assessment as per TransGrid's design standards;
 - c) ensure that buildings within the compounds and accommodation camps comply with Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* (or equivalent) and RFS's *Planning for Bushfire Protection 2019;*
 - d) develop procedures to manage potential fires on site, in consultation with the RFS and FRNSW;
 - e) assist the RFS, FRNSW and emergency services as much as practicable if there is a fire in the vicinity of the site; and
 - f) notify the relevant local emergency management committee following completion of construction of the development, and prior to commencing operations.

Emergency Plan

- D47 Prior to commencing construction, the Proponent must develop and implement a comprehensive Emergency Plan and detailed emergency procedures for the development, in consultation with the local Fire Control Centre, and provide a copy of the plan to the local Fire Control Centre. The Proponent must keep two copies of the plan on-site in a prominent position adjacent to the site entry point(s) to the Buronga Substation at all times. The plan must:
 - a) be consistent with:
 - RFS's Planning for Bushfire Protection 2019 (or equivalent);
 - RFS's Development Planning A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;
 - the Fire and Rescue NSW Act 1989;
 - the Work Health and Safety (WHS) Act 2011;
 - b) identify the fire risks and hazards and detailed measures for the development to prevent or mitigate fires igniting;
 - c) include procedures that would be implemented if there is a fire on-site or in the vicinity of the site;
 - d) list works that should not be carried out during a total fire ban;
 - e) include availability of fire suppression equipment, access and water;
 - f) include procedures for the storage and maintenance of any flammable materials;
 - g) detail access provisions for emergency vehicles and contact details for both a primary and alternative site contact who may be reached 24/7 in the event of an emergency;
 - h) include a figure showing site infrastructure, any Asset Protection Zones and the on-site water supply tank(s);
 - i) include location of hazards (physical, chemical and electrical) that may impact on fire fighting activities and procedures to manage identified hazards during fire fighting activities;
 - j) include details of the location, management and maintenance of any Asset Protection Zone and who is responsible for the maintenance and management of the Asset Protection Zone;
 - k) include bushfire emergency management planning;
 - I) include details of the how RFS would be notified, and procedures that would be implemented, in the event that:
 - there is a fire on-site or in the vicinity of the site;
 - there are any activities on site that would have the potential to ignite surrounding vegetation; or
 - there are any proposed activities to be carried out during a bushfire danger period that have the potential to ignite surrounding vegetation; and
 - m) include details on how live transmission infrastructure can be safely isolated in an emergency.

WASTE

- D48 Waste generated during construction, operation, upgrading and decommissioning must be dealt with in accordance with the following priorities:
 - a) waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;

- b) where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and
- c) where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.
- D49 The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the *Protection of the Environment Operations Act 1997*, the *Protection of the Environment Operations (Waste) Regulation 2014*, and orders or exemptions under the regulation.
- D50 Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, or to any other place that can lawfully accept such waste.
- D51 All waste that is removed from site must be classified in accordance with the EPA's *Waste Classification Guidelines*, with appropriate records and disposal dockets retained for audit purposes.

ACCOMMODATION CAMP

- D52 Prior to establishing the accommodation camps, the Proponent must prepare an Accommodation Camp Management Plan to the satisfaction of Council, unless the Planning Secretary agrees otherwise. The plan must:
 - a) ensure utilities at the accommodation camps, including water, wastewater, waste and electricity, are designed and located in accordance with Council specifications and relevant standards, in consultation with Council;
 - b) ensure the accommodation camp complies with conditions D21 and D46;
 - c) ensure any treated wastewater from the accommodation camps used for dust suppression during construction:
 - complies with the Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) guidelines for irrigation water quality;
 - meets the requirements of the Public Health Act 2010;
 - d) include measure for dust suppression within the accommodation camps;
 - e) provide the site layout including building locations, vehicle access and movement, site servicing and utilities infrastructure; and
 - f) include measures to support local suppliers in servicing the camp where possible.

Following approval, the Proponent must implement the Accommodation Camp Management Plan.

LOCAL BUSINESS AND EMPLOYMENT STRATEGY

D53 Prior to commencing construction, the Proponent must prepare a Local Business and Employment Strategy for the development in consultation with Council. This strategy must investigate options for prioritising the employment of local and Aboriginal workforce and suppliers for the construction of the development, where feasible.

The Proponent must implement the Accommodation and Employment Strategy.

REHABILITATION

D54 Within 6 months of the completion of construction, upgrading or decommissioning, unless the Planning Secretary agrees otherwise, the Proponent must rehabilitate the areas where ancillary facilities, accommodation camps and earthwork material sites are located, to the satisfaction of the Planning Secretary. This rehabilitation must comply with the objectives in Table 3.

Feature	Objective
Ancillary facilities, accommodation camps, earthwork material sites, the existing 220 kV transmission line between Buronga substation and the NSW / Victoria border (Line 0X1), and the temporary bypass transmission line between Tower 1 and Tower 19 of existing transmission line 0X1.	 Safe, stable and non-polluting Progressively rehabilitate the site as soon as possible following disturbance To be decommissioned and removed, unless the Planning Secretary agrees otherwise
Land use	Restore land capability to pre-existing use
Community	Ensure public safety at all times

PART E

ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

REVISION OF STRATEGIES, PLANS AND PROGRAMS

- E1 The Proponent must review and, if necessary, revise the strategies, plans or programs required under this approval to the satisfaction of the Planning Secretary within 3 month of the:
 - submission of an incident report under condition E6;
 - submission of an audit report under condition E11; or
 - any modification to the conditions of this approval.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

- E2 With the approval of the Planning Secretary, the Proponent may:
 - a) prepare and submit any strategy, plan or program required by this approval on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);
 - b) combine any strategy, plan or program required by this approval (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and
 - c) update any strategy, plan or program required by this approval (to ensure the strategies, plans and programs required under this approval are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).

If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this approval.

If approved by the Planning Secretary, updated strategies, plans or programs supersede the previous versions of them and must be implemented in accordance with the condition that requires the strategy, plan or program.

If the Planning Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this approval if those requirements are not applicable to the particular stage.

NOTIFICATIONS

Notification of Department

E3 Prior to commencing construction, operations, upgrading or decommissioning of the development or, the Proponent must notify the Department in writing via the Major Projects website portal of the date of commencing the relevant phase.

If any of these phases of the development are to be staged, then the Proponent must notify the Department in writing prior to commencing the relevant stage, and clearly identify the development that would be carried out during the relevant stage.

Final Layout Plans

- E4 Prior to commencing construction, the Proponent must submit detailed plans of the final layout of the development to the Department via the Major Projects website, including:
 - a) details on siting of transmission towers, ancillary infrastructure and / or ancillary facilities; and
 - b) showing comparison to the approved layout.

The Proponent must ensure that the development is constructed in accordance with the Final Layout Plans.

Work as Executed Plans

E5 Prior to commencing operations, the Proponent must submit plans that confirm the constructed layout of the development and showing comparison to the final layout plans to the Planning Secretary, via the Major Projects website.

Incident Notification

E6 The Department must be notified via the Major Projects website portal immediately after the Proponent becomes aware of an incident. The notification must identify the development (including the development

application number and the name of the development if it has one), and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 3.

Non-Compliance Notification

- E7 The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Proponent becomes aware of any non-compliance.
- E8 A non-compliance notification must identify the development and the application number for it, set out the condition of approval that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.
- E9 A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Notification of Landowners

E10 Prior to the commencement of construction, the Proponent must notify the owners of the owners of R1489, R2022 and R2023 of their rights under condition D41.

INDEPENDENT ENVIRONMENTAL AUDIT

E11 Independent Audits of the development must be conducted and carried out at the frequency described and in accordance with the *Independent Audit Post Approval Requirements* (2020), unless otherwise agreed or directed by the Planning Secretary.

ACCESS TO INFORMATION

- E12 The Proponent must:
 - a) make the following information publicly available on its website as relevant to the stage of the development:
 - (i) the EIS;
 - (ii) current statutory approvals for the development;
 - (iii) approved strategies, plans or programs required under the conditions of this approval;
 - the proposed staging plans for the development if the construction, decommissioning and/or operation of the development is to be staged;
 - a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this approval;
 - (vi) a record of complaints, which is to be updated on a monthly basis;
 - (vii) any independent environmental audit, and the Proponent's response to the recommendations in any audit; and
 - (viii) any other matter required by the Planning Secretary; and
 - b) keep this information up to date.

APPENDIX 1 – DEVELOPMENT LAYOUT











APPENDIX 2 – OVER-DIMENSIONAL AND HEAVY VEHICLE ACCESS ROUTE

NSW Government Department of Planning, Industry and Environment

APPENDIX 3 – INCIDENT NOTIFCATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

- 1. A written incident notification addressing the requirements set out below must be submitted to the Planning Secretary via the Major Projects website within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under condition E6 or, having given such notification, subsequently forms the view that an incident has not occurred.
- 2. Written notification of an incident must:
 - a) identify the development and application number;
 - b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - c) identify how the incident was detected;
 - d) identify when the Proponent became aware of the incident;
 - e) identify any actual or potential non-compliance with conditions of approval;
 - f) describe what immediate steps were taken in relation to the incident;
 - g) identify further action(s) that will be taken in relation to the incident; and
 - h) identify a development contact for further communication regarding the incident.
- 3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Proponent must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
- 4. The Incident Report must include:
 - a) a summary of the incident;
 - b) outcomes of an incident investigation, including identification of the cause of the incident;
 - c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
 - d) details of any communication with other stakeholders regarding the incident.

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Appendix B – Consultation log and documentation

Information redacted for public display
Appendix C – Addendum Aboriginal Archaeological Survey Report

EnergyConnect (NSW – Western Section) Additional Survey Areas

Addendum Aboriginal Archaeological Survey Report

Written for Secure Energy Joint Venture (45860-G-70005-REP-U-00010)

May 2022

Wentworth Local Government Area

Report Reference:

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Executive summary

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Approval for the Project under Part 5, Division 5.2 of the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021.

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b). The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures (RMMs):

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

AH3 of the RMMs states that an Aboriginal heritage survey must be carried out with Registered Aboriginal Parties (RAPs) where ground or vegetation disturbance activities are required in all locations outside of the previous heritage survey area prior to works occurring in any such areas. Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to undertake the Aboriginal archaeological survey for those disturbance areas identified as being outside the generally 100 metre (m) wide corridor previously surveyed by NOHC (2021a) (Figure 1-2-Figure 1-5).

On February 1, 2022, the Planning Secretary approved the Project's proposed staging approach for the Aboriginal Cultural Heritage Strategy, required by condition D29 of the Infrastructure Approval. The staging approach permits the commencement of construction in areas outside of Potential Archaeological Deposits (PADs) once the ASR has been prepared and consulted with RAPs and Heritage NSW, subject to complying with other relevant conditions of the Infrastructure Approval. Therefore, a further objective of this Addendum Aboriginal Archaeological Survey Report (ASR) is to identify areas that were subject to additional survey that are outside of PADs and now available to commence construction.

Information redacted for public display

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment		
ACHAR	Aboriginal Cultural Heritage Assessment Report		
Addendum CHAR	Addendum Cultural Heritage Assessment Report		
AFG	Aboriginal Focus Group		
AH	Aboriginal Heritage		
AHIMS	Aboriginal Heritage Information Management System		
AHIP	Aboriginal Heritage Impact Permit		
AS	Artefact scatter		
ASR	Aboriginal Archaeological Survey Report		
ASIRF	Aboriginal Site Impact Recording Form		
ASRF	Aboriginal Site Recording Form		
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)		
CHAR	Cultural Heritage Assessment Report		
Code of Practice	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales		
Consultation Requirement	nts Aboriginal cultural heritage consultation requirements for proponents 2010		
CSSI	critical State significant infrastructure		
DAWE	Australian Department of Agriculture, Water and the Environment		
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)		
DGPS	Differential Global Positioning System		

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DPIE Department of Planning, Industry and Environment (now Department of Planning and Environment (DPE))

EIS	Environmental Impact Assessment
EnergyConnect	Project EnergyConnect
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Diversity Conservation Act 1999 (Cth)
Everick Heritage	Everick Heritage Pty Ltd
GPS	Global Positioning System
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
HC	Hearth complex
IA	Isolated artefact
IH	Isolated hearth
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OC	Open campsite
OEH	Office of Environment and Heritage (now Heritage NSW)

PAD	Potential Archaeological Deposit		
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border		
RAP	Registered Aboriginal Party		
RMMs	revised mitigation measures, identified in Appendix G of the Response to DPIE Request for Information		
Response to DPIE Reque	st for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled EnergyConnect (NSW – Western Section) Response to DPIE Request for Information		
SecureEnergy	SecureEnergy Joint Venture		
S	means section		
SM	means shell midden		
SNI	South Australia and New South Wales Interconnector		
ST	Scarred tree		

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Assessment (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Table 1-1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to undertake the Aboriginal archaeological survey for those areas of the Project not yet surveyed.

Table 1-1: Revised mitigation measures relative to additional survey from the Addendum CHAR (NOHC 2021b: Table 11.1)

Reference	Mitigation measure	Timing	Applicable locations
AH3	An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.	Detailed design and construction	All locations
	These surveys will be carried out in accordance with the <i>Code of Practice for Archaeological</i> <i>Investigations of Aboriginal Objects in NSW</i> (2010).		
	If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.		
	Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:		
	• detail findings of the survey activities		
	 detail where test excavation is required in accordance with AH4 to inform detailed design 		
	 outline any additional mitigation strategies beyond those required by AH5 to AH12 		
	• be presented to the RAPs for comment.		
	Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations.		

1.2. Project area

The Project area for the additional survey comprises the EnergyConnect NSW – Western Section – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This Aboriginal Archaeological Survey Report (ASR) applies to those disturbance areas (additional) identified

as being outside the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b) (Figure 1-2 - Figure 1-5).

1.3. Project objectives

An Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a) was prepared to address the additional survey areas and is provided in Appendix C. The objectives of this ASR are to:

- Inspect those areas identified as additional to the Project corridor and not previously assessed by NOHC
- Consult with the registered Aboriginal parties (RAP) regarding archaeological and cultural values identified for the Project Area as well as any mitigation strategies.
- Document the findings of additional archaeological survey in an Archaeological Survey Report (ASR)
- Provide recommendations and management strategies for any Aboriginal sites or objects potentially impacted by the Project.
- Provide guidance to the proponent as to the requirements for any further archaeological assessment or consultation which might be required.

On February 1, 2022, the Planning Secretary approved the Project's proposed staging approach for the Aboriginal Cultural Heritage Strategy, required by condition D29 of the Infrastructure Approval. The staging approach permits the commencement of construction in areas outside of Potential Archaeological Deposits (PADs) once the ASR has been prepared and consulted with Registered Aboriginal Parties (RAPs) and Heritage NSW, subject to complying with other relevant conditions of the Infrastructure Approval. Therefore, a further objective of this ASR, is to identify areas that were subject to additional survey that are outside of PADs and now available to commence construction.

This ASR has been undertaken in accordance with the Code of Practice for the Protection of Aboriginal Objects in New South Wales (Code of Practice) (Department of Environment, Climate Change & Water [DECCW] 2010a) and AH3 of the RMMs (Table 1-1).

1.4. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) prepared this ASR with inputs to data from the Everick Heritage survey team as follows:

- Aaron Fogle (Principal, Everick Heritage)
- Caitlin Marsh (Senior Archaeologist, Everick Heritage)
- Jason Giang (Archaeologist, Everick Heritage)
- Matt Finlayson (Archaeologist, Everick Heritage)
- Emma Dougherty (Archaeologist, Everick Heritage)
- Pav Klein (GIS, Everick Heritage) prepared the mapping.

APPENDIX 1 – DEVELOPMENT LAYOUT



Figure 1-1: The Project area





Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria



Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling





Figure 1-4: Areas requiring further survey along the Project area – Buronga substation





Figure 1-5: Areas requiring further survey along the Project area – Murray River

2. Description of works

2.1. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

- used existing access tracks where possible (many of which are located outside the previously surveyed areas)
- located temporary construction areas away from identified Aboriginal objects where possible
- avoided PEC-W-PAD 27 through re-design of the disturbance area at Buronga substation
- rerouted access tracks around PEC-W-PAD 19 and PEC-W-PAD 25 (access tracks were proposed outside of the previously surveyed areas).

Through the development of detailed design and construction methodology to date, some project works were identified that were outside of the areas previously surveyed by NOHC (as identified in the Addendum CHAR (Cultural Heritage Assessment Report) (NOHC 2021a; Table 12.3) including those noted above and represented in the maps in Appendix D.

Areas to be surveyed were confirmed by SecureEnergy prior to and during the survey and were generally in line with the areas described in the Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a) (Appendix C).

2.2. Disturbance area A Project works (applicable areas)

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services are to be trenched.

The following sections briefly describe 'applicable locations' in accordance with Table 1-1, although the individual areas for specific works described above have not been identified they fall within the overall calculated area requiring survey.

2.2.1. Transmission line corridor

One section of the transmission corridor approximately 5.4 km in length, south of the Buronga substation (part of Lot 2, DP 1233260) was unavailable for survey by NOHC due to landowner access restrictions. Disturbance will comprise all Disturbance area A Project works (transmission towers, brake and winch sites, temporary construction /tower laydown areas, parking areas, centreline and B4/B10 clearance).

2.2.2. Access tracks

Numerous access tracks and bellmouths have been identified both within and outside those areas previously surveyed. Existing access tracks may also require upgrading or maintenance, generally in the form of grading. Access tracks requiring additional survey include those rerouted to avoid PEC-W-PAD 19 and PEC-W-PAD 25.

2.2.3. Water supply points

NOHC (2021b) has provided desktop assessments for proposed water supply points and recommended that archaeological survey is conducted in areas where ground disturbance is required for pipe infrastructure, as per RMM AH3. Ground disturbance may be required for the following water supply points:

- Alcheringa Road (3,945 square metres)
- Fletchers Lake Drive (2,871 square metres)
- 690 Pomona Road (1,057 square metres)
- Milpara Road (1,005 square metres)

For any water supply points that require ground disturbance (eg installation of a new stand pipe), these areas would be subject to the survey processes defined in the methodology included in Appendix C.

2.2.4. Construction compound and laydown areas

Buronga construction compound and accommodation camp was previously surveyed by NOHC (2021a; 2021b), however a small extension has been proposed along Arumpo Road (4,418 square metres).

Wentworth construction compound and accommodation camp was previously surveyed by NOHC (2021a; 2021b), however extensions within the approved development layout have been proposed to the north, east and south (44,898 square metres).

2.3. Summary

The additional survey areas comprise a total of 1,236,335 square metres (123.6 hectares) spread across the entire length, of the Project area. Additional survey areas are all generally consistent with the development layout in Appendix 1 of the Infrastructure Approval. Details of additional survey areas by land system are provided in Table 7-1.

It is noted that not all areas subject to additional survey will be required as part of the project works. Detailed design and construction methodology continue to be refined, as described in Section 2.1 of this report. The results of the additional survey, as described in this ASR, will be considered in the design refinement, where practical, as required in accordance with RMM AH1.

3. Legislative background

3.1. Commonwealth legislation

3.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

3.2. State legislation and codes of practice

3.2.1. National Parks and Wildlife Act 1974 (NSW)

The National Parks and Wildlife Act 1974 (NSW) (NPW Act) provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act*.

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

3.3. National Parks and Wildlife Regulation 2009 (NSW)

3.3.1.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by

specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW* Act.

The additional survey and ASR has been undertaken in line with the requirements of the Code of Practice.

3.3.1.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, the Infrastructure Approval requires that steps 2-4 are repeated. This report fufils requirements to Stage 2 and will form an appendix to the Aboriginal Cultural Heritage Assessment Report (ACHAR).

Part 6 of the NPW Act, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. An Aboriginal cultural heritage assessment report (ACHAR) is a written report detailing the results of the assessment and recommendations for actions to be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment.

This ASR will support an addendum ACHAR for the Project.

4. Consultation

4.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process and by Transgrid through to the handover to SecureEnergy. The documentation of consultation will be provided in the forthcoming ACHAR.

4.2. Consultation regarding the Aboriginal Archaeological Survey Methodology

An Aboriginal Archaeological Survey Methodology was prepared for the additional survey (Everick Heritage 2021a) (Appendix C) and submitted to the RAPs for 28 day review and comment on the 2 November 2021.

During the review period a presentation was provided to RAPs at the Coomealla Club, Dareton on the 4 November 2021. Various individual RAPs were also consulted in person and via video conference across early to mid November 2021 regarding the methodology. The discussions mainly centred on employment aspects of the Project and also on the aspect of artefacts remaining or being returned to Country. The full documentation of consultation will be provided in the forthcoming ACHAR.

4.3. RAP participation in the additional survey

Additional survey was conducted across six days from the 14-19 December 2021. The RAPs participated in the additional survey and a list of RAP participants is provided in Appendix B.

4.4. Consultation regarding the additional survey results

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The draft ASR was provided to the RAPs for 28 day review on the 1 April 2022. Two AFGs were held at the Wentworth Grande to discuss the survey results and recommendations provided during the review

period on the following dates:

- 6 April 2022
- 2 May 2022

On the last AFG the recommendations were described in detail to the group to ensure there was adequate understanding of those recommendations. No comments specific to the ASR were provided by the 6 May 2022 and this report was finalised for distribution on the 7 May 2022.

5. Environmental context

5.1. Physiography and climate

Physiographically, the Project Area lies within the south eastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council [LCC] 1987). Droughts are common.

5.2. Land systems

Eighteen land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Project area. These 18 land systems above can be placed into four major geomorphic categories as follows:

- Sandplains Belvedere, Bulgamurra, Hatfield, Menilta, Overnewton, Roo Roo, Trelega.
- Dunefields Arumpo, Haythorpe, Leaghur, Mandelman
- Alluvial Plains Anabranch, Canally, Darling, Riverland, Wentworth
- Playas and Basins Huntingfield, Morona.

A detailed description of the land systems including landforms, vegetation and related archaeological sensitivity is provided in Table 6-4.

5.3. Land use history

The Project area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Until recently however, there has been no large-scale clearance of the land in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas. Recreational use of the riverbanks is common. Section 6.1 discusses contact history of the area in detail.

6. Ethnohistoric and archaeological context

6.1. Ethnohistoric context

The central group of Aboriginal people living along the river now known as the Darling called it the Barka, hence the origins of the name Barkindji, a term now used to refer to the cluster of related tribes sharing a common language (Barkandji or Paakantyi) and living along the lower reaches of the Darling (Hardy 1976).

According to Tindale (1974), two Paakantyi speaking tribes have a potential association with the Project Area. These are the Kureinji and the Maraura (or Mararawa). The Kureinji tribe is said to have occupied the Murray River between Euston and Wentworth but very little else is known about this group of people. The Maraura were located along the Murray River between Wentworth and Paringa (South Australia), along the western side of the Darling and from Avoca northwest to Popiltah Lake (Tindale 1974: 130, 197, see also Withers 1989, in Martin 1996). The meaning of the term Maraura has been examined by Martin (1996) who has indicated that the term could have been used to describe a dialect group, part of a dialect group, a cluster of closely related dialect groups or the whole Barkindji language.

Tindale (1974: 130-131), worked with a Maraura informant, Robert McKinley, who provided him with accounts of some of his tribe's traditions. The Maraura were, according to McKinley (or McKinlay), an aggressive people who had migrated south down the Darling River. They intermarried with neighbouring hordes from surrounding tribes from both sides of the river (whether Murray or Darling is not stated but assumed to be the Murray) but would not allow their own womenfolk to be taken more than 50 km from their own tribal area (Tindale 1974:131). The influence of the Barkindji also stretched east along the Murray. With their more secure resources of the Murray River frontage tribal areas were smaller and the contrast between tribes greater (Hardy 1976: 4). Most of these tribes, who distinguished the difference between themselves by the word 'no' repeated (eg Latji Latji, Tati Tati) were unfriendly towards the Barkindji, however the Kureinji recognised the Maraura or Barkindji as kinsmen (Hardy 1976: 4).

In the early 1830s, it was the Maraura who challenged the Overlanders driving sheep and cattle to South Australia via Lake Victoria, approximately 80 km west of the Project area (Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130). Open warfare between the Maraura and Overlanders ensued between 1838 and 1841 culminating in the famous Rufus River Massacre (Hardy 1976; Hope 1998: 23; Martin 1996). There are different interpretations of why the Maraura so fiercely defended Lake Victoria. Martin (1996: 10) argues it was in defence of the burial areas and/or spiritual significance of the lake, while others claim the Maraura coveted European items of food, clothing and blankets or that the attacks were based on competition for food resources impacted on by the sheep and cattle (Hope 1998: 33).

Colonial settlers quickly realised the importance of the Murray-Darling junction as an area central to trade and began to settle there by the 1840s, driving the local Aboriginal tribes inland. There appears to be no mention of Kureinji in records from the 1840s onwards and Barkindji were the dominant group occupying the Project Area by that time (Thompson 1997: 7).

In 1855, an Aboriginal mission station was established by the Anglicans at Yelta, on the southern bank of the Murray opposite Wentworth, and this mission provided a refuge for many Maraura people. By the 1860s, so many people at the mission had died from diseases that only one family remained and the mission was closed in 1868 (Hardy 1976: 127; Martin 1996: 10). Remnants of the local tribes managed to survive by traditional subsistence methods in the sandhill and mallee country of the hinterland but it is also thought there may have been movement of people downstream to missions at Morunde, near Swan Hill, Manuka, near Mannum and Point MacLeay at the Murray Mouth because they provided rations and a certain degree of safety (Hardy 1976: 109; Martin 1996: 10).

By the early 1860s, those Barkindji tribes along the Darling River frontage were under severe pressure of displacement from their traditional lands by pastoralists. Most Barkindji worked on stations or were employed as trackers for the police. Working on stations meant it was possible for the Barkindji to live a semi-traditional existence with rations supplementing traditional hunting and gathering.

Dependence on Aboriginal labour by squatters lessened during the 1870s, particularly along the river frontages where better transport and communications attracted non-Aboriginal workers. By 1910, displacement from stations was chronic and refugees from southern stations along the Darling came to camp at Pooncarie and around the outskirts of Wilcannia. Pooncarie Aboriginal Reserve was established about 1910 along with others at White Cliffs, Tibooburra and Milparinka (Hardy 1976: 135, 185). By this time, Barkindji population numbers had severely decreased through starvation caused by displacement and introduced diseases.

Demand for Aboriginal labour decreased again after 1920, with the further subdivision of properties, the exception being those owned by Kidman who still willingly employed Aborigines (Hardy 1976: 186). Nulla Station and its Outstation, Waterjelly (now Warwick Station), was the home of the Mitchell family from sometime before 1902 until the 1940s. Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren are now Elders in the Barkindji community at Dareton.

In summary, although displacement and disease affected the Barkindji population there many Barkindji descendants still living in and around Coomealla (Dareton), Buronga and Mildura.

6.2. Archaeological context

6.2.1. Database searches

6.2.1.1. Aboriginal Heritage Information Management System

GIS data for all Aboriginal Heritage Information Management System (AHIMS) within and close to the Project area was provided to Everick Heritage prior to the survey. A copy of all the Aboriginal Site Recording Forms (ASRF) for sites registered by NOHC for the Project area were also supplied to Everick Heritage. These sites excluded scarred trees which were to be assessed by an arborist prior to any registration. No further AHIMS search was undertaken prior to the additional survey.

6.2.1.2. Other database searches

The following heritage registers were accessed on the 24 February 2022:

- World Heritage List (Australian Heritage Council/ UNESCO
- The National Heritage List (Australian Heritage Council)
- Commonwealth Heritage List (Australian Heritage Council)
- Register of the National Estate (Australian Heritage Council). The Register of the National Estate (RNE) is a non-statutory list which it retained as archive of the previous listing process
- The State Heritage Register (Heritage NSW)
- Wentworth Local Environment Plan (LEP) (2011)
- AHIP Public Register (previous 5 years only)

Database search results are provided in Table 6-1. Several Indigenous Places are recorded on the Register of the National Estate for the Wentworth region however information regarding their nature and location is restricted. It is likely these will relate to Lake Victoria.
6.2.2. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes, 120 kms to the north of the Project Area. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope et al. 1983). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

These sites share a number of common elements consisting invariably of shell midden with small components of each site being made up of stone artefacts, hearths, hearthstones, and other faunal material. Ancestral Human Remains (burials) are rare in these sites or locations and the only dated burial in the area comes from Mallee Cliffs, 5 km to the east of the Project area (Pardoe 1988). The cultural horizon of each site is generally shallow, although the horizon itself may be buried by as much as one metre of sterile sediment. The exceptions to this generalisation are Red Cliffs, on the south side of the Murray in Victoria, where the shell was stratified through 1.4 m of deposit, and at Gol Gol car park, just west of the Project area where Lance (1993; 1994) found approximately one metre of stratified cultural deposit.

In 1977, McIntyre (1977; 1981) conducted an archaeological survey of a 220 kV transmission line commencing at Red Cliffs, along the Murray River in Victoria and continuing northwest through to Broken Hill (Figure 6-1). McIntyre (1977; 1981) analysed the distribution of sites in relation to specific geomorphic features or landforms and concluded that the Darling River survey unit was the most productive archaeological area along the Broken Hill transmission corridor. This conclusion is supported by more recent surveys undertaken along the Darling by Edmonds (1998; 1999a; 1999b; 2000).

One of McIntyre's (1977) sites at Sturts Billabong (AHIMS ID 39-5-0010), along the Darling River 1 km to the west of the Project area, has been the subject of further research (Littleton and Blair 1993). The site at Sturts Billabong consists of a large sand dune measuring approximately 500 m x 150 m. It is possible

that the site is located in the general vicinity of Sturt's first camp on the Darling River when he journeyed up there between 1844-1846. The centre of this dune has eroded to reveal 36 human burials, numerous burnt clay heat retainers from old fireplaces or hearths, and about 22 small campsites or stone artefact scatters. There are also sparse remains of freshwater mussel, fish and yabby scattered about. At least 22 scarred trees surround the dune.

In 1990, Lance prepared a Plan of Management for Lake Victoria. As part of this Plan, Lance (1990) undertook a site survey of specific areas around Lake Victoria, including a 3 m wide transect north of the lake along the cleared boundary fence between Nulla and Noola properties. The local environment along this transect comprised sand dunes. Eight shell middens (LVN 1-8) were located. The northernmost middens (LVN 3-8) comprised small or large scatters of freshwater mussel shell and some contained in situ shell deposits. Burnt calcrete heat retainers and occasional silcrete and chert stone artefacts were also found in association with these sites. The two southernmost sites (LVN 1-2) were larger shell midden complexes containing a wide range of raw stone materials and artefact types. One of these sites also contained Ancestral Human Remains.

Lance (1990: 93) surmised there was a strong preference shown by Aborigines for camping on sandy soils. These would have been drier than the interdunal clays, elevated above the general landscape for better views and cool breezes and would have provided shade trees. Furthermore, Lance (1990: 93) states that the size and number of sites located along the Nulla-Noola transect was limited by the amount of exposure present. He proposed that site density can be expected to be extremely high on the crests of dunes found within several kilometres of Lake Victoria. Beyond this distance, sites would still be common but would occur at a much lower density. According to Lance (1990: 93) numerous small scatters of shell were noted but not recorded along farm tracks on Nulla Station particularly where these cross dunes. It would also appear from Lance's (1990) results that site complexity may decrease with distance travelled north from Lake Victoria, particularly with regard to stone raw materials, artefact type and numbers.

Evidence for widespread occupation of the Lake Victoria landscape, that is, the southern beaches, islands and barrier, the higher shores and lunette, along the river channels linking the lake to the Murray River and along the River Murray banks, only appears in the last 2,500 years. There may be some bias in this evidence due to younger sediments around the lake shoreline covering older sediments although it would appear that most of the major Aboriginal cemeteries date to within the last 2,500 years and that this may reflect changes in both population size and social complexity (see also Pardoe 1988).

At Monak, on the edge of the Murray River floodplain, directly adjacent to the Project area on its eastern side, archaeological investigations undertaken by Edmonds (1995; 1997) identified a single shell midden, Bowen Park 1, situated on an old terrace overlooking the Murray River floodplain on the margin

of the Mallee Dunefield. This terrace represents the ancestral riverbank at 30,000 years Before Present (BP), that is 1950. The shell midden was diffuse and highly disturbed, the deposit being composed of fragmented river mussel (*Alathyria jacksoni*), occasional emu egg shell fragments, three silcrete artefacts and consolidated sandy lumps which may have been heat retainers. Some of the mussel shell was heavily carbonated. Two radiocarbon dates were obtained from shell samples from two different exposures within the midden. These dates were 20,420+1130/-990 BP (CS159) and 19,670+1030/-910 BP (CS141), the former date representing the oldest evidence of Aboriginal occupation in the Sunraysia District thus far (Edmonds 1997b).

Edmonds (2002a; 2002b; 2003) undertook a number of assessments for the South Australia-NSW Interconnector (SNI) which examined a 100 m wide corridor which in some instances mirrored the current Project area particularly east of the Darling though to Buronga substation (Figure 6-2) Generally, east of the South Australian border to the Darling Edmonds (2002a; 2002b) assessed a corridor slightly to the north of the current Project area.

Across a number of surveys, between 1998 and 2003, Edmonds recorded 66 Aboriginal sites. Along with scarred trees, open campsites and isolated stone artefacts dominated the SNI corridor landscape. Generally, these sites were predominantly composed of hearths with a sparse distribution of stone artefacts. Stone artefacts were mainly manufactured from silcrete with smaller components of chert, quartz, quartzite and sandstone present. Both silcrete and chert occur locally from pedogenic rocks which outcrop in the cliffs along the Murray (chert at Paringa in South Australia and silcrete at Berribee on the Lindsay River in Victoria). Silcrete seams are also widespread throughout the region between Wentworth and Broken Hill (eg at Mungo) but the sources are generally small and widespread. One such seam occurs on Talgarry Station (just south of the Project area) in the vicinity of Lake Victoria (Hope 1998: 342). The quartz, quartzite and sandstones would have come from older metamorphic and volcanic rock outcrops, such as those in the Barrier Ranges to the north and are likely to have been traded into the area through a complex of exchange networks. The artefact assemblage on campsites primarily consisted of unmodified flakes and occasional cores. A small number of retouched and/or utilised flakes and grindstones were noted. There did not appear to be any distinctive patterning of artefact distribution either within or between sites.

Only 17 scarred trees were recorded within or close to Edmonds (2002a; 2002b; 2003) study area. Scar types ranged from canoes through to containers, shields and shelter but there was no observable pattern to the type of scar occurring. Bark removal was predominantly from Black Box trees and is a reflection of the relative abundance of this tree species as compared to River Red Gums in the study area. Numerous scarred trees were noted along survey transects in the Canally, Darling and Darling/Menilta interface land systems but were not recorded due to the lack of time.

Middens mostly occurred as shallow accumulations of individual shell heaps comprising freshwater mussel shell. The fragmentary nature of much of the shell exposed on the surface of these sites made it difficult to distinguish between lake mussel shell (*Velesunio ambiguus*) and river mussel shell (*Alathyria jacksoni*) although it is most likely that the distribution of river mussel was confined to the river margins whilst the lake mussel was confined to middens found north and west of Lake Victoria (2002b: 43). River snail (*Notopala sublineata*) was only noted at one site, an extensive midden on the riverbank along the western side of the Darling and occurred as single shell lenses or one-off meals within a larger midden complex.

The shell middens recorded in the SNI corridor landscape appeared fall into three main categories:

- extensive but shallow linear accumulations of both scattered and in situ individual shell lenses in a dark grey ashy clay matrix in association with burnt clay hearths and stone artefacts (Anabranch, Darling)
- extensive areas of discrete scattered and in situ shell lenses in a sandy matrix in association with calcrete hearths and, rarely, stone artefacts predominantly located on dunes (Roo Roo)
- small isolated lenses of shell in association with larger open campsites on duplex soils (Roo Roo).

Stone artefacts were occasionally noted in association with the middens but were rare. Ubiquitous in situ and scattered hearths formed a major component of most middens (2002b. There were no vertebrate faunal remains noted in the shell middens recorded along the corridor. Lance (1990) has also commented on the rarity of faunal remains in middens in the Lake Victoria landscape. Hope (1998: 347), however, discovered a wide range of faunal remains during excavations of shell middens at Lake Victoria but these were very fragmented. Therefore, the lack of faunal remains in association with shell middens in the SNI corridor landscape may be a perception related to the highly fragmented nature of the bone. This fragmentation is most likely related to food processing (Hope 1998: 347).

Edmonds (2002b) noted that the most interesting distribution of shell middens could be found in the Roo Roo land system. The closest source of freshwater mussels were from Lake Victoria, which is 6.8 km south of the northernmost midden Edmonds (2002a) recorded. Middens appeared to be distributed across a narrow band directly to the north and northwest of Lake Victoria. Middens north of Lake Victoria were mostly located on sandy plains directly adjacent to substantial depressions or claypans, however, two of the most extensive middens were located on the crests of dunes overlooking the general landscape. Both of these middens were, however, within 400 m of a depression or pan. According to Lance (1990: 93) numerous small scatters of shell were noted but not recorded along farm tracks on Nulla Station particularly where these cross dunes. It would also appear from Lance's (1990) results that site complexity may decrease with distance travelled north from Lake Victoria.

Hearths were a ubiquitous archaeological feature noted on sites along the SNI corridor and were found in association with stone artefact scatters (campsites) and middens, in complexes or as isolated archaeological features and were mostly found near permanent or temporary water sources. Along channel banks in the Anabranch and Darling land systems hearths often formed a linear complex. The hearths located during the SNI survey were composed of heat retainers made from clay, termite nest, ironstone or calcrete (carbonate) depending on the local availability of these materials.

The majority of sites located along or close to the study area are situated adjacent to a water source, such as rivers and creeks, relict lakebeds, depressions, claypans, swamps and scalds. This pattern of site distribution is a reflection of the semi-arid nature of the landscape, that is, limited distribution of water sources with the focus of Aboriginal occupation on or near those sources.

In summary, Edmonds (2002b: 42-43) states the following:

- Sites were located in all land systems occurring along the SNI corridor except Arumpo, Hatfield, Mandleman and Trelega. Within the corridor these land systems comprise extensive sandplains and dunes with few reliable water sources in the semi-arid landscape. Therefore, the evidence for Aboriginal occupation of the Arumpo, Hatfield, Mandleman and Trelega land systems is likely to reflect the transient nature of occupation and be sparse and difficult to detect. It is reasonable to assume that any evidence may consist of a rare isolated hearth and/or isolated artefact.
- The Canally land system contained the highest numbers of sites along the SNI corridor followed by the Darling. The Canally land system along the corridor contains a large number of ephemeral water sources, such as depressions, channels and scalds and as with the Darling River these features would have provided a focus for aboriginal occupation because of the water and food resources found there.
- All of the recorded sites in the Belvedere land system were located around the margins of depressions
 or where this land system is situated adjacent to the Canally land system. Sites within the Belvedere
 land system to the northwest of Lake Victoria appeared to be slightly less tightly focussed around
 water sources (Edmonds 2001), although the evidence points to other preferred location factors, such
 as, sandy well drained soils and elevation above the landscape for views as suggested by Lance
 (1990: 93).

The survey results indicate there is evidence for Aboriginal occupation across the majority of the SNI corridor and that landforms associated with permanent and ephemeral water sources were a primary focus for Aboriginal settlement. The evidence for occupation along the corridor appeared to represent two different settlement patterns based on seasonal availability of water.

- Large open campsites and/or extensive shell middens, which are located along permanent water sources (riverine corridors), such as the Darling and Anabranch Rivers. These larger sites represent base camps occupied for extended periods of time during the drier summer months when food and water resources were restricted. These sites could have been re-occupied on an annual basis
- 2. Seasonal or transient camps located around ephemeral water sources which probably supported small mobile groups of people for short periods of time when increased rainfall in winter months filled the back channels and billabongs, depressions, claypans, sinks and scalds which facilitated travel through the more marginal land systems. Animals and birds would also be attracted to the seasonal water sources providing food normally restricted to the Riverine corridors in drier seasons. Transient camps or seasonal camps are the second pattern of settlement along the corridor and are represented in the landscape by small open campsites/surface scatters, isolated hearths and hearth complexes, isolated artefacts and scarred trees.

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Figure 6-1: Distribution of sites recorded by McIntyre along or close to the Project area near the Darling. The dashed line indicates the SNI corridor assessed by Edmonds (2002a; 2002b; 2003).



Figure 6-2: SNI Interconnector poste EIS route plus modifications in the alignment (Edmonds 2003)

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6.2.3. The Project area

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by NOHC (2021a; 2021b). The following sections 6.2.3.1 to section 6.2.3.5 provide a summary of the assessment, survey methodology and results.

6.2.3.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 6-4. This suggested that:

- The largest and most dense archaeological sites correlate to freshwater resources (lakes, rivers, claypans and swamps)
- •

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- Transitional zones between plant communities may be a predictor for Aboriginal occupation
- Aeolian sands commonly obscure surface sites within the region, and ground exposure and visibility should be considered where assessing site significance as well as subsurface potential.

6.2.3.2. Field survey

Field survey of the survey area was undertaken by NOHC between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity

Re-locate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian transects of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

6.2.3.3. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 6-2). NOHC (2021a) state that:

Table 6-2: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

6.2.3.4. Results



Figure 6-3: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

6.2.3.5. Recommendations

NOHC (2020a; 2021b) stated that if following detailed design sections of the proposal are to be located outside the 100 m survey area these areas will be subject to further assessment. This would include a section of the transmission line inaccessible due to landowner access restrictions.

6.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 6-4 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 6-4 and Table 6-2 although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, will be used to understand the archaeological sensitivity of disturbance areas requiring further survey along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002a; 2002b; 2003).

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Figure 6-4: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 6-5: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1

Table 6-4: Land systems, landforms and archaeological sensitivity (Witter et al in prep)

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6.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

6.4.1. Shell middens

Shell middens (SM) dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the Darling River Snail (*Notopala sublineata*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

6.4.2. Open campsites

Open campsites (OC) or surface artefact scatters (AS) containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

6.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences (Isolated hearths-IH) or in groups forming hearth complexes (HC). They are generally found close to drainage features in the landscape.

6.4.4. Ancestral human remains

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6.4.5. Isolated artefacts

Isolated artefacts (IA) comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

6.4.6. Culturally scarred trees

Scarred trees (ST) generally consist of River Red Gums (*Eucalyptus camaldulensis*) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

7. Archaeological survey

7.1. Aims

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of the archaeological survey as identified by the Aboriginal Archaeological Survey Methodology (Appendix B) were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

An additional aim identified prior to the survey was to reinspect the following AHIMS registered sites which had not been found during the NOHC survey:

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7.2. Timing and personnel

The survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. The survey teams comprised one Everick Heritage archaeologist and two or three RAP representatives. A number of Transgrid and SecureEnergy staff also accompanied the survey

teams to assist with land access and orientation. A full list of key survey participants is provided in Appendix B.

7.3. Survey strategy

RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously surveyed areas. The archaeological survey aimed to visually inspect 100 per cent of all areas not previously surveyed, as detailed in Appendix D, therefore no sampling strategy was required. Areas to be surveyed were confirmed by SecureEnergy prior to the survey and were generally in line with the works described in section 2.2.

The Aboriginal Archaeological Survey Methodology (Appendix C) stated that a vehicular reconnaissance prior to the survey would be undertaken by the archaeologists and RAPs of extensive, previously disturbed access tracks requiring upgrade to establish whether any areas require detailed pedestrian inspection. However, at the time of survey it was decided this was not practical due to timing and access although a small number of vehicle transects were undertaken during the survey itself.

7.4. Survey methodology

The survey was conducted on foot and occasionally by vehicle where there were areas of extensive existing tracks in land systems of low archaeological sensitivity. Only one survey team member had possession of a Global Positioning System (GPS), consequently only one set of transects was recorded for each team.

All sites and/or objects were identified during field survey, their location recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using the system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes were also be made. A photographic record will be kept of all survey units and landforms where these are informative and appropriate photographic scales will be used.

The following details were recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

7.4.1. Aboriginal sites and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria was used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD were identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary.

7.4.2. Aboriginal Site Recording

Aboriginal Site Recording Forms (ASRF) have been submitted to the AHIMS for all Aboriginal objects and sites identified during the survey.

Aboriginal sites, objects and PADs identified during the additional survey were numbered sequentially based on the naming and numbering system implemented by (NOHC 2021a; 2021b).

7.5. Survey coverage

The additional survey areas total 1,358,432 square metres (136 hectares). The majority of the additional survey areas were covered. Notable exceptions include:

Table 7-1: Survey coverage of land systems and archaeologically sensitive landforms

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7.6. Survey results

7.6.3. Survey coverage

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Figure 7-9: Looking north across the waterlogged survey around PEC-W-PAD 19

7.6.4. Archaeological sensitivity of land systems and landforms
Table 7-2: Site gazetteer

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8. Significance assessment

8.1. Significance assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (the Guide) (OEH 2011: 10) provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013) and the Heritage NSW (Heritage Office 2001) for significance assessment with assessments being required to consider the following criteria:

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

This ASR primarily considers the scientific values of the sites and objects. Social, historic and aesthetic values will be considered within the ACHAR following discussion of cultural values with the RAPs. Scientific values should be considered in light of the following criteria:

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

It is important to note that heritage significance is a dynamic value and will be considered in the ACHAR. This ASR only presents the scientific or archaeological significance of newly recorded sites and objects. Ratings are low, moderate or high.

8.2. Scientific significance

A summary of the scientific significance for all new Aboriginal sites and objects identified is provided in Table 8-1. Most of the site types such as isolated artefacts, artefact scatters, isolated hearths and hearth complexes and shell midden are well represented in the landscape and generally of low scientific significance due to their contents, structure and representativeness. Consequently, most of these sites are of low or low-moderate scientific significance. Culturally scarred trees are a much rarer site type although do not offer much in the way of research value but are rated as moderate-high significance because of their representative value.

Table 8-1: Summary of scientific significance

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9. Mitigation measures

The following mitigation measures were based on consideration of:

- The results of the background research and archaeological survey results
- The currently known nature of impacts of the Project
- The Revised Mitigation Measures.

Avoidance of impact to Aboriginal cultural heritage is the preferred option in all instances, however it is acknowledged that where existing disturbance occurs within the Project area it is often preferable to minimise further disturbance to the landscape and potentially to as yet unidentified Aboriginal cultural heritage. Table 9-2 and Table 9-3 present an assessment of the potential impacts to sites, objects and PADs identified during the additional survey. Where practical impacts to sites and PADs would be avoided and an exclusion zone would be implemented as the preferred mitigation measure.

9.1. Minimisation of impact

AH1 of the RMMs states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

In addition, AH4 of the RMMs states:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

SecureEnergy has made refinements to the design and construction methodology and succeeded in avoiding impacts by:

- using existing access tracks where possible
- locating temporary construction areas away from identified Aboriginal objects where possible

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9.2. Aboriginal consultation

AH2 of the RMMs states:

Aboriginal stakeholder consultation will be carried out in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a).

Engagement with Registered Aboriginal Parties (RAPs) will consist of the following:

- > Aboriginal heritage site surveys (AH3) review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas)
- > test excavation activities (AH4) review of proposed methodologies and involvement in the test excavation activities in the field
- > review of the draft addendum report/s (relating to surveys (AH3), test excavations (AH4) and scar trees (AH5)), and consultation on the draft reports which will typically be in the form of a RAP meeting
- > provision of final addendum

report/s will be provided to RAPs (AH3, AH4, AH5)

> involvement in establishment of Aboriginal heritage exclusion zones prior to construction commencing (AH7).

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Further cultural information will be gathered during consultation undertaken in association with these activities. All addendum reports to the Aboriginal Cultural Assessment Report (CHAR) will be provided to RAPs for comment, and input will be considered, and actioned wherever practicable

In accordance with AH2 the RAPs identified in Appendix B participated in the additional survey. The preliminary results of the additional survey were presented to an Aboriginal Focus Group (AFG) meeting on the 9 February 2022 (section 4.4).

This ASR must be provided to the RAPs for 28 day review and during that time it is recommended that a further AFG meeting is held to discuss the results of the additional survey and the recommendations. The final ASR will incorporate any RAP inputs from the review and AFG.

9.3. Clearance to proceed

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

The proposed staging approach for the Aboriginal Cultural Heritage Strategy (required in accordance with condition D29 of the Infrastructure Approval) was approved by the Planning Secretary on 1 February 2022. The staging approach identifies that construction may commence in additional survey areas, outside of PADs and sites once the ASR is prepared and consulted with RAPs and Heritage NSW. The staging approach also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas. Based on the results of the additional survey presented in this ASR, clearance to proceed with Project works is allowed in additional survey areas excluding those areas identified as PADs or extended PADS. Therefore, in accordance with AH3 of the RMMs construction can proceed within those additional survey areas outside of any identified PADs or sites identified in Table 7-2 and Table 7-3 and with reference to the figures provided in Appendix D.

The results of this ASR have been and will continue to inform design refinements for the project. Where design has avoided the identified PAD and/or site, works are permitted to commence once this ASR has been prepared and consulted.

It is acknowledged that Aboriginal heritage items may be found anywhere along the Project corridor even in areas of low archaeological sensitivity. Therefore, SecureEnergy has developed an Unexpected

Heritage Finds Procedure EnergyConnect (NSW-Western Section) which would be implemented should unexpected Aboriginal cultural heritage items be found during construction in areas identified for clearance. This procedure is provided in Figure 9-1. In addition, SecureEnergy (2021) has developed a Discovery of Suspected Human Remains Procedure EnergyConnect (NSW-Western Section) for the approved Stage 1 Heritage Management Plan which would be implemented should suspected human remains be discovered during construction in areas identified for clearance.

9.4. Additional survey

AH3 of the RMMs states:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Further refinements to the design and construction methodology may be required and may result in part from the outcomes of this additional heritage survey. In accordance with AH3 of the RMMs (Table 1-1) if works to any additional areas outside those previously subjected to heritage assessment and survey, these areas will require survey as described in the Aboriginal Archaeological Survey Methodology (Appendix C).

9.5. Test excavation

AH4 of the RMMs states:

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will: detail findings of the test excavation activities

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9.6. Scarred trees

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

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These have been registered on the AHIMS database and will be assessed by an arborist in accordance with AH5 of the RMMs. Recommendations for exclusion zones (AH7), 3D scanning and/or salvage will be detailed in the addendum ACHAR.

9.7. Surface collection

AH6 of the RMMs states:

All portions of artefact scatters that are to be directly impacted will require surface collection prior to construction commencement in those areas.

Additionally, based on the outcomes of the test excavation, items or PADs will be subject to surface collection or salvage prior to the commencement of construction in those areas. The activities will be documented in a surface collection report.

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9.8. Aboriginal heritage exclusion zones

AH7 of the RMMs states:

Aboriginal heritage exclusion zones will be established to protect

- > known features/items of significance that have been identified to remain in-situ throughout construction (and not subject AH6)
- > scarred trees that are to remain in-situ.

Suitable controls will be identified in the heritage management sub-plan, which may include site fencing and sediment control. Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the RAPs prior to the commencement of construction at each location.

Areas of PADs that are located within areas of vegetation clearance where ground disturbance will not occur will be managed through construction methodologies and will not be delineated as exclusion zones. These methodologies will be developed in the heritage sub-plan.

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Heritage Management Procedure UNEXPECTED HERITAGE FINDS PROCEDURE





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Heritage Management Procedure DISCOVERY OF SUSPECTED HUMAN REMAINS PROCEDURE

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Figure 9-2: Discovery of Suspected Human Remains Procedure (SecureEnergy 2021)

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Table 9-1: Assessment of direct and indirect (that is within 10 m of Area A or B) and RMMs for sites and objects identified during the additional survey

Table 9-2: Impact assessment of new PADs and PAD extensions

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

Appendix B – Field personnel

Appendix C – Survey methodology

EnergyConnect (NSW – Western Section)

Aboriginal Archaeological Survey Methodology

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00001)

December 2021

Wentworth Local Government Area

Report Reference:

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Executive summary

On 29 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

The Environmental Impact Assessment (EIS) for the NSW – Western Section (the Project) of EnergyConnect was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) the Project is yet to be determined by the Australian Minister for the Environment.

AH3 of the RMMs from the Response to DPIE Request for Information (Transgrid 2021b) states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

The Project area for this survey methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100

metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b) (Figure 1-2).

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Cultural Heritage Assessment Report (CHAR) and Addendum CHAR (NOHC 2021a; 2021b), RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology provides background information on the previous Aboriginal cultural heritage assessments undertaken (section 4.2), land system sensitivity modelling (sections 4.3 and 4.4) and a summary of the impact assessment of the current design and construction methodology on areas requiring further survey (section 5). The methodology offers an Aboriginal consultation strategy (section 3), a survey strategy and methodology (sections 6.3 and 6.4) and requirements for reporting on survey (section 6.5).

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance areas

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology.

The broad aims and objectives of the Aboriginal consultation strategy (section 3.4) will be:

- To re-establish RAP connection with the Project and introduce the SecureEnergy team
- To establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads, if no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- To organise roster of available RAP field participants and their contacts
- To discuss how RAP engagement is to be managed by the Project
- To agree on process and timing for further consultation and communications.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHA	R Addendum Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Re	quirementsAboriginal cultural heritage consultation requirements for proponents2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
Draft Conditions	s Draft Conditions of Approval Revision 3 (August 2021)
EIS	Environmental Impact Assessment
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Diversity Conservation Act 1999 (Cth)

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GPS	Global Positioning System
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OEH	Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border
RAP	Registered Aboriginal Party
RMMs	revised mitigation measures, identified in Appendix G of the Response to DIE Request for Information
Response to DPI	E Request for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled <i>EnergyConnect (NSW – Western Section) Response to DPIE Request for Information</i>
S	means section
SNI	South Australia and New South Wales Interconnector
STP	Shovel test pit(s)

test excavation methodology Aboriginal archaeological test excavation methodology

TP Test pit(s)
1. Introduction

1.1. Project background and legislative context

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the Project) (and to which this methodology relates)
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Diversity Conservation Act 1999 (Cth)* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The Environmental Impact Assessment (EIS) was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the EPBC Act the Project is yet to be determined by the Australian Minister for the Environment.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

1.2. Project area

The Project area for this survey methodology comprises the EnergyConnect NSW – Western Section – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b) (Figure 1-2).

1.3. Previous archaeological investigation

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised mitigation measures (RMMs) identified in Appendix G of the Response to DPIE Request for Information (Transgrid 2021b). AH3 of these RMMs states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

1.4. Aims and objectives

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Addendum CHAR, RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology has been prepared in line with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

This survey methodology will be conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in

cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Vanessa undertook previous surveys along an earlier version of the transmission line corridor (South Australia - NSW Interconnector) in conjunction with some of the Aboriginal stakeholders identified for the current Project area and has a comprehensive understanding of the archaeological and cultural landscape of the Project area. Vanessa has also undertaken numerous Aboriginal cultural heritage assessments within the Project region having owned and operated her own consulting practice based in Dareton and Mildura for 22 years.

Robbie Mazlin (Archaeologist, Everick Heritage) provided input into the calculations for the sampling strategy wording and mapping. Upload of GIS data and analysis was undertaken by Patrick Burke (Principal-GIS, Everick Heritage).





Figure 1-1: The Project area



Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria



Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling



Figure 1-4: Areas requiring further survey along the Project area – Buronga substation



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2. Legislative context

2.1. Commonwealth legislation

2.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.2. State legislation and codes of practice

2.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

2.2.2. National Parks and Wildlife Regulation 2009 (NSW)

2.2.2.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by

specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW* Act.

2.2.2.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, changes to design and construction methodology require that steps 2-4 are repeated. The survey methodology would be presented at Stage 2.

2.2.2.3. Aboriginal Cultural Heritage Assessment

Division 2 s 61 of the NPW Regulation, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. A cultural heritage assessment report is a written report detailing the results of the assessment and recommendations for actions to be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment.

3. Consultation strategy

3.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process through to April 2021. It must be noted if there has been a lapse of 12 months in the consultation process for a Project, Heritage NSW may expect the process to be recommenced from Stage 1 of the Consultation Requirements (section 2.2.2.2).

3.2. Registered Aboriginal Party engagement

As part of AH2 of the RMMs it is stated that engagement with RAPs will consist of the following:

Aboriginal heritage site surveys (AH3) – review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas).

Consequently, this survey methodology will be presented to the RAPs listed in section 3.1 for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

3.3. Consultation process

Open, honest and ongoing communication between Transgrid, SecureEnergy, the RAPs and the Project archaeologists is vital to the success of the Project. To comply with Stage 4 of the Consultation Requirements this draft survey methodology will be presented to the RAPs for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

Virtual or in person meetings are proposed to be held in the region to present the Aboriginal Cultural Heritage Strategy. It is proposed that this survey methodology would be provided to the RAPs with the test excavation methodology (Everick Heritage in prep). Following receipt of the methodologies and at some stage during the 28 day review period it is proposed that further virtual or in person meetings with the RAPs will be held to:

- Re-engage the RAPs with the Project.
- Present the methodologies
- Engage with the RAPs
- Provide a venue for discussion and comment.

Where key individuals or representatives of key organisations are unable to attend meetings, or where Covid restrictions are still in place, virtual meeting options will be implemented, with the Environmental team and Everick to present the methodologies and record comments. There is also potential for up to three meetings to be held within the Project region to accommodate stakeholder travel and time constraints if virtual meetings are not possible.

The proposed process for consultation with RAPs is as follows:

- Provide survey and test excavation methodologies together
- Follow up with phone calls to RAPs to ascertain availability for stakeholder meeting and preferred venue (likely to be Dareton, Wentworth, Buronga, Mildura)
- Send meeting invites and agenda for stakeholder meeting(s)
- Follow up with phone calls to RAPs to ascertain attendance at meeting or alternate one on one meeting
- Hold virtual or in person stakeholder meeting(s) providing resources such as a powerpoint presentation in addition to roll out maps relating to the areas across which the methodologies relate
- Finalise survey and test excavation methodologies incorporating any comments or recommendations from the RAPs and send out to RAPs.

Whilst this process is likely to take a maximum 28 day period it is anticipated that by approaching RAPs on an individual basis where necessary either in person or by phone the process may be able to be shortened.

3.4. Consultation aims

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads like Milpara Road, no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

4. Archaeological context

This section provides a brief summary of the archaeological landscape as background to the survey methodology in accordance with Requirement 1-4 of the Code of Practice. Note that an updated Aboriginal Heritage Information Management System (AHIMS), in accordance with Requirement 1b, is not considered necessary at this stage of the Project. Transgrid has provided the AHIMs Aboriginal Site Recording Forms (ASRF) as prepared by NOHC (2021a; 2021b) for all newly recorded sites.

4.1. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes 55 kilometres (km) to the north of the Project. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

4.2. The Project area

Two Aboriginal Cultural Heritage Assessment Reports have been prepared for the Project by NOHC (2021a; 2021b). The following sections 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6 provide a summary of the assessment, survey methodology and results.

4.2.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and

the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 4-2. This suggested that:

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4.2.2. Field survey

Field survey of the survey area was undertaken between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Relocate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian survey of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission

corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

4.2.3. RAP field representatives

The following Aboriginal representatives participated in the field survey:

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4.2.4. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 4-1). NOHC (2021a) state that:

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Table 4-1: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

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4.2.5. Results

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Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

4.2.6. Recommendations

NOHC (2020a; 2021b) stated that if following detailed design sections of the proposal are to be located outside the 100 m survey area these areas will be subject to further assessment. This would include a section of the transmission line inaccessible due to landowner access restrictions.

4.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 4-3 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 4-2 and Table 4-1although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, will be used to understand the archaeological sensitivity of disturbance areas requiring further survey along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002).

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Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

Table 4-3: Land systems, landforms and archaeological sensitivity (Witter et al in prep)

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4.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

4.4.1. Shell middens

Shell middens dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the freshwater snail (*Vivipara notopala hamelyi*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

4.4.2. Open campsites

Open campsites or surface scatters containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

4.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences or in groups forming hearth complexes. They are generally found close to drainage features in the landscape.

4.4.4. Ancestral human remains

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4.4.5. Isolated artefacts

Isolated Artefacts comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

4.4.6. Culturally scarred trees

Scarred trees generally consist of River Red Gums (Eucalyptus camaldulensis) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

5. Impact assessment

5.1. Mitigation measures

AH3 of the RMMs are provided in Table 5-1. Furthermore, AH1 from the Addendum CHAR (NOHC 2021b: Table 11.1) states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

Reference	Mitigation measure	Timing	Applicable locations		
AH3	An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.	Detailed design and construction	All locations		
	These surveys will be carried out in accordance with the <i>Code of Practice for Archaeological</i> <i>Investigations of Aboriginal Objects in NSW</i> (2010).				
	If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.				
	Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:				
	• detail findings of the survey activities				
	 detail where test excavation is required in accordance with AH4 to inform detailed design 	is required in rm detailed			
	 outline any additional mitigation strategies beyond those required by AH5 to AH12 				

Table	5-1.	Revised	mitigation	measures	from th	he Adder	dum (CHAR	(NOHC	2021b	Table	11.1	١
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be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations.

5.2. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

- used existing access tracks where possible (many of which are located outside the previously surveyed areas)
- located temporary construction areas away from identified Aboriginal objects where possible
- avoided PAD27 through re-design of the disturbance area at Buronga substation
- relocated access tracks around PAD19 and PAD25 (access tracks are now outside of the previously surveyed areas).

Through the development of detailed design and construction methodology to date, some project works have been identified that are outside of the areas previously surveyed by Navin Officer (as identified in the Addendum CHAR (NOHC 2021a; Table 12.3)) including those noted above and described in this methodology.

Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the additional heritage survey described in this methodology). If any additional areas are required outside the area(s) previously subjected to heritage assessment and survey, these areas will require survey as described in this methodology.

Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology. Consultation with the RAPs regarding the updates to disturbance areas will be undertaken throughout the survey and test excavation process and resulting reports (section 6.5).

5.3. Disturbance area A Project works (applicable areas)

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance.

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The following sections briefly describe 'applicable locations' in accordance with Table 5-1, although the individual areas for specific works have not been identified but fall within the overall calculated area requiring survey. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Surveyed areas would be identified in the Archaeological Survey Report described in section 6.5.3.

5.3.1. Transmission line corridor

One section of the transmission corridor approximately 5.4 km in length, south of the Buronga substation (part of Lot 2, DP 1233260) was unavailable for survey due to landowner access restrictions. Disturbance will comprise all Disturbance area A Project works (transmission towers, brake and winch sites, temporary construction /tower laydown areas, parking areas, centreline clearance).

5.3.2. Access tracks

Numerous access tracks and bellmouths have been identified both within and outside those areas previously surveyed. Existing access tracks may also require upgrading or maintenance, generally in the form of grading. A reconnaissance survey by the archaeologists and RAPs (section 6.3) will be undertaken to identify any areas along existing access tracks that require further detailed inspection.

5.3.3. Water supply points

NOHC (2021b) has provided desktop assessments for proposed water supply points and recommended that archaeological survey (as described in this survey methodology) is conducted in areas where ground disturbance is required for pipe infrastructure, as per RMM AH3. Ground disturbance may be required for the following water supply points:

- Alcheringa Road
- Fletchers Lake Drive
- 690 Pomona Road
- Milpara Road
- Wentworth construction compound and accommodation camp.

For any water supply points that require ground disturbance (e.g. installation of a new stand pipe), these areas would be subject to the survey processes defined in this methodology.

Table 5-2: Details of required additional survey by land system

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6. Archaeological survey

6.1. Aboriginal Cultural Heritage Strategy

In accordance with the Conditions of Approval (September 2021), Condition D29 requires preparation of an Aboriginal Cultural Heritage Strategy as outlined below:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;

This survey methodology will inform the Aboriginal Cultural Heritage Strategy to satisfy condition D29 c).

6.2. Aims and objectives of archaeological survey

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of archaeological survey would be to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.
6.3. Survey strategy

In accordance with Requirement 5a of the Code of Practice requires a survey sampling strategy to be developed. This would be required in instances where the entire area in question is not surveyed. However, RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously. The archaeological survey will aim to visually inspect 100 per cent of all areas not previously surveyed, as outlined in Figure 1-2, therefore no sampling strategy is required. Survey units will be based on land system and an identification number assigned for each works area surveyed. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology (section 6.4).

A vehicular reconnaissance survey will be undertaken by the archaeologists and RAPs of extensive, previously disturbed access tracks requiring upgrade to establish whether any areas require detailed pedestrian inspection. The timing for this reconnaissance would be in tandem with the archaeological survey program.

Survey will be undertaken for survey units within land systems of lower potential archaeological sensitivity in order to provide letters of clearance for works to commence where there is no archaeological potential (section 6.5.2).

6.4. Survey methodology

6.4.1. Survey teams

Each survey team will comprise one archaeologist and would aim to include two RAP representatives. In the interests of communication and safety, two teams will work in close proximity. Further teams will be employed where necessary to facilitate coverage in a timely manner.

6.4.2. Survey requirements

In accordance with Requirement 5b of the Code of Practice the following survey requirements will be implemented.

The survey will be conducted on foot in accordance with the survey strategy outlined in section 6.3. The methodology will be to undertake a series of pedestrian transects across the entire Project Area to be

subject to further survey targeting ground surface exposures for evidence of Aboriginal sites and objects and landforms of potential archaeological sensitivity which constitute PAD.

One survey team member will have possession of a Global Positioning System (GPS), consequently only one set of transects will be recorded for each team. Start and end points for each survey transect will be taken.

In accordance with Requirement 8 of the Code of Practice, where sites and/or objects are identified during field survey, their location will be recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using the system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes may also be made. A photographic record will be kept of all survey units and landforms where these are informative and appropriate photographic scales will be used.

The following details will be recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

6.4.3. Survey coverage

In accordance with Requirement 9-10 of the Code of Practice, information regarding visibility and exposure in each survey unit will be recorded in order to assess the effectiveness of the survey coverage. This information will be utilised, in conjunction with land system and landform sensitivity to evaluate the

effectiveness of the survey coverage and enable predictions regarding archaeological potential (where visibility and exposure are low) of survey units to provide appropriate management recommendations.

6.4.4. Aboriginal site and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria will be used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD will be identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary. Broad brush PAD boundaries will be avoided wherever possible.

6.5. Reporting

6.5.1. Aboriginal Site Recording Forms

An Aboriginal Site Recording Form (ASRF) would be submitted as soon as is practicable to the AHIMS database to document any Aboriginal objects identified through survey.

6.5.2. Letters of heritage clearance

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

It is proposed that these 'letters' would be in a format downloaded from Field Maps / Survey123 system and provided to the RAPs. In addition, all key survey results will be presented to RAPs.

6.5.3. Archaeological survey report

AH3 of the RMMs from Appendix G of the Response to DPIE Request for Information states that:

Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:

- detail findings of the survey activities
- detail where test excavation is required in accordance with AH4 to inform detailed design
- outline any additional mitigation strategies beyond those required by AH5 to AH12
- be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations

An Addendum Archaeological Survey Report (ASR) detailing the results of the survey would be prepared once fieldwork activities are concluded. The ASR would be completed to the requirements outlined in the Code of Practice Requirement 11 and would include all information contained in the proposed 'letters of heritage clearance'. The draft Addendum ASR will provide mitigation measures for identified sites and PADs and recommendations where further test excavation is required for PADs. The draft Addendum ASR will be presented to the RAPs for comment and discussion.

6.6. Procedure for the discovery of Human Remains

If suspected human remains are discovered during the survey, the following actions would be undertaken:

- The remains must not be harmed/further harmed
- Immediately cease all works at that particular location
- Secure the area so as to avoid further harm to the remains
- Notify the NSW Police and the Environment Line (Department of Planning, Industry and Environment) on 131 555 as soon as practicable and provide any details of the remains and their location
- Do not recommence any work at that particular location unless authorised in writing by the Aboriginal Heritage Regulation Team, Heritage NSW, Department of Premier and Cabinet.

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a 1 m x 1 m or 2 m x 1 m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits

Appendix D – Figures showing additional survey areas





Document Path: G:\Client Cloud Shares\EHC Coffs Hbr Shares\EV.1240 SecureEnergyJV_Project EnergyConnect NSW_Salvage\Maps & Plans\MXD\EV1240_Survey Areas_211015_Map2.mxd





Document Path: G:\Client Cloud Shares\EHC Coffs Hbr Shares\EV.1240 SecureEnergyJV_Project EnergyConnect NSW_Salvage\Maps & Plans\MXD\EV1240_Survey Areas_211015_Map4.mxd

Appendix D – Aboriginal Archaeological Test Excavation Report

EnergyConnect (NSW – Western Section)

Stage 1 (2a) - Aboriginal Archaeological Test Excavation Report

Prepared for Secure Energy Joint Venture (45860-G-70005-REP-U-00018)

July 2022

Wentworth Local Government Area

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Executive summary

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment		
ACHAR	Aboriginal Cultural Heritage Assessment Report		
Addendum ASR	Addendum Aboriginal Archaeological Survey Report		
Addendum CHAR	Addendum Cultural Heritage Assessment Report		
AFG	Aboriginal Focus Group		
AH	Aboriginal Heritage		
AHIMS	Aboriginal Heritage Information Management System		
AHIP	Aboriginal Heritage Impact Permit		
AS	Artefact scatter		
ASR	Aboriginal Archaeological Survey Report		
ASIRF	Aboriginal Site Impact Recording Form		
ASRF	Aboriginal Site Recording Form		
ATER	Aboriginal Archaeological Test Excavation Report		
CCA	Centreline clearance area		
CG	course-grained		
CHAR	Cultural Heritage Assessment Report		
Code of Practice	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales		
Consultation Requireme	nts Aboriginal cultural heritage consultation requirements for proponents 2010		
CSSI	critical State significant infrastructure		

DAWE	Australian Department of Agriculture, Water and the Environment			
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)			
DGPS	Differential Global Positioning System			
DPIE Planning and Environme	Department of Planning, Industry and Environment (now Department of ent (DPE))			
EIS	Environmental Impact Statement			
EnergyConnect	Project EnergyConnect			
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)			
Everick Heritage	Everick Heritage Pty Ltd			
Ext	extension (to existing PAD)			
FG	fine-grained			
GPS	Global Positioning System			
g	grams			
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW			
ha	hectares			
HC	Hearth complex			
IA	Isolated artefact			
ІН	Isolated hearth			
km	kilometres			
L	Line			
m	metres			

mm	millimetres		
MNI	Minimum Number of Individuals		
NISP	Number Of Individual Specimens		
NOHC	Navin Officer Heritage Consultants Pty Ltd		
NPW Act	National Parks and Wildlife Act 1974 (NSW)		
NPW Regulation	National Parks and Wildlife Regulation 2009 (NSW)		
NSW	New South Wales		
ос	Open campsite		
OEH	Office of Environment and Heritage (now Heritage NSW)		
PAD	Potential Archaeological Deposit		
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border		
RAP	Registered Aboriginal Party		
RMMs	revised mitigation measures, identified in Appendix G of the Response to DPIE Request for Information		
RTP	Repatriation Test Pit		
Response to DPIE Reque	st for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled EnergyConnect (NSW – Western Section) Response to DPIE Request for Information		
SecureEnergy	SecureEnergy Joint Venture		
s	section		
SM	shell midden		
SNI	South Australia and New South Wales Interconnector		

ST	Scarred tree
STP	shovel test pit
т	Tower
ТР	test pit
WNSWAP	Western New South Wales Archaeological Program

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Statement (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Table 1-1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Key issue conditions relating for Aboriginal cultural heritage (D29) specify that:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;

b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);

c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;

d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and

- e) include an updated Aboriginal cultural heritage assessment report, which:
- is based on the findings of the subsurface testing in b) and surveys in c);
- · describes any potential additional impacts to heritage items;
- identifies further mitigation measures, including avoidance or salvage;
- includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
- provides an updated and consolidated list of sites that would be protected and remain insitu throughout construction and sites that would be salvaged and relocated to suitable alternative locations

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake a) to e) of the conditions in accordance with the Infrastructure Approval and the RMMs (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

1.2. The Project area

EnergyConnect -Western comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Test Excavation Report (ATER) reports on the test excavation for Stage 1 of EnergyConnect (NSW – Western Section), that is Line (L) 1 Tower (T) 138, just east of the Anabranch, through to Line 4 Tower 58 (Murray River, NSW), a distance of approximately 96 kilometres (km) (Figure 1-1).

Stage 2, L1, T138 west through to the South Australian border will be reported on separately. A second ATER and Aboriginal Cultural Heritage Assessment Report (Stage 2B) will be prepared to consider the portion of EnergyConnect (Western Section), that extends from east of the Anabranch, through to the South Australian border.

1.3. Study objectives

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (Navin Officer Heritage Consulting 2021b [NOHC] 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

In accordance with an approved request under condition E3 of the NSW Infrastructure approval, two separate Aboriginal Cultural Heritage Assessment Reports will be prepared, each covering different geographic parts of the Project Area (referred to as Stage 2a and Stage 2b).

The objectives of this Stage 1 – ATER are to fulfill condition 29b) of the Infrastructure Approval and to comply with Aboriginal Heritage (AH) 4 of the RMMS (Table 1-1).

This ATER has been undertaken in accordance with the following approvals, reports and guidelines:

- Infrastructure Approval SSI 10040
- EnergyConnect (NSW Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Department of Environment, Climate Change and Water [DECCW] 2010b).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a).
- The Burra Charter 2013 (Australia ICOMOS 2013).

The test excavation applies to those identified areas of potential archaeological deposit (PAD) impacted by Disturbance areas A and B (see section 2) within the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b) (Table 1-1). Additionally, two sites were also identified as requiring test excavation due to their potential to possess moderate to high potential for subsurface archaeological deposit (Table 1-1).

Additional survey undertaken by Everick Heritage (2022a) for the Addendum Aboriginal Archaeological Survey Report (Addendum ASR) identified new PADs and extensions to existing PADs requiring test excavation as identified in Table 1-2.

SecureEnergy has made refinements to the design and construction methodology and succeeded in avoiding impacts to several PADs by:

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Table 1-1: Revised mitigation measures relative to test excavation for Stage 1 from the Addendum Aboriginal Cultural Heritage Assessment Report (ACHAR) (NOHC 2021b: Table 11.1)

Reference	Mitigation measure	Timing	Applicable locations (Stage 1)
AH4	In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.	Detailed design and construction impacts to sites/features/ PADs	Sites PEC-W-102, PEC- G-7
			PADs
			PEC-PAD-20

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Reference	Mitigation measure	Timing	Applicable locations (Stage 1)
	Where direct impacts cannot be avoided,		through to
	test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root- ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.		PEC- PAD-28
	Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.		
	Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will: detail findings of the test excavation activities.		

Table 1-2: PAD gazetteer based on additional survey – Stage 1 only (Everick Heritage 2022). Those PADs not requiring test excavation are highlighted

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Figure 1-1: Stage 1 – Project area

1.4. Compliance

The test excavations were undertaken with representatives of the RAPs. Any cultural knowledge and/or management recommendations regarding Aboriginal cultural heritage offered by the RAPs during the excavation have been recorded and incorporated where appropriate into the ATER.

Test excavation described in this ATER has been undertaken with regard to the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

Test excavation described in this ATER has been conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Consultation

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders and was ongoing throughout the EIS process and by Transgrid through to the handover to SecureEnergy. The documentation of consultation can be found in the ACHAR for Stage 1 and has been completed in accordance with Clause 80 C of the *National Parks and Wildlife Regulation 2009 (NSW).*

1.6. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) directed the test excavation program and contributed to the production of this ATER. Vanessa has over 35 years' experience in cultural heritage management and has previously excavated a number of sites in the Sunraysia region in both NSW and Victoria.

Jason Giang (Archaeologist, Everick Heritage) supervised the data management and preparation of sections 2, 6, 6.3 and 8.

Liam Neill (Senior Archaeologist, Everick Heritage) undertook the stone artefact analysis and wrote section 6.2.1.

Georgie Wye, Joshua Giesken and Gloria Aranda-Spinazze (Archaeologists, Everick Heritage) undertook the majority of the sorting and analysis of the faunal remains

Madison White (Archaeologist, Everick Heritage) researched and prepared the paleoenvironmental section 3.2.

Brendan Wong (Archaeologist, Everick Heritage) and Grace Eldon (Archaeologist Everick Heritage) assisted with the compilation and rationalisation of test excavation data as well as the preparation of section 6.1.

Pav Klien (Senior GIS, Everick Heritage) managed the spatial data for the project and prepared the mapping.

2. Description of works

2.1. Disturbance area A

The design of Disturbance area A works for the Project was provided by SecureEnergy in GIS format. Disturbance area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services cross the EnergyConnect corridor

Further descriptions of the proposed works associated with the construction of the development

2.1.1. Transmission towers

The construction of a total of 196 transmission towers, 58 poles on L4 and 138 towers on L1, are proposed to be constructed as a part of the Stage 1 Project area. The construction of these towers will require the clearance of land across an area of approximately 60 metre (m) x 60 m depending on the type of transmission tower (guyed or self-supporting). The tower footprint area is required to be that size to ensure that there is a safe working space for the teams constructing the towers. Clearance will involve

removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

Tower footings will be located approximately 20 m from the corners of the tower construction areas for self-supporting towers and 5 m for guyed towers. The associated piles would be constructed to a depth of between 7.5 m and 16 m. The tower footings and piles would be constructed with the use of a Soilmec drill rig. Holes will be drilled to the site-specific depth according to the engineered design calculations. Once they have met the required depth, specialised jigs are then installed which hold the foundation steel work. They are then set in place and the holes are filled with concrete.

Each tower construction area will require additional areas up to 70 m x 40 m in size. These areas would be utilised for temporary laydown and storage of tower steel, bolts and accessories and would be cleared where permitted (areas without an exclusion zone). Clearing will involve vegetation removal to ground level utilising a forest mulcher or similar type of plant. Where the proposed alignment changes direction, break and winch sites will be required. These sites would extend up to 200 m from the centre of the tower and require a clearance of a 50 m x 30 m area in addition to a 5 m wide track which will lead to the break and winch location. The brake and winch points will be constructed by clearing all trees in the marked-out area, root balls will be retained. This will provide a location to set out specialized machinery that enables installation of the overhead transmission line cables.

2.1.2. Ancillary tower works

There are several works which will be required in addition to the construction of the transmission towers, including the construction of access tracks, bellmouths (turning circles) and parking areas. The creation of new and upgrade of existing access tracks is proposed along the transmission corridor alignment. These access tracks run parallel to the alignment both within and outside the transmission line corridor as well as into each new transmission tower. The new access tracks will be 4 m wide with passing lanes installed in select locations and formed by grading the ground surface with a grader and / or excavator. Any spoil that is created during access track works will be utilised to form earthen bunds in the vicinity of the tracks as a manner of erosion and sediment control. Where required new fill will be laid down for stability. Any imported fill will be sourced from a registered quarry. Access tracks which provide access directly to the tower location will also be constructed with a bellmouth connecting the two tracks. These bellmouths can be up to a maximum width of 15 m and be utilised as a turning circle.

Parking areas have been proposed at each tower location and will be constructed adjacent to the proposed access tracks. The parking areas are typically 35 m x 10 m in size and will be cleared of vegetation except where exclusion zones exist. As with the tower footprints, clearance will involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

2.2. Centreline, Disturbance area B

Two clearance areas have been proposed which will be subject to vegetation management requirements between the tower locations requiring varying levels of ground disturbance. The Centreline clearance area (CCA) (Disturbance area A – centreline) refers to the centreline of the Project corridor where the draw wires will be pulled from tower to tower with the use of Challenger tractors. This disturbance area comprises a 10 m wide linear area in the centre of the alignment in which vegetation will be cleared and will be used as the main access track for moving the drill rig from to site to site during tower foundation construction and the installation of the draw wire during stringing operations. Vegetation clearance will be completed using mobile plant and equipment that is able to remove vegetation to ground level. Root balls of any removed vegetation will remain in situ to deter soil erosion. The CCA may also be utilized as access across the transmission alignment during construction.

Areas where selective clearing and/or trimming of trees will occur (Disturbance area B) to maintain the minimum vegetation clearance requirements as required by Transgrid when the conductor is at maximum operating conditions. Tree pruning and management associated with Disturbance area B will be completed through the use of mobile plant and equipment with the centreline or access tracks being utilised for accessing the vegetation that requires management. Plant and equipment movements through Disturbance Area B will be limited to what is required to tidy felled trees and potentially for herbicide application.

2.3. Additional works

Several additional works are required which do not directly relate to the construction of the transmission line however are ancillary activities required to support the Project. These include:

- Construction of water fill points for provision of both potable water and construction water A series
 of water supply points have been identified as suitable connection points to existing water supply
 pipelines. Establishment for water supply points will comprise installation of an access point /
 driveway, some ground leveling and installation of pipework required for the fill point. The proposed
 water supply points which are to be established and/or used include:
 - Alcheringa Drive, Buronga
 - Modica Crescent, Buronga
 - Fletchers Lake Drive, Dareton
 - Beverley Street, Wentworth
 - 690 Pomona Road, Pomona/Oxley Drive, Pomona
- Construction of the Buronga and Wentworth construction compound (laydown) and accommodation camp. Establishment of the construction compound and accommodation camp requires clearing of vegetation within the disturbance area and clearing and removal of topsoils.
- The Anabranch South laydown area measuring 104,268 square metres north of L1 T127

3. Environmental context

This section provides an overview of the environmental conditions that characterise Stage 1 of the Project area. The information provided relates specifically to those factors which affect archaeological site distribution and preservation.

3.1. Physiography and climate

Physiographically, the Project area lies within the southeastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council 1987). Droughts are common.

3.2. Paleoenvironment

What is now the Lower Murray-Darling Basin, 26-3 million years ago was intermittently submerged beneath the sea. At this time, an event occurred which led to the uplifting of a geological formation called the Pinnaroo Block. Located at the mouth of the now Lower Murray River, the uplifted Pinnaroo Block created an ancient inland Lake known as Lake Bungunnia (Murray-Darling Basin Authority 2020; Page et al. 2009). Lake Bungunnia was a shallow lake and existed for roughly two million years during a period when the climate was expected to have either been much wetter than it is now, or underwent considerably less evaporation, with humid conditions and potentially, vastly more vegetated. Six hundred thousand years ago, the Pinnaroo Uplift was breached, resulting in the draining of Lake Bungunnia. It has been suggested that semi-regular marine incursions and retreats followed by the draining of Lake Bungunnia lead to the creation of the Paleo Murray (Butler et al. 1973: 4; Page et al. 2009: 20). It is assumed that most of the sand now covering this area of southeast Australia was deposited during the periods of intermittent marine incursion (Murray-Darling Basin Authority 2020).

Alluvial Plains of the Lower Murray-Darling Basin are the seasonal flood plains contiguous with the extensive waterways that make up this area (Butler et al. 1973: 7). These alluvial plains can be characterised generally by grey clays and silty clays which host larger Eucalyptus species such as River Red Gum, Grey Box and Black Box species which require larger amounts of water to survive (Butler et al. 1973: 7). These soils are generally less saline due to denudation and accumulation processes related to

semi-regular flood events. Alluvial plains and fluvial channels were subject to periods of heavy water flow balanced with periods of no water flow whereby sediment was deposited and then denuded (Page et al. 2009: 21) creating complex lenses and layer stratigraphy. To lead to this, ancestral rivers were thought to have been deep and sinuous channels without levees, able to maintain their course across broader alluvial plains, suspected to be immediate precursors to modern channels whose alluvial plains exist within the larger ancestral channel traces (Page et al. 2009: 21). The Lower Murray-Darling Basin alluvial network can be described as an expression of single channel, anabranching and distributary patterns with a downstream decline in channel size representative of a lack of perennial floodwater retention in lakes, wetlands and lagoons with attributable losses from evaporation and infiltration (Page et al. 2009: 21).

During the late Pleistocene the Darling River followed that of the Darling Anabranch and its upper reaches north of Lake Tandou (Balme 1995). Loss of efficiency of this sinuous channel caused a transition to the present river channel in the early Holocene, probably around 9-7, 000 years ago (Balme 1995). In the upper reaches of the Anabranch system, Pleistocene sites are mainly associated with the Anabranch and its overflow lakes, and Holocene sites are associated with the present course of the Darling River and its overflow lakes (Balme 1995; Anderson et al 2017).

Drier areas away from waterways and alluvial plains tend to resemble undulating sandplains and dunefields (widespread and distinctive patterns of dunes), vegetated predominately by Mallee (Eucalypt scrub), and is comprised of aeolian sands overlying aeolian solonised loams. Both soil types are prone to deflation, especially during periods of drought and grazing (Butler et al. 1973: 4-5). Aeolian landforms tend to occur in lowland areas and are commonly separate from riverine landforms. The most common representation of these landforms involves the accumulation of sandy material creating dunes and sand ridges:

...deflationary forms are represented by the occurrences of sheet erosion known as scalds, and may also be represented by the occurrence of dry lake basin (Butler et al. 1973: 12).

Scalds are a deflationary feature whereby surface and subsurface soils are removed by wind exposing subsoil often impervious to water; this landform also known as a claypan. It is believed (Butler et al. 1973) that these dunes are fixed by mallee vegetation and that deflationary features are generally more modern, within the last 200 years. Sand ridges associated with the mallee region typically contain more clay as well as soft lime and/or calcrete. Dunefields, however, are generally more undulating and frequently contain less clay and calcrete (Butler et al. 1973: 13).

Lunettes are a unique feature to Australia; they tend to have a crescentic shape and can be comprised from both clay and sand, sometimes containing gypsum or salts (Butler et al. 1973: 13). Generally,

lunettes are formed over a process of flooding and drying events whereby a lake will retain water during floods seasonally or perennially, and intermittently dry out. Lunettes form during these dry lake phases, as deflationary processes move lakebed sediments from those beds and blow them unto the lakes bank. As prevailing wind direction in these areas is predominantly consistent, it creates a crescent shape as these deposits build up over time. Lakes that stay full longer tend to create more sandy lunettes as sand blows in from the surrounding dunefields. Whereas lakes that regularly dry out/are drier for longer tend to create more clayey lunettes, as the lakebed clays are exposed to deflationary processes for longer periods of time (Bowler et al. 2012: 275). From around 50,000 to 25,000 years Before Present, increased surface runoff and reduced evaporation resulted in high groundwater levels and full lake levels in the region. Approximately 25,000 years ago the lakes shrank and become shallow and saline. Lakebed deposits were reworked forming lunettes associated with the lakes and longitudinal sand dunes were reactivated. The last major phase of dune building occurred around 15,000 years ago. Since then only minor climatic have occurred and the effect on landscape development has been minimal (Fox 1991: 446).

3.3. Land systems

Land systems are mutually exclusive complexes that contain similar environmental components such as climate, geology, landform, soil and indigenous vegetation (Rowan 1990). Land systems form useful discrete units for describing and analysing the landscape.

Ten land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Stage 1 Project area. These 10 land systems above can be placed into three major geomorphic categories as follows:

Sandplains – Bulgamurra, Hatfield, Menilta, Overnewton, Roo Roo

Dunefields – Arumpo, Mandelman

Alluvial Plains - Canally, Darling, Riverland

A summary description of the land systems, landforms and related archaeological sensitivity is provided in Table 1-2. Further detail can be found in the Addendum ASR (Everick Heritage 2022a: Table 6.4).

3.4. Land use history

The Project Area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. As a result of grazing and subsequent devegetation of the

landscape erosion is high and the landscape can be considered as primarily a degrading landscape although aeolian processes also assist in some aggradation with windblow sands. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Recreational use of the riverbanks is common. Until recently however, there has been no large-scale clearance of the land in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas.

4. Archaeological context

The Archaeological Survey Report (ASR) prepared by Everick Heritage (Edmonds 2022a) provides a comprehensive review of the background archaeological literature pertinent to the Project area as a whole. The following is expanded on from Edmonds (2022) and is relevant to the archaeological context for the Stage 1 Project area.

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope et al. 1983). These sites share a number of common elements consisting invariably of shell midden with small components of each site being made up of stone artefacts, hearths, hearthstones, and other faunal material. Ancestral Human Remains (burials) are rare in these sites or locations. The cultural horizon of each site is generally shallow, although the horizon itself may be buried by as much as one metre of sterile sediment.

In 1977, McIntyre (1977; 1981) conducted an archaeological survey of a 220 kV transmission line commencing at Red Cliffs, along the Murray River in Victoria and continuing northwest through to Broken Hill (Figure 6 1). McIntyre (1977; 1981) analysed the distribution of sites in relation to specific geomorphic features or landforms and concluded that the Darling River survey unit was the most productive archaeological area along the Broken Hill transmission corridor. This conclusion is supported by more recent surveys undertaken along the Darling by Edmonds (1998; 1999a; 1999b; 2000).

One of McIntyre's (1977) sites at Sturts Billabong (AHIMS ID 39-5-0010), along the Darling River 1 km to the west of the Project area, has been the subject of further research (Littleton and Blair 1993). The site at Sturts Billabong consists of a large sand dune measuring approximately 500 m x 150 m. It is possible that the site is located in the general vicinity of Sturt's first camp on the Darling River when he journeyed up there between 1844-1846. The centre of this dune has eroded to reveal 36 human burials, numerous burnt clay heat retainers from old fireplaces or hearths, and about 22 small campsites or stone artefact scatters. There are also sparse remains of freshwater mussel, fish and yabby scattered about. At least 22 scarred trees surround the dune.

Edmonds (1998) conducted a salvage excavation for a sewerage pumpout station on the banks of the Murray River at Cowanna Bend, Dareton. An initial archaeological assessment of the area located the presence of an Aboriginal shell midden, the Dareton Pumpout Station site. This site comprises an extensive shell midden occurring along the low bank of the Murray River. On the surface, this midden comprises a scatter of both fragmented and whole river mussel shell. Shell fragments were commonly seen in areas where erosion has removed the upper few centimetres of soil thereby exposing shell midden. In undisturbed areas and along the exposed section of riverbank, this shell midden occurs approximately 50-100 mm below the ground surface and consists of a single, sparse layer of shell. In some cases, isolated in situ shell valves could be seen up to 150 mm below the surface. Several baked clay heat retainers were found in an exposed section of the riverbank and scattered mussel shells appeared to be associated with the burnt clay heat retainers. This archaeological feature was interpreted as an in situ cooking hearth or fireplace. Test probes were conducted inland away from riverbank but the shell midden appeared to be confined to the edge of the bank and no shell appeared in test probes 30-40 m or more inland from the river bank.

Permit conditions for the salvage excavation of the site included:

- detailed archaeological recording of any exposed stratigraphy or other archaeological features
- collection of two shell samples from any exposed section to be submitted for radiocarbon dating
- detailed description of the methods of excavation/collection and analysis used
- detailed plan of the site, including the location of the collection areas.
- summary of consultation undertaken with relevant Local Aboriginal Land Councils or relevant Aboriginal community groups.

The Consent Permit mainly concerned that area of midden impacted by the excavation of the river bank for a rising main. Shell samples were obtained from two separate in situ layers exposed in section in the rising main trench. The shell samples were submitted for radiocarbon dating and the results are as follows:

- Sample 1 290+100 Laboratory Code No. CS1385
- Sample 2 2,020+400 Laboratory Code No. CS1386

The salvage excavation has generally confirmed the nature and distribution of the site as a sparse, single layer of shell located in the undisturbed upper soil deposits along the edge of the high riverbank at Dareton. The midden appeared to be confined to within five metres of the edge of the bank. Slightly deeper and older in situ midden deposits also occur across the site area. Both deposits are recent in

origin and result from a limited range of Aboriginal occupation and subsistence activity across this part of the riverbank.

Edmonds (2002a; 2002b; 2003) undertook a number of assessments for the South Australia-NSW Interconnector (SNI) which examined a 100 m wide corridor which in some instances mirrored the current Project area particularly east of the Darling though to Buronga substation. Generally, east of the South Australian border to the Darling Edmonds (2002a; 2002b) assessed a corridor slightly to the north of the current Project area.

Across a number of surveys, between 1998 and 2003, Edmonds recorded 66 Aboriginal sites. Along with scarred trees, open campsites and isolated stone artefacts dominated the SNI corridor landscape. Generally, these sites were predominantly composed of hearths with a sparse distribution of stone artefacts. Stone artefacts were mainly manufactured from silcrete with smaller components of chert, quartz, quartzite and sandstone present. Both silcrete and chert occur locally from pedogenic rocks which outcrop in the cliffs along the Murray (chert at Paringa in South Australia and silcrete at Berribee on the Lindsay River in Victoria). Silcrete seams are also widespread throughout the region between Wentworth and Broken Hill (eg at Mungo) but the sources are generally small and widespread. One such seam occurs on Talgarry Station (just south of the Project area) in the vicinity of Lake Victoria (Hope 1998: 342). The quartz, quartzite and sandstones would have come from older metamorphic and volcanic rock outcrops, such as those in the Barrier Ranges to the north and are likely to have been traded into the area through a complex of exchange networks. The artefact assemblage on campsites primarily consisted of unmodified flakes and occasional cores. A small number of retouched and/or utilised flakes and grindstones were noted. There did not appear to be any distinctive patterning of artefact distribution either within or between sites.

Middens mostly occurred as shallow accumulations of individual shell heaps comprising freshwater mussel shell. The fragmentary nature of much of the shell exposed on the surface of these sites made it difficult to distinguish between lake mussel shell (*Velesunio ambiguous*) and river mussel shell (*Alathyria jacksoni*) although it is most likely that the distribution of river mussel was confined to the river margins whilst the lake mussel was confined to middens found north and west of Lake Victoria (2002b: 43). River snail (*Notopala sublineata*) was only noted at one site, an extensive midden on the riverbank along the western side of the Darling and occurred as single shell lenses or one-off meals within a larger midden complex.

The shell middens recorded within the Darling land system appeared to comprise extensive but shallow linear accumulations of both scattered and in situ individual shell lenses in a dark grey ashy clay matrix in association with burnt clay hearths and stone artefacts.

Stone artefacts were occasionally noted in association with the middens but were rare. Ubiquitous in situ and scattered hearths formed a major component of most middens (2002b). There were no vertebrate faunal remains noted in the shell middens recorded along the corridor. Hope (1998: 347), however, discovered a wide range of faunal remains during excavations of shell middens at Lake Victoria but these were very fragmented. Therefore, the lack of faunal remains in association with shell middens in the SNI corridor landscape may be a perception related to the highly fragmented nature of the bone. This fragmentation is most likely related to food processing (Hope 1998: 347).

Edmonds (2002a; 2002b; 2003) survey results indicated there was evidence for Aboriginal occupation across the majority of the SNI corridor and that landforms associated with permanent and ephemeral water sources were a primary focus for Aboriginal settlement. The evidence for occupation along the corridor appeared to represent two different settlement patterns based on seasonal availability of water.

- Large open campsites and/or extensive shell middens, which are located along permanent water sources (riverine corridors), such as the Darling and Anabranch Rivers. These larger sites represent base camps occupied for extended periods of time during the drier summer months when food and water resources were restricted. These sites could have been re-occupied on an annual basis
- 2. Seasonal or transient camps located around ephemeral water sources which probably supported small mobile groups of people for short periods of time when increased rainfall in winter months filled the back channels and billabongs, depressions, claypans, sinks and scalds which facilitated travel through the more marginal land systems. Animals and birds would also be attracted to the seasonal water sources providing food normally restricted to the Riverine corridors in drier seasons. Transient camps or seasonal camps are the second pattern of settlement along the corridor and are represented in the landscape by small open campsites/surface scatters, isolated hearths and hearth complexes, isolated artefacts and scarred trees.

5. Test excavation

5.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation were to:

- Establish if subsurface archaeological deposit is present within those PADs and sites identified as being directly impacted by Disturbance area A and Disturbance area B Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation was limited to those areas of PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B (required tree clearance). Test excavation was also undertaken for those two sites identified in Table 1-1 as having high potential for subsurface archaeological deposit.

5.2. Timing and personnel

Test excavation for both Stage 1 and Stage 2 was conducted between the 10 February to the 28 June 2022. During this time test excavation was supervised by the following Everick Heritage personnel across the test excavation program:

- Vanessa Edmonds (Principal-Project manager)
- Aaron Fogel (Principal)
- Roark Muhlen-Schulte (Principal-Field supervisor)
- Cailtin Marsh (Senior Archaeologist)

- Mitch Cleghorn (Senior Archaeologist)
- Andrew Wilkinson (Senior Archaeologist)
- Liam Neill (Senior Archaeologist)

Test excavation teams generally comprised two archaeologists and four RAP representatives, although that number fluctuated across the life of the test excavation program. RAP representatives participated in test excavation through a rostering system and a list of RAP participants and other Everick Heritage personnel are provided in Appendix B.

5.3. Sampling strategy

A sampling strategy was developed for test excavation of the Project area as part of the test excavation methodology prepared by Everick Heritage (2021b). Disturbance area A and Disturbance area B works are varied in size and shape, as are the PADs, therefore it was proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy was informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy had been calculated for:

- Disturbance area A tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks between tower sites (centreline) and from existing roads (Table 5-1)
- Disturbance area B, the latter based on an arborists's assessment for the requirement for tree removal (Table 5-1).

In all instances the aim of the sampling strategy was to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Test excavation for Disturbance area B was calculated by Catherine Curlewis (Senior Environmental Advisor, SecureEnergy) based on the following application:

- Extent of disturbance factor 50 per cent impact in B4
- Extent of disturbance factor 25 per cent impact in B10
- Extent of disturbance factor 10 per cent impact in hazard tree area for centreline

During the course of test excavation, impact for some PAD areas was refined requiring less test excavation as follows:

Table 5-1: PAD land system, landform, total area, impact area and excavation totals

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5.4. Notification

In accordance with Requirement 15c of the Code of Practice notice in writing was provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject area
- Name and contact details of the legal entity with overall responsibility for the Project
- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations
- Test excavation methodology (Appendix C).

5.5. Constraints

Weather was a major constraint to the test excavation program. From February through to the end of March, temperatures were extreme and often in the region of 40 degrees Celsius which slowed progress and the ability to work long days in the field. From mid April on unseasonable wet weather delayed fieldwork with roads being closed to vehicle traffic and access into some area such as adjacent to the Darling River not being possible.

Access was constrained by the need to provide adequate notice to landholders for access which in conjunction with rain delays exacerbated timeframes. Covid struck the teams, both archaeologists and RAPs, in the first few months of fieldwork and led to a decrease in team numbers.

5.6. Test excavation methodology

Test excavation followed the methodology that was prepared by Everick (2021b) and approved by the RAPs (Appendix C). The methodology employed is summarised below.

5.6.1. Test excavation units

Test excavation comprised a combination of 1 m x 1 m Test Pits (TP) and 0.5 m x 0.5 m Shovel Test Pits (STP) that proceeded to an archaeologically sterile layer. Test excavation units were combined where required. Each landform was first investigated first by 1 x 1 m x 1 m TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units.

The exact location of test excavation units within the disturbance zones were determined in the field in consultation with the RAPs and in accordance with the sampling strategy. The location of these needed to be flexible to allow for minor adjustment in the field to avoid any obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD was excavated in 50 millimetre (mm) spits (vertical depth). Dependent on the results of the initial excavation unit sediments were then excavated in 100 mm spits.

Test excavation was undertaken manually by trowel, shovel or mattock. Excavation proceeded to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture and was agreed on in consultation with the RAPs.

Test excavation of PADs ceased where enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

- Maintenance of operational access tracks, and
- Landowner activities, such as access tracks, fences, cultivation (noting that management of landowners activities are not under Transgrid's control unless they specifically have a potential to impact on Transgrid's assets or require consultation/approval from Transgrid under the provisions of the *Electricity Supply Act 1995* or Transgrid easement guidelines, Living and working with electricity transmission lines).

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Figure 5-1: Not to scale. Showing the recommended exclusion zones and offsets for transmission lines (220 kV and above) from Living and working with electricity transmission lines (Transgrid 2021), which details restrictions for land owners in relation to transmission line easements and infrastructure

5.6.3. Sieving

Excavated deposit was placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments were dry sieved through 5 mm mesh onto tarps and the spoil was used to backfill test pits manually following recording. All excavation units were closed on completion.

5.6.4. Recording

5.6.4.1. Test excavation units

The location of each excavation unit was recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit was given a unique identification number. A context sheet for each excavation unit was completed in the field. Details recorded included date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings were prepared for a representative sample of excavation unit. A photograph was taken of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating were collected and curated appropriately where encountered during excavation.

All cultural material retrieved from test excavation was given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont [™] Tyvek ® paper.

5.6.4.2. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) has been submitted to the Aboriginal Heritage Information Management System (AHIMS) database to document the test excavation results where archaeological deposit was found and a site identified or existing site updated.

8. Recommendations

8.1. Guiding principles

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

The nature of the recommendations provided is based on the assessed significance of (AHIMS ID) and acknowledges the existing and potential impacts to the site. The final recommendations would also be informed by the RAPs in their responses during the next stage of consultation.

8.2. Aboriginal Site Impact Recording Form

An Aboriginal Site Impact Recording Form (ASIRF) was completed and submitted for all identified AHIMS sites as listed in Table 6-1.

8.3. Aboriginal Cultural Heritage Assessment Report

An Aboriginal Cultural Heritage Assessment Report (ACHAR) in accordance with the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011) and the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a) is being prepared for the Stage 1 Project Area to support the for the works and to consult with the registered Aboriginal parties regarding management measures provide above. This ATER forms part of that ACHAR.

8.4. Salvage recommendations and mitigation measures

Where the mitigation of impact to Aboriginal sites through avoidance cannot be achieved, the archaeological salvage of recorded archaeological sites is recommended. The final salvage requirements and salvage methodology would be decided through consultation with the RAPs. The following paragraphs outline the general salvage recommendations for the Project.

The salvage of a given site can be undertaken in a number of different methods depending on the results of the test excavation of nearby areas, the type of site in question and the works conducted in its location. As a general recommendation, it is suggested that all surface stone artefacts located within Disturbance area A and Disturbance area B, be salvaged through a surface collection program. This salvage method would involve the collection, cataloguing and analysis of all surface stone artefacts located within the impact areas. They would then be repatriated at sometime during or after completion of the project. The recording requirements would be subject to agreement with the RAPs. For scarred trees designated for removal, it is recommended that these trees be recorded as a three dimensional model (Everick Heritage 2022b).

The salvage methodology for other surface sites such as hearths and shell scatters, or partly in situ hearths and small low density shell middens will be subject to further discussions with the RAPs. This site type is very common in the Project area and they are of low scientific significance because little information can be gained from their salvage. In addition, it must be considered that it would be almost impossible to salvage every burnt clay heat retainer and fragment of shell impacted. No soil will be removed from the Project area and therefore the remnants of these sites will remain on Country close to where they originated from. Important information has been gained from the knowledge of where these sites occur in the landscape.

Where subsurface archaeological deposits have been identified within the impact areas as a result of the test excavation, the key factors to consider are the nature of the archaeological deposit and the extent of impact from the works. It is recommended that any archaeological deposit within the tower pad footprint be subject to salvage through open area excavation based on the assumption that the installation of the transmission towers will require considerable ground disturbing activity.

fall under this category. Details of the preliminary salvage recommendation per Aboriginal site and PAD are provided in Table 8-1 and Table 8-2.

Table 8-1: Assessment of impacts to archaeological sites within and adjacent to the Project boundary and RMMs for sites and objects identified during the NOHC (2021a; 2021b) survey, Everick Heritage (2022a) additional survey and test excavation (Everick Heritage 2022b)

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Maps

Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. Shovel Test Pits were used to determine the presence and extent of archaeological deposit in a controlled excavation of 100 mm spits

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits$

Appendix B – Field personnel

Appendix C – Test excavation methodology

EnergyConnect (NSW – Western Section)

Aboriginal Archaeological Test Excavation Methodology

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00002)

October 2021

Wentworth Local Government Area
Report Reference:

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Executive summary

On 29 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW section of Project EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

The Environmental Impact Assessment (EIS) for the NSW – Western Section (the Project) of EnergyConnect was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) the Project is yet to be determined by the Australian Minister for the Environment.

AH4 of the RMMs from the Response to DPIE Request for Information (Transgrid 2021b) states that:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the test excavation methodology for the applicable potential archaeological deposit (PAD) areas.

The Project area for this test excavation methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This test excavation methodology applies to those PADs/sites identified in Table 5-1.

The primary aims of this test excavation methodology are to:

- Inform a test excavation program based on the results of the Addendum CHAR and RMMs
- Provide the test excavation methodology to the registered Aboriginal parties and Heritage NSW for the Project for discussion, comment and agreement.

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the test excavation methodology, in particular:
 - Whether mechanical test excavation would be an option to use (section 6.7.2)
 - Discussion of a temporary repository (section 6.9)
 - Long term care and management of recovered archaeological materials (section 6.9)
- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

This test excavation methodology also provides background information on the previous Aboriginal cultural heritage assessments undertaken (section 4.2), land system sensitivity modelling (sections 4.3 and 4.4) and a summary of the impact assessment of the current design and construction methodology on PADs/sites requiring test excavation (section 5). The methodology offers a test excavation strategy (section 6.2), sampling strategy (section 6.5), methodology (section 6.7) and requirements for reporting on test excavation (section 6.8).

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers).

Disturbance area A works are varied in size and shape, as are the PAD, therefore it is proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy has been informed through the proposed disturbance footprint within previously identified PADs. For the purposes of explanation, the sampling strategy has been calculated for:

- tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks from existing roads) (Table 6-1)
- access tracks between tower sites (Table 6-2).

In all instances the aim of the sampling strategy is to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area. Although the current sampling has only been applied to those PADs identified in AH4 of the RMMs, the sampling strategy would be applied to all future PADs identified through further survey required by AH3. The sampling strategy and processes described in this methodology would also be applied to Disturbance area A (centreline clearing) and Disturbance area B within PADs once the nature and extent of these activities has been defined.

Table 6-1 calculates the proposed total excavation area for towers sites, aggregated by PAD. For greater detail on the exact excavation area for each tower site see Appendix B.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHA	R Addendum Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATER	Archaeological Test Excavation Report
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Red	quirementsAboriginal cultural heritage consultation requirements for proponents2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
Draft Conditions	s Draft Conditions of Approval Revision 3 (August 2021)
EIS	Environmental Impact Assessment
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)

EPBC Act Environment Protection and Diversity Conservation Act 1999 (Cth)

Everick Heritage Everick Heritage Pty Ltd

the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW			
ha	hectares			
km	kilometres			
m	metres			
mm	millimetres			
NOHC	Navin Officer Heritage Consultants Pty Ltd			
NPW Act	National Parks and Wildlife Act 1974 (NSW)			
OEH	Office of Environment and Heritage (now Heritage NSW)			
PAD	Potential Archaeological Deposit			
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border			
RAP	Registered Aboriginal Party			
RMMs	revised mitigation measures			
S	means section			
SNI	South Australia and New South Wales Interconnector			
STP	Shovel test pit(s)			
test excavation r	nethodology Aboriginal archaeological test excavation methodology			
ТР	Test pit(s)			

1. Introduction

1.1. Project background and legislative context

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the Project) (and to which this methodology relates)
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Diversity Conservation Act 1999 (Cth)* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The Environmental Impact Assessment (EIS) was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the EPBC Act the Project is yet to be determined by the Australian Minister for the Environment.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological test excavation methodology (test excavation methodology).

1.2. Project area

The Project area for this test excavation methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This test excavation methodology applies to those identified areas of potential archaeological deposit (PAD) impacted by Disturbance areas A (see section 5.2) within the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b).

1.3. Previous archaeological investigation

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised mitigation measures (RMMs) identified in Appendix G of the Response to DPIE Request for Information (Transgrid 2021b). AH4 of the RMMs states that:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

1.4. Aims and objectives

The primary aims of this test excavation methodology are to:

- Inform a test excavation program based on the results of the Addendum CHAR and RMMs and refined design and construction methodology
- Provide the test excavation methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This test excavation methodology has been prepared in line with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

This test excavation methodology will be conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Vanessa undertook previous surveys along an earlier version of the transmission line corridor (South Australia - NSW Interconnector) in conjunction with some of the Aboriginal stakeholders identified for the current Project area and has a comprehensive understanding of the archaeological and cultural landscape of the Project area. Vanessa has also undertaken numerous Aboriginal cultural heritage assessments within the Project region having owned and operated her own consulting practice based in Dareton and Mildura for 22 years.

Robbie Mazlin (Archaeologist, Everick Heritage) provided input into the calculations for the sampling strategy wording and mapping. Upload of GIS data and analysis was undertaken by Patrick Burke (Principal-GIS, Everick Heritage).

APPENDIX 1 – DEVELOPMENT LAYOUT



Figure 1-1: The Project area

EVERICK HERITAGE

2. Legislative context

2.1. Commonwealth legislation

2.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.2. State legislation and codes of practice

2.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

2.2.2. National Parks and Wildlife Regulation 2009 (NSW)

2.2.2.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

Establish the requirements for undertaking test excavation as a part of an archaeological investigation
without an AHIP. If these requirements are complied with and harm is done to an Aboriginal object
when undertaking test excavations, those actions will be excluded from the definition of harm and as
such will not be considered as committing an offence of harm to an Aboriginal object. Although no
AHIP is required for this Project the intention would be to conduct test excavations generally in line
with the Code of Practice.

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW Act*. The Code of Practice also states that for test excavation Aboriginal consultation must be completed to the stage described in subclause 80C(5c) of the *NPW Regulation*.

2.2.2.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, changes to design and construction methodology require that steps 2-4 are repeated. The test excavation methodology would be presented at Stage 2.

2.2.2.3. Aboriginal Cultural Heritage Assessment

Division 2 s 61 of the NPW Regulation, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. An Aboriginal cultural heritage assessment report (ACHAR) is a written report detailing the results of the assessment and recommendations for actions to

be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment. For the purposes of this Project the ACHAR will support any mitigation measures or recommendations where harm cannot be avoided.

3. Consultation strategy

3.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodviersity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process through to March 2021. It must be noted if there has been a lapse of 12 months in the consultation process for a Project, Heritage NSW may expect the process to be recommenced from Stage 1 of the Consultation Requirements (section 2.2.2.2).

3.2. Registered Aboriginal Party engagement

As part of AH2 of the RMMs, it is stated that engagement with RAPs will consist of the following:

test excavation activities (AH4) – review of proposed methodologies and involvement in the test excavation activities in the field (NOHC 2021: Table 11.1).

Consequently, this test excavation methodology will be presented to the RAPs listed in section 3.1 for discussion and comment. Any comments arising from the discussion will be incorporated into the final test excavation methodology.

3.3. Consultation process

Open, honest and ongoing communication between Transgrid, SecureEnergy, the RAPs and the Project archaeologists is vital to the success of the Project. To comply with Stage 4 of the Consultation Requirements this draft test excavation methodology will be presented to the RAPs for discussion and comment. Any comments arising from the discussion will be incorporated into the final test excavation methodology.

Virtual or in person meetings are proposed to be held in the region to present the Aboriginal Cultural Heritage Strategy. It is proposed that this test excavation methodology would be provided with the survey methodology (Everick Heritage in prep). Following receipt of the methodologies and at some stage during the 28 day review period it is proposed that a stakeholder meeting of the RAPs be held to:

- Re-engage the RAPs with the Project
- Present the methodologies
- Engage with the RAPs
- Provide a venue for discussion and comment.

Where key individuals or representatives of key organisations are unable to attend meetings, or where Covid restrictions are still in place, virtual meeting options will be implemented, with the Environmental team and Everick to present the methodologies and record comments. There is also potential for up to three meetings to be held within the Project region to accommodate stakeholder travel and time constraints if virtual meetings are not possible.

The proposed process for consultation with RAPs is as follows:

- Provide test excavation and survey methodologies
- Follow up with phone calls to RAPs to ascertain availability for stakeholder meeting and preferred venue (likely to be Dareton, Wentworth, Buronga, Mildura)
- Send meeting invites and agenda for stakeholder meeting(s)
- Follow up with phone calls to RAPs to ascertain attendance at meeting or alternate one on one meeting requirement
- Hold virtual or in person stakeholder meeting(s) providing resources such as a powerpoint presentation in addition to roll out maps relating to the areas across which the methodologies relate
- Finalise survey and test excavation methodologies incorporating any comments or recommendations from the RAPs and send out to RAPs.

Whilst this process is likely to take a maximum 28 day period it is anticipated that by approaching RAPs on an individual basis where necessary either in person or by phone the process may be able to be shortened.

3.4. Consultation aims

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the test excavation methodology, in particular:
 - Whether mechanical test excavation would be an option to use (section 6.7.2)
 - Discussion of a temporary repository (section 6.9)
 - Long term care and management of recovered archaeological materials (section 6.9)
- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

4. Archaeological context

This section provides a brief summary of the archaeological landscape as background to the test excavation methodology. Note that an updated Aboriginal Heritage Information Management System (AHIMS), in accordance with Requirement 1b, is not considered necessary at this stage of the Project. Transgrid has provided the AHIMs Aboriginal Site Recording Forms (ASRF) as prepared by NOHC (2021a; 2021b) for all newly recorded sites.

4.1. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes 55 kilometres (km) to the north of the Project. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

4.2. The Project area

Two Aboriginal Cultural Heritage Assessment Reports have been prepared for the Project by NOHC (2021a; 2021b). The following sections 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6 provide a summary of the assessment, survey methodology and results.

4.2.1. Predictive modelling

NOHC (2021a) conducted background studies across a one km wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and the

NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 4-2. This suggested that:

- The largest and most dense archaeological sites correlate to freshwater resources (lakes, rivers, claypans and swamps)
- Sand bodies including lunettes and dunes, are of high sensitivity due to their association with Aboriginal burials
- Transitional zones between plant communities may be a predictor for Aboriginal occupation
- Aeolian sands commonly obscure surface sites within the region, and ground exposure and visibility should be considered where assessing site significance as well as subsurface potential.

4.2.2. Field survey

Field survey of the survey area was undertaken between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Relocate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian survey of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars. One section of the transmission

corridor approximately 5.4 km in length, south of the Buronga substation was unavailable for survey due to landowner access restrictions.

4.2.3. RAP field representatives

The following Aboriginal representatives participated in the field survey:

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4.2.4. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 4-1). NOHC (2021a) state that:

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Table 4-1: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

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4.2.5. Results

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Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: figure 8.8)

4.2.6. Recommendations

NOHC (2021b: Table 11.1) recommended that in developing the detailed design and construction methodology, the construction contractor would review the location of all identified PADs and aim to avoid and/or minimise direct impacts to the identified PADs. Where direct impacts cannot be avoided, then test excavation programs would be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations would be to determine the presence or absence and significance of subsurface archaeological deposits. These test excavations would be carried out in accordance with a methodology that is presented to and consulted

on with the RAPs and test excavation addendum report/s to the ACHAR would be prepared for each test excavation program(s) to detail findings of the test excavation activities

4.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 4-3 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 4-2 and Table 4-1 although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, has been used to understand the requirement and potential for test excavation within the disturbance areas of PADs along the Project, particularly with regard to the nature of the sediments potentially encountered and likely archaeological deposit (Table 6-1).

It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002).

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Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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Table 4-3: Land systems, landforms and archaeological sensitivity based on Witter et al (in prep) and Edmonds (2002)

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4.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

4.4.1. Shell middens

Shell middens dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the freshwater snail (*Vivipara notopala hamelyi*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

4.4.2. Open campsites

Open campsites or surface scatters containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

4.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences or in groups forming hearth complexes. They are generally found close to drainage features in the landscape.

4.4.4. Ancestral human remains

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¹ That is 1950

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4.4.5. Isolated artefacts

Isolated Artefacts comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

4.4.6. Culturally scarred trees

Scarred trees generally consist of River Red Gums (Eucalyptus camaldulensis) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

5. Impact assessment

5.1. Mitigation measures

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Furthermore, Table G-1 (AH1) (Transgrid 2021b) states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

Table 5-1: Revised mitigation measures from Table G-1 (AH4) of the Response to DPIE Request for Information (Transgrid 2021b)

Reference	Mitigation measure	Timing	Applicable locations
AH4	In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.	Detailed design and pre-construction impacts to sites/features/ PADs	
	Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.		
	Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.		
	Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will:		
	 detail findings of the test excavation activities 		
	 outline how the detailed design has been further developed to avoid or minimise 		
Reference	Mitigation measure	Timing	Applicable locations
---	--	--------	-------------------------
	impacts to the identified constraints/features of significance/PADs		
	 as applicable, detail any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing for these to be implemented 		
	• be presented to the RAPs for comment.		
Final reports will be provided to RAPs and to Heritage NSW prior to the commencement of construction that impacts these locations. The addendum report(s) may be staged to enable progressive commencement of construction. Any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing of implementation, will be included with the Construction Environmental Management Plan and implemented accordingly.			

Further survey as required by RMM AH3 may lead to the identification of additional new PADs or to the extension of existing PADs. Any new PADs or extensions to existing PADs will be assessed with regard to their potential impact from Disturbance areas A and B and where impacted will be subject to test excavation as under the methodology proposed here.

Table 5-2: Details of PADs and sites. PAD significance, potential and justification and associated sites as identified by the Amendment Report

5.2. Direct and indirect impacts

Potential impacts and the total or partial loss of heritage value were assessed in the Addendum CHAR based on the Amendment Report design and proposed construction methodology. The type of impacts attributable to construction described in the Addendum CHAR include:

- Direct impacts: impacts that move or physically alter items, objects, or features of a site. This includes, but is not limited to, direct physical impacts to midden/shell, hearths, stone artefacts, and scarred trees. Also, as impacts that directly and physically disturb the sediments and deposits of potential archaeological deposit (PADs).
- Indirect impacts: potential impacts identified for sites located outside the disturbance area include, the physical disturbance from surface water drainage or other mechanism

Direct impacts were grouped into disturbance areas and are described below and illustrated in Figure 5-1:

- Disturbance area A this is the area where ground disturbance would be required. It refers to an area around the transmission towers in which all vegetation would be removed during construction. It would include potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. This area would also be subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire).
- Disturbance area A (centreline clearing) Refers to a 10 m wide area along the centreline alignment between the proposed transmission towers in which all vegetation would be removed during construction to ground however topsoil materials and ground material would be retained, where possible and would not likely result in sub-surface impacts in these locations. Plant and equipment movements would occur through the centreline, particularly during vegetation clearing activities, however, this is not the primary means of access. The area would be subject to ground disturbance where tree removal is necessary and vegetation root-balls are required to be removed. This area would also be subject to ongoing maintenance during operation (ie removal to ground level) for operational and safety requirements (including bushfire).
- Disturbance area B Refers to a 60 m wide area from the centreline alignment between and around transmission towers in which removal of vegetation (including trees) would be undertaken where they have the potential to exceed vegetation clearance heights. The removal (which may include the removal of vegetation root-balls) may result in temporary ground disturbance. Plant and equipment movements would occur in this area during vegetation clearing activities.



Figure 5-1: Schematic of Disturbance areas A and B

5.3. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

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Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the test excavation described in this methodology).

The RMMs state that where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being

removed). Disturbance area A locations on PAD sites which have been included in the test excavation sampling strategy have been identified as:

- Tower locations including tower laydown areas
 - For the self supporting towers, footings are located approximately 20 m inside of the four corners of the permanent tower pads. The associated piles would be at a depth of between 9 m and 16 m and located at the footings.
 - For the guyed towers, footings are located approximately 5 m inside of the four corners of the tower pads and at the centre of the tower pad. The associated piles would be at a depth of between 7.5 m and 16 m and located at the footings
 - Depth of disturbance is approximately 300 mm across the tower assembly area.

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The three tower site layouts as explained above are presented in Figure 5-2 to Figure 5-4.

Disturbance area A (Centreline clearance) is between 0 m and 5 m on either side of the centreline (10 m in total). Generally, this area would be slashed, however trees would need to be removed which would result in ground disturbance from root removal. Disturbance area A (centreline clearance) and Disturbance area B activities are yet to be fully defined and these areas are not included in the test excavation sample provided in Table 5-3 or Table 6-1.

Following verification of the nature and extent of disturbance within the Centreline clearance in consultation with SecureEnergy and an analysis of where this intersects with identified PADs the test excavation methodology and the sampling strategy can be rolled out to those areas.

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Figure 5-2: Example of guyed tower layout

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Figure 5-3: Example of light suspension tower layout

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Figure 5-4: Example of light angle strain brake/winch tower layout

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Table 5-3: Details of PADs and proposed disturbance

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6. Test excavation

6.1.1. Preamble

Project EnergyConnect is being assessed under Division 5.2, Part 5 of the *Environmental Planning & Assessment Act (NSW).* Under section 5.23 of the *EP&A Act (NSW)*, the following authorisations are not required under other legislation for the Project:

• Aboriginal heritage impact permits under section 90 of the *National Parks and Wildlife Act 1974* (*NSW*).

Consequently, where Requirement 14 of the Code of Practice states that an AHIP is necessary for test excavation within 50 m of a rock shelter, shell midden or earth mound, this will not apply to the Project area.

The RMMs from Table G-1 (AH4) of the Response to DPIE Request for Information (Transgrid 2021b) states:

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Table 6-1 and Table 6-2 provides a list of those PADs requiring test excavation for Disturbance area A (excluding centreline clearing) activities. This list would need to be verified and updated on a regular basis against the spatial data and any further refinements to design and construction methodology.

6.2. Test excavation strategy

In accordance with the Infrastructure Approval, Condition D29 requires preparation of an Aboriginal Cultural Heritage Strategy as outlined below:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010)

This test excavation methodology will inform the Aboriginal Cultural Heritage Strategy to satisfy Condition D29 b).

6.3. Aims and objectives of test excavation

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation would be to:

- Establish if subsurface archaeological deposit is present within those PADs identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation would be limited to those PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B. The test excavations will be undertaken with representatives of the RAPs. Any cultural knowledge and/or management recommendations recorded for Aboriginal cultural heritage during the excavation would be recorded and incorporated where appropriate into an Archaeological Test Excavation Report.

6.4. Research questions

Research questions provide a framework for undertaking test excavation and ensure that the information collected during the program contributes to the knowledge of sites locally and within the regional archaeological record. The test excavations will attempt to address the following research questions:

- Do stratified in situ deposits exist within those PAD potentially impacted by the Project works?
- How does any subsurface archaeological deposit relate to associated AHIMS registered sites in the vicinity?
- How does the nature of any archaeological deposit compare with other excavated archaeological sites in the region?
- Are there features such as hearths (as represented by lenses of ash and charcoal) present?
- Are stone artefacts present and if so, what is the nature of the stone artefact assemblage?
- If shell midden exists what is the nature and composition of the deposit?
- Is it possible to determine the age of the archaeological deposit?
- How does the nature of any archaeological deposit present fit any predictive model developed for the Project?
- What is the scientific and cultural significance of the archaeological deposit?
- What are the best mitigation measures to prevent further harm to archaeological deposit from the Project works?

6.5. Sampling strategy

The Code of Practice (2010a: 25) states that a test excavation sampling strategy must be developed and must do the following:

- provide a framework for sampling all PAD that are at risk of harm (within the subject area)
- describe the differentiation of the PAD to be test excavated from the surrounding archaeological landscape (i.e explain why the PAD is anticipated to be of higher significance than the continuous distribution of archaeological material in which it exists²), and:

 $^{^{\}rm 2}$ This has been established by NOHC 2021b: see Table 5-2 this report.

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- test those areas of PAD that have no archaeological exposure or visibility, or
- test the boundaries of known sites (where appropriate)
- confirm areas of low potential (where relevant)
- comply with the methods described in the Code of Practice
- describe how the sampling area relates to the area that is proposed to be impacted by the proposed activity.

The strategy developed here provides a framework for the sampling of all PADs that will be impacted by Disturbance area A activities across the Project. Although the current sampling has only been applied to those PADs identified in AH4 of the RMMs, the sampling strategy would be applied to all future PADs identified through further survey required by AH3. The sampling strategy and processes described in this methodology would also be applied to Disturbance area A (centreline clearing) and Disturbance area B within PADs once the nature and extent of these activities has been defined.

The Code of Practice (2010a: 26) states that:

ii) the maximum surface area of all test excavation units must be no greater than 0.5% of the area – either PAD or site – being investigated.

Disturbance area A works are varied in size and shape, as are the PAD, therefore it is proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy has been informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy has been calculated for:

- tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks from existing roads) (Table 6-1)
- access tracks between tower sites (Table 6-2).

In all instances the aim of the sampling strategy is to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Table 6-1 calculates the proposed total excavation area for towers sites, aggregated by PAD. For greater detail on the exact excavation area for each tower site see Appendix B.

6.6. Notification

In accordance with Requirement 15c of the Code of Practice at least 14 days notice in writing will be provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject are
- Name and contact details of the legal entity with overall responsibility for the Project
- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations.

A copy of the sampling strategy for this test excavation would also be provided although it is anticipated that earlier discussions will have taken place with Heritage NSW with regard this test excavation methodology.

Table 6-1: Total proposed tower excavation area and methodology by PAD, land system and landform

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6.7. Test excavation methodology

6.7.1. Manual test excavation units

Test excavation will comprise a combination of $1 \text{ m} \times 1 \text{ m}$ Test Pits (TP) and $0.5 \text{ m} \times 0.5 \text{ m}$ Shovel Test Pits (STP) that will would proceed to an archaeologically sterile layer. For example, to achieve a total excavation area of approximately six square metres (e.g., Tower 249), $5 \times 1 \text{ m} \times 1 \text{ m}$ TPs and a further $2 \times 0.5 \text{ m} \times 0.5 \text{ m}$ STPs may be completed, or $1 \times 1 \text{ m} \times 1 \text{ m}$ TP and $22 \times 0.5 \text{ m} \times 0.5 \text{ m}$ STP.

Alternately, test excavation units may be combined depending on the circumstances being investigated for example:

- 2 m x 1 m test excavation trenches
- 3 m x 1 m test excavation trenches
- 6 m x 0.5 m test excavation trenches
- other irregular shaped excavations as fit for purpose (eg a 2 m x 1 m trench with a 0.5 m x 0.5 m square on each end etc.).

Test excavation units of 120-250 mm in diameter are also proposed for testing the depth and extent of archaeological deposit (specifically midden deposit) along archaeologically sensitive linear landforms in PADs within the Anabranch and Darling land systems. Manual augering would be used supplement the results from controlled test excavations units:

to provide additional spatial information when tracing the extent and characteristics of certain lenses or layers identified in the test pits. (Aboriginal Victoria nd)

Each landform in would be first investigated first by 1 x 1 m x 1 m TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units. This size of test excavation unit was considered preferential because of the generally shallow deposits expected across the sandplains and dunefields and also to provide greater coverage for what is predicted to be low density subsurface archaeological deposit, such as artefact scatters, as per Way (2017).

The exact location of test excavation units would be determined in the field in consultation with the RAPs. The location of these will need to be flexible to allow for minor adjustment in the field to avoid any

obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

Requirement 16a of the Code of Practice states that '...Any test excavation point must be separated by at least 5 m...'. It must be noted that the test excavation of Disturbance A areas is constrained by the size of the disturbance area and the sampling size of 15 per cent. Where distance between excavation units is constrained, the option will be to combine the units to appropriately test the disturbance area while maintaining the five metre separation. It is noted that the Code of Practice requires that the maximum continuous surface area of a combination of test excavation units at any single excavation point must be no greater than three square metres.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD would be excavated in 50 millimetre (mm) spits (vertical depth). Sediments within any further excavation units may be excavated in 100 mm spits depending on the results of the initial excavation unit.

Test excavation will be predominantly undertaken manually by trowel, shovel, mattock or other manual instrument such as a hand augur. Excavation would proceed to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture.

Test excavation would cease where:

- Human skeletal remains are uncovered (see section 6.10)
- Enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

6.7.2. Mechanical test excavation units

Mechanical test excavation is not excluded from the definition of harm by the Code of Practice. Aside from floodplain or dune landforms it is likely that sediments across the Project landscape will generally be shallow and less than 500 mm in depth. However, where there are PADs located in the Alluvial Plains geomorphic unit, that is within the Anabranch, Darling and Riverland land systems, it will be necessary to consider forms of mechanical test excavation due to the dry, concreted and potentially deep alluvial sediments, particularly the grey cracking floodplain clays (Table 6-1; Table 6-2). Mechanical excavation would not be used in the Sandplains geomorphic unit which generally comprise shallow duplex soils. The fragile nature of the duplex soils and their tendency to erode on destabilisation require that manual excavation only is utilised to avoid indirect impacts to adjacent sites/PAD. Similarly, although the

Dunefields geomorphic unit has potentially deeper sediments on the crests and slopes of dunes, these sediments would require manual excavation to minimise avoid deflation across the surface (Table 6-1; Table 6-2).

Two forms of mechanical excavation should be considered for the Project as follows:

6.7.2.1. Mechanical augering

Mechanical augers are useful for reaching depths beyond that of a manual auger, when the sediments are too hard for a manual auger or to determine the linear extent of archaeological deposit, specifically shell midden deposit. They can also be of assistance in guiding the use of machine excavation under limited circumstances.

6.7.2.2. Mechanical trench excavation

Using appropriate machines, operators should be able to excavate in a controlled manner, that is in even, horizontal scrapes, utilising the stratigraphic basis that has been established previously either through a manual TP or manual or mechanical augur. Any Aboriginal cultural heritage material found through sieving should be able to be provenanced to the appropriate stratigraphic layer and approximate horizontal location. should be carried out in a controlled manner.

Mechanical excavation should be conducted in a manner that will assist in determining the nature, extent and significance of any Aboriginal cultural heritage that may be impacted by the proposed activity. Where occupation deposits or features are encountered, an attempt must be made to uncover and assess these through controlled manual excavation.

All excavated deposits would be sieved wherever possible.

6.7.3. Sieving

Dry sieving with hand held or table sieves will be employed. Wet sieving is not an appropriate method of sieving in the semi-arid region due to the difficulty of containing water runoff which can damage unexcavated archaeological deposit and surface scatters as well as the potential of water trucks to further damage archaeological sites and PADs.

Excavated deposit will be placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments will be sieved through 5 mm mesh onto tarps and the spoil will be used to backfill test pits manually following recording. All excavation units will be closed on completion and no excavation units will be left open overnight. Three millimetre sieves may also be employed where sandy or fine silt sediments occur or where there is potential for micro-debitage.

6.7.4. Recording

6.7.4.1. Test excavation units

The location of each excavation unit would be recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit would be given a unique identification number. A context sheet for each excavation unit would be completed in the field. Details recorded will include date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings will be prepared for a representative sample of excavation units. A photograph will be recorded of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating would be collected and curated appropriately if discovered during excavation.

All cultural material retrieved from test excavation would be given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker will be used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont [™] Tyvek ® paper.

6.7.4.2. Freshwater shell middens and stone artefacts

Freshwater mussel shell is fragile and is likely to become highly fragmented during the excavation and sieving process. This will impact on the quality and type of information that can be retrieved from shell during test excavation.

All midden material subject to excavation will be subject to scientific analysis including;

- Taxonomic identification to determine species diversity/ diet breadth
- Shell weight by species
- Degree of fragmentation

- Occurrence of worked shell and potential shell tools
- Presence and weight of charcoal.

Retrieved faunal remains other than freshwater mussel are likely to be rare. All faunal remains where recovered from the test excavation will be analysed using the following method:

- Minimum number of individual (MNI) animals represented in each spit and/or layer
- Minimum number of elements (MNE) represented in each discrete area and on site overall.
- Number of species (NISP) represented in each discrete area and on site overall.
- Dimensions of each element
- Butchery/heat marks
- Pathologies.

Suitable raw material for stone artefact manufacture is moderately rare in the region and stone artefacts tend to present as isolated or low density occurrences. Key attributes of all stone artefacts recovered from the test excavation will be recorded as follows:

- Raw material
- Artefact type
- Platform type
- Termination type
- Dimensions.

A photographic record will be taken for all retrieved stone artefacts and a representative sample of faunal material. All artefacts and other material would be given a unique number and stored in double resealable snap lock bags. A permanent marker will be used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont TM Tyvek ® paper.

All recorded information would be entered into a Microsoft Excel table with detail linked to the provenance of the material. Once entered into the Excel table, the data can be readily supplied with the test excavation report to the AHIMS database and RAPs in both electronic and hard-copy form.

6.8. Reporting

6.8.1. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) would be submitted as soon as is practicable to the AHIMS database to document the test excavation results where archaeological deposit was found and a site identified.

6.8.2. Archaeological Test Excavation Report

As part of AH4 of the RMMS, it is stated that:

Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will:

> detail findings of the test excavation activities

> outline how the detailed design has been further developed to avoid or minimise impacts to the identified constraints/features of significance/PADs

> as applicable, detail any additional mitigation strategies beyond those required by AH6 to AH12, and the required timing for these to be implemented

> be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Heritage NSW prior to the commencement of construction that impacts these locations. The addendum report(s) may be staged to enable progressive commencement of construction.

The results of the test excavation program will be documented in an Archaeological Test Excavation Report (ATER) to be provided as an appendix to an updated ACHAR in accordance with the D29 of the Conditions of Approval.

The ATER would provide details on the established extent and scientific significance of each of the PAD/sites investigated and would provide recommendations regarding the necessity of further archaeological investigations. If a PAD/site is assessed as demonstrating low archaeological significance, no further archaeological investigation would be recommended although surface salvage may be an option. If a PAD/site is assessed as demonstrating moderate-high archaeological significance, further archaeological work, such as salvage excavation may be required.

The ATER will provide detail on:

- RAP consultation and results
- Test excavation justification
- Test excavation location, methodology and results including a representative sample of stratigraphic drawings and photos
- Results from the analysis of recovered archaeological material
- Significance re-assessment
- Conclusions regarding archaeological sensitivity of the landscape and discussion of past Aboriginal utilisation of the landscape in light of the data
- Mitigation measures and recommendations for any further archaeological assessment or salvage
- Inclusion of all data in tables as appendices

The draft ATER would be presented to the RAPs for discussion and comment particularly around the cultural significance of PADs/sites, appropriate mitigation measures and any requirement for further archaeological assessment and/or salvage.

6.9. Management of recovered archaeological material and objects after

excavation

As identified in the mitigation measures in the Response to DPIE Request for Information (Transgrid 2021b) the following requirements need to be addressed for salvaged Aboriginal artefacts.

In the short term, archaeological material and objects recovered from the test excavation will be stored in a secure location on Country (Wentworth/Dareton/Buronga) temporarily for recording and analysis purposes. If this is not satisfactory with the RAPs then options will be explored for secure storage in Wentworth/Dareton/Buronga and analysis will be undertaken there.

A temporary repository will be identified to store any Aboriginal objects and/or non-Aboriginal heritage items or material collected prior to the finalisation of the long-term management approach for each item/material.

Consultation regarding the long-term management of archaeological material and objects recovered during the test excavation program would be undertaken with the RAPs both during and following test excavation.

6.10. Procedure for the discovery of Human Remains

If suspected human remains are discovered during test excavation, the following actions would be undertaken:

- The remains must not be harmed/further harmed
- Immediately cease all works at that particular location
- Secure the area so as to avoid further harm to the remains
- Notify the NSW Police and the Environment Line (Department of Planning, Industry and Environment) on 131 555 as soon as practicable and provide any details of the remains and their location
- Do not recommence any work at that particular location unless authorised in writing by the Aboriginal Heritage Regulation Team, Heritage NSW, Department of Premier and Cabinet.

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. STP can be used to determine the horizontal extent of archaeological deposit across an area.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. TP can be used to determine the vertical extent of possible features (such as shell middens) in a$

controlled excavation of 50 mm or 100 mm spits. They can also be expanded horizontally to reveal stratified in situ deposit where this is evident in the stratigraphy.

Appendix B – Total proposed excavation area by tower

Appendix E – Survey letter reports-additional survey

Appendix F- Scarred tree assessment

Appendix F – Aboriginal Cultural Heritage Assessment Stage 2b

EnergyConnect (NSW – Western Section)

Stage 2 (2b) - Aboriginal Cultural Heritage Assessment Report

Prepared for Secure Energy Joint Venture (45860-G-70005-REP-U-00026)

September 2022

Wentworth Local Government Area

Report Reference:

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Executive summary

Background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021 (Appendix A).

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to satisfy condition 29 a) to e) of the Infrastructure Approval and select Revised Mitigation Measures (RMMs) relevant to Aboriginal heritage (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

The Project area

EnergyConnect (NSW-Western Section) comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Cultural Heritage Assessment Report reports on the additional survey, test excavation, scarred tree assessment and cultural values assessment for Stage 2 (Stage 2b - in line with the approved staging of the Aboriginal Cultural Heritage Strategy of EnergyConnect (NSW – Western Section), that is Line (L) 1 Tower (T) 138, just east of the Anabranch, through to L1, T293 at the New South Wales and South Australia border, Renmark Road, a distance of approximately 72 kilometres (km) (Figure 1-1).

Stage 1 (Stage 2a - in line with the approved staging of the Aboriginal Cultural Heritage Strategy) of EnergyConnect (NSW – Western Section), that is L1, T138, just east of the Anabranch, through to L4,

T58 (Murray River, NSW), a distance of approximately 96 km, has been reported on separately (Everick Heritage 2022c).

Consultation

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as listed in section 4.1. A further two RAPs subsequently registered as individuals prior to additional survey and following test excavation and are also listed in section 4.1. Consultation has been ongoing throughout the EIS process, by Transgrid and by SecureEnergy with RAP reviews of all documents relating to Aboriginal cultural heritage, Aboriginal Focus Group Meetings at various stages to discuss methodologies and results, and participation by the RAPs in all phases of fieldwork. A consultation log and relevant documentation of consultation is provided in Appendix B.

Survey

RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously surveyed areas. The archaeological survey aimed to visually inspect 100 per cent of all areas not previously surveyed, therefore no sampling strategy was required. Areas to be surveyed were confirmed by SecureEnergy prior to the survey and were generally in line with the works described in section 2.
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Definitions and abbreviations

ACHAR	Aboriginal Cultural Heritage Assessment Report
AFG	Aboriginal Focus Group
AHC	Australian Heritage Council
An	Anabranch
Ар	Arumpo
Australian Herit	tage Council Act Australian Heritage Council Act 2003 (Cth)
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ALR Act	Aboriginal Land Rights Act 1983
AS	Artefact scatter
ASR	Aboriginal Archaeological Survey Report
ASRF	Aboriginal Site Recording Form
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Ве	Belvedere
BP	Before Present (that is 1950)
CEMP	Construction Environmental Management Plan
CHL	Commonwealth Heritage List
Code of Practic	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Re	2010 Aboriginal cultural heritage consultation requirements for proponents

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CSSI	Critical State significant infrastructure				
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)				
DPIE	Department of Planning, Industry and Environment (now Department of Planning and Environment				
EIS	Environmental Impact Statement				
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)				
EPBC Act	Environment Protection and BioDiversity Conservation Act 1999 (Cth)				
ESD	Ecologically Sustainable Development				
Everick Heritage	e Everick Heritage Pty Ltd				
GIS	Geographic Information Systems				
GPS	Global Positioning System				
Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW				
Hf	Hatfield				
ha	hectares				
Hy	Haythorpe				
HC	Hearth complex				
Hυ	Huntingfield				
IA	Isolated artefact				
ІН	Isolated hearth				
km	kilometres				
Le	Leaghur				

L	Line
LALC	Local Aboriginal Land Council
LGA	Local Government Area
m	metres
mm	millimetres
MNI	Minimum Number of Individuals
Мо	Morona
NISP	Number of Individual Specimens
NOHC	Navin Officer Heritage Consulting
NPW Act	National Parks and Wildlife Act 1974 (NSW)
OEH	(former) New South Wales Office of Environment and Heritage
OC	Open campsite
OSL	Optically Stimulated Luminescence
Ov	Overnewton
PAD	Potential Archaeological Deposit
Project Area	EnergyConnect (NSW – Western Section) Stage 1 (Stage 2a in line with the CEMP staged approach for the Project)
RAP	Registered Aboriginal Party
RNE	Register of the National Estate
RMMs	revised mitigation measures
RPT	Repatriation Test Pit

Response to DPIE Request for Information	the	ʻaddi	tional	letter	dated	10	Augus	t 20	21′
referenced in the definition se	ection	of the	Infrastr	ucture	Appro	val, c	locumer	nt is o	also
titled EnergyConnect (NSW	– We	estern	Section)	Resp	onse	to D	PIE Rec	quest	for
Information									

Rr	Roo	Roo

- SNI South Australia-NSW Interconnector (SNI)
- ST Scarred tree
- s section
- SEARs Secretary's Environmental Assessment Requirements
- STP Shovel Test Pit
- T Tower
- TP Test Pit
- We Wentworth

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Assessment (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Navin Officer Heritage Consulting [NOHC] 2021: Table 11.1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021 (Appendix A). The key condition of approval relating to Aboriginal cultural heritage (D29) specify that:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;

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- b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);
- c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;
- d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and
- e) include an updated Aboriginal cultural heritage assessment report, which:
- is based on the findings of the subsurface testing in b) and surveys in c);
- · describes any potential additional impacts to heritage items;
- identifies further mitigation measures, including avoidance or salvage;
- includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
- provides an updated and consolidated list of sites that would be protected and remain insitu throughout construction and sites that would be salvaged and relocated to suitable alternative locations

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake condition D29 a) to e) of the Infrastructure Approval and the select RMMs relevant to Aboriginal Heritage (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

1.2. The Project area

EnergyConnect (NSW - Western Section) comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Cultural Heritage Assessment Report reports on the additional survey, test excavation, scarred tree assessment and cultural values assessment for Stage 2 (2b) of EnergyConnect (NSW – Western Section), that is Line (L) 1 Tower (T) 138, just east of the Anabranch,

west through to the South Australian border, a distance of approximately 72 kilometres (km) (Figure 1-1).

Stage 1 (2a), that is L1 T138 east through to L 4 T 58 (Murray River, NSW) has been reported on separately (Everick Heritage 2022e).

1.3. Study objectives

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have previously been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (Navin Officer Heritage Consulting 2021b [NOHC] 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

The objectives of this Stage 2 (2b) - Aboriginal Cultural Heritage Assessment Report (ACHAR) are to fulfill condition D29 e) of the Infrastructure Approval and to assess and report on condition D29 b) to d) of the Infrastructure Approval. This ACHAR has been undertaken in accordance with the following approvals, reports and guidelines:

- Infrastructure Approval SSI 10040
- EnergyConnect (NSW Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Department of Environment, Climate Change and Water [DECCW] 2010b).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (the Guide) (Office of Environment and Heritage [OEH] 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a).
- The Burra Charter 2013 (Australia ICOMOS 2013).

1.4. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) directed the survey and test excavations and prepared the cultural values assessment. Vanessa also prepared the body of the ACHAR. Vanessa has a Bachelor of Arts in Australian Prehistory and a Master of Letters in Archaeology and Palaeoanthropology. Vanessa has over 35 years of experience in Aboriginal cultural heritage management nationally and has extensive consulting experience within the Project region.

Mapping and spatial data analysis for this project has been undertaken by Pav Klein and Brad Moreland (GIS Specialists, Everick Heritage).

1.5. Report structure

Technical reports are provided in the Appendices. The Addendum Aboriginal Archaeological Survey Report (Addendum ASR) is provided in Appendix C and the Aboriginal Archaeological Test Excavation Report (ATER) is provided in Appendix D. Additional survey letter reports are provided in Appendix E, the scarred tree assessment report is provided in Appendix F and the OSL dating report is provided in Appendix G. The purpose of this report is to document the results of an Aboriginal cultural heritage assessment of the Stage 2 (2b) Project area. As such, the structure of this report includes the following in accordance with the Guide:

- Section 1 Introduction of Project background and location; authors and ACHAR objectives
- Section 2 Description of works
- Section 3 Legislative context with summary description of the key legislation pertaining to Aboriginal heritage and the Project area.
- Section 4 Broadly describes the Aboriginal heritage consultation process relevant to this ACHAR.
- Section 5 Environmental context summarised from the Addendum ASR (Appendix C).
- Section 6 Ethnohistoric and archaeological background summarised from the Addendum ASR (Appendix C) and ATER (Appendix D) as a backdrop to the cultural values assessment.
- Section 7 Archaeological survey, results and discussion summarised from the Addendum ASR (Appendix C).
- Section 8 Test excavation results and discussion summarised from the ATER (Appendix D).

- Section 9 A summary of the arborists scarred tree assessment is provided in this section and the arborists report is provided in (Appendix F).
- Section 10 Cultural values assessment based on consultation and background research.
- Section 11 Scientific and cultural significance assessment.
- Section 12 Impact assessment of the potential impacts
- Section 13 Management and mitigation measures: outlines relevant management and mitigation measures for the Project
- Section 14 Survey maps
- Section 15 Test excavation maps
- References





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2. Description of works

2.1. Disturbance area A

The design of Disturbance area A works for the Project was provided by SecureEnergy in GIS format. Disturbance area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services cross the EnergyConnect corridor.

Further descriptions of the proposed works associated with the construction of the development are included below.

2.1.1. Transmission towers

A total of 155 transmission towers on L1, are proposed to be constructed as a part of the Stage 2 (2b) Project area. The construction of these towers will require the clearance of land across an area of approximately 60 metre (m) x 60 m depending on the type of transmission tower (guyed or self supporting). The tower footprint area is required to be that size to ensure that there is a safe working

space for the teams constructing the towers. Clearance will involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

Tower footings will be located approximately 20 m from the corners of the tower construction areas for self-supporting towers and 5 m for guyed towers. The associated piles would be constructed to a depth of between 7.5 m and 16 m. The tower footings and piles would be constructed with the use of a Soilmec drill rig. Holes will be drilled to the site-specific depth according to the engineered design calculations. Once they have met the required depth, specialised jigs are then installed which hold the foundation steel work. They are then set in place and the holes are filled with concrete.

Each tower construction area will require additional areas up to 70 m x 40 m in size. These areas would be utilised for temporary laydown and storage of tower steel, bolts and accessories and would be cleared where permitted (areas without an exclusion zone). Clearing will involve vegetation removal to ground level utilising a forest mulcher or similar type of plant. Where the proposed alignment changes direction, brake and winch sites will be required. These sites would extend up to 200 m from the centre of the tower and require a clearance of a 50 m x 30 m area in addition to a 5 m wide track which will lead to the brake and winch location. The brake and winch points will be constructed by clearing all trees in the marked-out area, root balls will be retained. This will provide a location to set out specialized machinery that enables installation of the overhead transmission line cables.

2.1.2. Ancillary tower works

There are several works which will be required in addition to the construction of the transmission towers, including the construction of access tracks, bellmouths (turning circles) and parking areas. The creation of new and upgrade of existing access tracks is proposed along the transmission corridor alignment. These access tracks run parallel to the alignment both within and outside the transmission line corridor as well as into each new transmission tower. The new access tracks will be 4 m wide with passing lanes installed in select locations and formed by grading the ground surface with a grader and / or excavator. Any spoil that is created during access track works will be utilised to form earthen bunds in the vicinity of the tracks as a manner of erosion and sediment control. Where required new fill will be laid down for stability. Any imported fill will be sourced from a registered quarry, or location approved to provide the required material. Access tracks which provide access directly to the tower location will

also be constructed with a bellmouth connecting the two tracks. These bellmouths can be up to a maximum width of 15 m and be utilised as a turning circle.

Parking areas have been proposed at each tower location and will be constructed adjacent to the proposed access tracks. The parking areas are typically 35 m x 10 m in size and will be cleared of vegetation except where exclusion zones exist. As with the tower footprints, clearance will involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

2.2. Centreline, Disturbance area B

Two clearance areas have been proposed which will be subject to vegetation management requirements between the tower locations requiring varying levels of ground disturbance. The Centreline clearance area (CCA) (Disturbance area A - centreline) refers to the centreline of the Project corridor where the draw wires will be pulled from tower to tower with the use of Challenger tractors. This disturbance area comprises a 10 m wide linear area in the centre of the alignment in which vegetation will be cleared and will be used as the main access track for moving the drill rig from to site to site during tower foundation construction and the installation of the draw wire during stringing operations. Vegetation clearance will be completed using mobile plant and equipment that is able to remove vegetation to ground level. Root balls of any removed vegetation will remain in situ to minimise soil erosion. The CCA may also be utilized as access across the transmission alignment during construction.

Disturbance area B refers to areas where selective clearing and/or management of trees will occur to maintain the minimum vegetation clearance requirements as required by Transgrid when the conductor is at maximum operating conditions. Tree management associated with Disturbance area B will be completed through the use of mobile plant and equipment with the centreline or access tracks being utilised for accessing the vegetation that requires management. Plant and equipment movements through Disturbance Area B will be limited to what is required to tidy felled trees and potentially for herbicide application.

2.3. Additional works relevant to Stage 2 (2b) only

Several additional works are required for Stage 2 (2b), which do not directly relate to the construction of the transmission line, however, are ancillary activities required to support the Project. These include:

- Construction of water fill points for provision of both potable water and construction water. A series
 of water supply points have been identified as suitable connection points to existing water supply
 pipelines. Establishment for water supply points will comprise installation of an access point /
 driveway, some ground levelling and installation of pipework required for the fill point. The
 proposed water supply points which are to be established and/or used for Stage 2 (2b) include:
 - Beverley Street, Wentworth.

A further two water supply points (Alcheringa Drive and Modica Crescent, both in Buronga) were established as part of Stage 1 (2a) and will continue to be used through this stage.

- Construction of the Wentworth construction compound (laydown) and accommodation camp. Establishment of the construction compound and accommodation camp requires clearing of vegetation within the disturbance area and clearing and removal of topsoils.
- Potential undergrounding of existing low voltage overhead powerline crossings. Potential works
 may include installation of new poles on either side of the EnergyConnect corridor and trenching
 across the EnergyConnect alignment. Two areas are proposed for undergrounding along Stage 2
 (2b):

3. Legislative context

3.1. Commonwealth legislation

3.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

3.2. State legislation and codes of practice

3.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act*. Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW (Department of Planning and Environment) for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and an AHIP application is not required.

3.3. National Parks and Wildlife Regulation 2009 (NSW)

3.3.1.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

 Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW Act*. Both the additional archaeological survey and test excavation for this Project has been undertaken generally in accordance with the Code of Practice.

3.3.1.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, the Infrastructure Approval requires that steps 2-4 are repeated. This report fulfils requirements to Stage 4 for Stage 2 (2b) of the Project.

3.3.1.3. The Guide

The Guide (OEH 2011: iii) states:

Anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose.

The investigation and assessment of Aboriginal cultural heritage is undertaken to explore the harm of a proposed activity on Aboriginal objects and declared Aboriginal places and to clearly set out which impacts are avoidable and which are not.

The Guide requires the following input into an ACHAR:

- Review of background information
- Consultation that must adhere to the requirements set out in clause 80C of the NPW Regulation
- Identification and assessment of cultural significance
- Assessing harm
- Developing practical measures to avoid harm
- Management strategies to minimise harm

Section 3 of the Guide also shows how to document findings and compile the report. This ACHAR has been prepared in accordance with the Guide.

4. Consultation

4.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maraura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout the EIS process and by Transgrid through to the handover to SecureEnergy.

Prior to the additional survey one further registration was received as follows:

• Jason Smith

Following AFG, another individual registration was received as follows:

• Derek Hardman (Derek Hardman Consultancy)

A consultation log and relevant documentation of consultation conducted for the additional survey, test excavation and ACHAR preparation is provided in Appendix B.

4.2. Consultation regarding the archaeological survey and test excavation

4.2.1. Archaeological survey and test excavation methodologies

An Aboriginal Archaeological Survey Methodology and Test Excavation Methodology were prepared for the additional survey (Everick Heritage 2021a; Everick Heritage 2021b) and submitted to the RAPs for 28 day review and comment on the 2 November 2021.

During the review period a presentation was provided to RAPs at the Coomealla Club, Dareton on the 4 November 2021 (Aboriginal Focus Group [AFG] meeting 2). Various individual RAPs were also consulted in person and via video conference across early to mid-November 2021 regarding the methodology. The discussions mainly centered on employment aspects of the Project and also on the aspect of artefacts remaining or being returned to Country.

4.2.2. RAP participation in the additional survey and test excavation

Additional survey was conducted across six days from the 14-19 December 2021. The RAPs participated in the additional survey and a list of RAP participants is provided in Appendix B of the Addendum ASR (Appendix B).

Test excavation and further survey was conducted over 108 days from the 10 February through to 28 June 2022. The RAPs participated in the test excavation and further survey on a roster system and a list of RAP participants is provided in Appendix B of the ATER (Appendix D).

4.2.3. Consultation regarding the additional survey and test excavation

Information redacted for public display

4.2.5. Consultation regarding the Aboriginal Cultural Heritage Assessment Reports

5. Environmental context

5.1. Physiography and climate

Physiographically, the Project area lies within the south eastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council 1987). Droughts are common.

5.2. Land systems

Eleven land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Stage 2 (2b) Project area (Figure 5-1). These 11 land systems can be placed into four major geomorphic categories as follows:

- Sandplains Hatfield (Hf), Overnewton (Ov), Roo Roo (Rr), Belvedere (Be)
- Dunefields Arumpo (Ap), Leaghur (Lh), Haythorpe (Hy)
- Alluvial Plains Anabranch (An), Wentworth (We)
- Playas and Basins Huntingfield (Hu), Morona (Mo).

A detailed description of the land systems including landforms, vegetation and related archaeological sensitivity is provided in Table 6-3.

5.3. Land use history

The Project area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. As a result of grazing and the subsequent devegetation of the landscape erosion is high and the landscape can be considered as primarily a degrading landscape although aeloian processes also assist in some aggradation with windblow sands. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Recreational use of the riverbanks is common. Until recently however, there has been no large-scale clearance of the land

in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas. Section 6.1 discusses contact history of the area in detail.



Figure 5-1: Land systems of the Stage 2 (2b) - Project area
6. Ethnohistoric and archaeological context

6.1. Ethnohistoric context

The central group of Aboriginal people living along the river now known as the Darling called it the Barka, hence the origins of the name Barkindji, a term now used to refer to the cluster of related tribes sharing a common language (Barkandji or Paakantyi) and living along the lower reaches of the Darling (Hardy 1976).

According to Tindale (1974), two Paakantyi speaking tribes have a potential association with the Project Area. These are the Kureinji and the Maraura (or Mararawa). The Kureinji tribe is said to have occupied the Murray River between Euston and Wentworth but very little else is known about this group of people. The Maraura were located along the Murray River between Wentworth and Paringa (South Australia), along the western side of the Darling and from Avoca northwest to Popiltah Lake (Tindale 1974: 130, 197, see also Withers 1989, in Martin 1996). The meaning of the term Maraura has been examined by Martin (1996) who has indicated that the term could have been used to describe a dialect group, part of a dialect group, a cluster of closely related dialect groups or the whole Barkindji language.

Figure 6-1 is thought to be from Tindale (1974) but was sourced from Learning Paakantyi Book 1 (Lindsay 2010). The map clearly indicates that most of the Project area, particularly Stage 2 (2b) is located within Maraura territory and is generally acknowledged as such by most Barkindji/Maraura people.

Tindale (1974: 130-131), worked with a Maraura informant, Robert McKinley, who provided him with accounts of some of his tribe's traditions. The Maraura were, according to McKinley (or McKinlay), an aggressive people who had migrated south down the Darling River. They intermarried with neighbouring hordes from surrounding tribes from both sides of the river (whether Murray or Darling is not stated but assumed to be the Murray) but would not allow their own womenfolk to be taken more than 50 km from their own tribal area (Tindale 1974:131). The influence of the Barkindji also stretched east along the Murray. With their more secure resources of the Murray River frontage tribal areas were smaller and the contrast between tribes greater (Hardy 1976: 4). Most of these tribes, who distinguished the difference between themselves by the word 'no' repeated (eg Latji Latji, Tati Tati) were unfriendly towards the Barkindji, however the Kureinji recognised the Maraura or Barkindji as kinsmen (Hardy 1976: 4).

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Figure 6-1: Tribal boundaries (Lindsay 2010)

The lower Anabranch and the lowermost Darling were occupied by the Marawarra group of Paakantyi (Barkindji) people, and the Lower Darling above Burtundy by the southern Paakantyi (Barkindji) group. Between them, these two groups occupied the better watered regions and the entire floodplain. (Local Land Services Western Region nd: 5)

There appears to be little doubt that historically and through to the present the (Southern) Barkintji tribe shares cultural connections with the Maraura through marriage laws via the Eaglehawk and Crow mythology and various historical and social documentation.

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In the early 1830s, it was the Maraura who challenged the Overlanders driving sheep and cattle to South Australia via Lake Victoria, approximately 80 km west of the Project area (Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130). Open warfare between the Maraura and Overlanders ensued between 1838 and 1841 culminating in the famous Rufus River Massacre (Hardy 1976; Hope 1998: 23; Martin 1996). There are different interpretations of why the Maraura so fiercely defended Lake Victoria. Martin (1996: 10) argues it was in defence of the burial areas and/or spiritual significance of the lake, while others claim the Maraura coveted European items of food, clothing and blankets or that the attacks were based on competition for food resources impacted on by the sheep and cattle (Hope 1998: 33).

Colonial settlers quickly realised the importance of the Murray-Darling junction as an area central to trade and began to settle there by the 1840s, driving the local Aboriginal tribes inland. There appears to be no mention of Kureinji in records from the 1840s onwards and Barkindji were the dominant group occupying the Project Area by that time (Thompson 1997: 7).

In 1855, an Aboriginal mission station was established by the Anglicans at Yelta, on the southern bank of the Murray opposite Wentworth, and this mission provided a refuge for many Maraura people. By the 1860s, so many people at the mission had died from diseases that only one family remained and the mission was closed in 1868 (Hardy 1976: 127; Martin 1996: 10). Remnants of the local tribes managed to survive by traditional subsistence methods in the sandhill and mallee country of the hinterland but it is also thought there may have been movement of people downstream to missions at Morunde, near Swan Hill, Manuka, near Mannum and Point MacLeay at the Murray Mouth because they provided rations and a certain degree of safety (Hardy 1976: 109; Martin 1996: 10).

By the early 1860s, those Barkindji tribes along the Darling River frontage were under severe pressure of displacement from their traditional lands by pastoralists. Most Barkindji worked on stations or were employed as trackers for the police. Working on stations meant it was possible for the Barkindji to live a semi-traditional existence with rations supplementing traditional hunting and gathering.

Dependence on Aboriginal labour by squatters lessened during the 1870s, particularly along the river frontages where better transport and communications attracted non-Aboriginal workers. In 1901, there were approximately 40 Aboriginal people camped on the Darling River north of Pooncarie and they were allocated a 640 acre reserve around the main campsite. In 1901, they were joined by descendants of Nanya's tribe who were brought to the Pooncarie campsite from the Lake Victoria region. Nanya was born on the Darling Anabranch and disappeared into the Mallee west of the Anabranch with two tribal women after an argument with his tribe. Eventually, in 1893, his small tribe were captured by Harry Mitchell (Dareton), Fred William and Dan McGregor who had been hunting

dingoes on the back part of Lake Victoria Station. The tribe numbered 12 men, eight women and 10 children and Nanya was father or grandfather to all of them (Hardy 1976: 168). Nanya's tribe camped out on the Darling near Wentworth and gradually became acclimatised to the 'white fella' ways, however, the authorities were unsure of what to do about them. Eventually, Nanya passed on and the rest of the tribe travelled back and forth between Pooncarie and Anabranch, some moving away and some dying, although it is highly likely there are a few of Nanya's descendant in the Sunraysia region today (Hardy 1976: 170, 171).

Pooncarie Aboriginal Reserve (later known as the Mission), was officially established around 1910 (Hardy 1976: 135, 185). By 1910, displacement from stations was chronic and refugees from southern stations along the Darling came to camp at Pooncarie on the reserve and around the outskirts of Wilcannia. By this time, Barkindji population numbers had severely decreased through starvation caused by displacement and introduced diseases. In1933, the Aborigines Protection Board decided to move all the Pooncarie Mission people to the new Menindee Mission. It was apparently an unhappy place with poor accommodation and rampant tuberculosis. Most people left as soon as they were able. In relation to the Pooncarie Mission:

At least 20 people were in continual residence until 1933 when it was closed down and the people relocated to Menindee. Present day Aboriginal family names with ties to the Pooncarie Mission include; the Quayles, Hunts, Mitchells, O'Donalds, Wymans, Johnsons, Clarkes, Mortons, Bugmys and descendants of the Nanya tribe who were brought to Pooncarie from the Lake Victoria region in the early 1900s. (Kelly 2015: 16)

Granny Nellie Johnston (1878-1948), the daughter of Mary Johnson who was born on Moorara Station, lived and travelled up and down the Darling River in the late 1800s and early 1900s. Demand for Aboriginal labour decreased again after 1920, with the further subdivision of properties. Nellie and her husband Harry Johnston, a Ngiyampaa man, and their fifteen children ended up at Pooncarie Mission and then were shifted to Menindee Aboriginal Station. Nellie and Harry's children married into many other Aboriginal and non-Aboriginal families leaving many descendants, a lot of whom still live in the region (Nellie Johnston nd).

Life at the Pooncarie Mission and other missions such as Yelta, cemented the bonds through kinship between the Mararura, Barkindji and other tribes such as Ngiyampaa. Certainly, many families identify to various tribes through multiple lines of kinship.

The exception to the subdivision of the larger pastoral holdings were those owned by Kidman who still willingly employed Aborigines (Hardy 1976: 186). Nulla Station and its Outstation, Waterjelly (now Warwick Station), was the home of the Mitchell family from sometime before 1902 until the 1940s.

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Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren are now Elders in the Barkindji community at Dareton.

In summary, although displacement and disease affected the Barkindji population there are many Barkindji descendants still living in and around Coomealla (Dareton), Buronga and Wentworth and further north along the Darling River. More recently, many live across the Murray in Mildura.

6.2. Archaeological context

6.2.1. Database searches

6.2.1.1. Aboriginal Heritage Information Management System

Geographic Information System (GIS) data for all Aboriginal Heritage Information Management System (AHIMS) registered sites within and close to the Project area was provided to Everick Heritage prior to the survey works completed in December 2021. A copy of all the Aboriginal Site Recording Forms (ASRF) for sites registered by NOHC for the Project area were also supplied to Everick Heritage. These sites excluded scarred trees which were to be assessed by an arborist prior to any registration. No further AHIMS search was undertaken prior to the additional survey.

6.2.1.2. Other database searches

The following heritage registers were accessed on the 24 February 2022:

- World Heritage List (Australian Heritage Council/ UNESCO
- The National Heritage List (Australian Heritage Council)
- Commonwealth Heritage List (Australian Heritage Council)
- Register of the National Estate (Australian Heritage Council). The Register of the National Estate (RNE) is a non-statutory list which it retained as archive of the previous listing process
- The State Heritage Register (Heritage NSW)
- Wentworth Local Environment Plan (2011)
- AHIP Public Register (previous 5 years only).

Table 6-1: Australian Heritage Database search results

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6.2.2. Regional context

Both the Addendum ASR (Appendix C), the ATER (Appendix D) and the ACHAR and Addendum CHAR (NOHC 2021a; 2021b) provide further details on previous studies in the region. The following summarises the most pertinent to Stage 2 (2b).

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6.2.3. The Project area

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by NOHC (2021a; 2021b). Sections 6.2.3.1 to 6.2.3.5 provide a summary of the assessment, survey methodology and results although further detail can be found in the Addendum ASR (Appendix C).

6.2.3.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model. This suggested that:

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6.2.3.2. Field survey

Field survey of the Project area was undertaken by NOHC between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Re-locate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian transects of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars.

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6.2.3.3. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary

estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case. NOHC (2021a) state that:

A total of 74.69 per cent of the surveyed ground area was inspected during the survey, with 67.35 per cent providing useable archaeological exposures.

6.2.3.4. Results

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Table 6-2: Site type by number and percentage recorded by NOHC (2021a)

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The following general observations were made by NOHC (2021a) regarding the results of their survey:

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6.2.3.5. Recommendations

NOHC (2020a; 2021b) stated that if following detailed design sections of the proposal are to be located outside the 100 m survey area these areas will be subject to further assessment. This would include a section of the transmission line inaccessible due to landowner access restrictions.

6.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, has been used to understand the archaeological sensitivity of disturbance areas requiring additional survey and test excavation along the Project area (Table 6-3). It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002a; 2002b; 2003).

Table 6-3: Land systems, landforms and archaeological sensitivity relevant to Stage 2 (2b) (Witter et al in prep)

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7. Archaeological survey

7.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of the archaeological survey as identified by the Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a: Appendix B) were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

7.2. Timing and personnel

The primary survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. The survey teams comprised one Everick Heritage archaeologist and two or three RAP representatives. A number of Transgrid and SecureEnergy staff also accompanied the survey teams to assist with land access and orientation. A full list of key survey participants is provided in Appendix B of the Addendum Aboriginal Archaeological Survey Report (Addendum ASR) (Appendix C).

Additional small survey areas for traffic signage, traffic entry points and [*information redacted for public display*] and laydown area were identified during the test excavation program and undertaken as required. The survey strategy, methodology, site and PAD identification and recording were as described below. These small additional surveys are ongoing and being reported on in letter format which are being provided to the RAPs as completed (Appendix E).

7.3. Survey strategy

RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously surveyed areas. The archaeological survey aimed to visually inspect 100 per cent of all areas not previously surveyed, therefore no sampling strategy was required. Areas to be surveyed were confirmed by SecureEnergy prior to the survey and were generally in line with the works described in section 2.

7.4. Survey methodology

The survey was conducted on foot and occasionally by vehicle where there were areas of extensive existing tracks in land systems of low archaeological sensitivity. Only one survey team member had possession of a Global Positioning System (GPS), consequently only one set of transects was recorded for each team.

All sites and/or objects were identified during field survey, their location recorded with a GPS (using GDA 2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA 94.

Survey notes are also described using this system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes were also made. A photographic record was kept of all survey units and landforms where these are informative and appropriate photographic scales were used.

The following details were recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use

• Significance of the location for the Aboriginal community.

7.4.1. Aboriginal sites and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria was used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD were identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary.

7.4.2. Aboriginal site recording

Aboriginal Site Recording Forms (ASRF) have been submitted to the AHIMS for all Aboriginal objects and sites identified during the survey. Aboriginal sites, objects and PADs identified during the additional survey were numbered sequentially based on the naming and numbering system implemented by NOHC (2021a; 2021b).

7.5. Survey coverage Stage 2 (2b)

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7.6. Survey results Stage 2 (2b)

Following the Addendum ASR (Appendix C) additional survey of small areas was undertaken periodically during the test excavation program and further Aboriginal sites identified (Table 7-1). These have been reported on in letter style format (Appendix E).

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Figure 7-1: Numbers of Aboriginal sites per land system (see Table 6-3 for symbology)

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Figure 7-2: Numbers of site types (Table 6-2 for symbology)

Table 7-1: Site gazetteer from survey of Stage 2 (2b) – Project area (Table 6-2 for symbology of site type; see Table 6-3 for symbology of land systems)

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Table 7-2: PAD gazetteer from Stage 2 (2b) Project area

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Table 7-3: Survey coverage of land systems and archaeologically sensitive landforms for the Stage 2 (2b) - Project area

8. Test excavation

8.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation were to:

- Establish if subsurface archaeological deposit is present within those PADs and sites identified as being directly impacted by Disturbance area A and Disturbance area B Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation was limited to those areas of PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B (required tree clearance). NOHC (2021b) identified the following sites as having high potential for subsurface archaeological deposit and recommended test excavation:

Where the above sites or parts thereof, would be impacted these were subject to test excavation generally through the Disturbance area A and Disturbance area B sampling strategy (section 8.3).

8.2. Timing and personnel

Test excavation for both Stage 1 (2a) and Stage 2 (2b) was conducted between the 10 February to the 28 June 2022. During this time test excavation was supervised by the following Everick Heritage personnel across the test excavation program:

- Vanessa Edmonds (Principal-Project manager)
- Aaron Fogel (Principal)
- Roark Muhlen-Schulte (Principal-Field supervisor)
- Cailtin Marsh (Senior Archaeologist)
- Mitch Cleghorn (Senior Archaeologist)
- Andrew Wilkinson (Senior Archaeologist)
- Liam Neill (Senior Archaeologist)

Test excavation teams generally comprised two archaeologists and four RAP representatives, although that number fluctuated across the life of the test excavation program. RAP representatives participated in test excavation through a rostering system and a list of RAP participants and other Everick Heritage personnel are provided in Appendix B of the ATER (Appendix D – this report).

8.3. Sampling strategy

A sampling strategy was developed for test excavation of the Project area as part of the test excavation methodology prepared by Everick Heritage (2021b). Disturbance area A and Disturbance area B works are varied in size and shape, as are the PADs, therefore it was proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy was informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy had been calculated for:

- Disturbance area A tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks between tower sites (centreline) and from existing roads
- Disturbance area B, the latter based on an arborists's assessment for the requirement for tree removal.

In all instances the aim of the sampling strategy was to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Test excavation for Disturbance area B was calculated by Catherine Curlewis (Senior Environmental Advisor, SecureEnergy) based on the following application:

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Table 5-1 in the ATER (Appendix D) provides detail on PAD land system, landform, total area, impact area and excavation totals. The total disturbance area of all PADs in Stage 2 (2b) was 1,017,784 or around 40 per cent of the PADs. Total square metres of excavation of PADs were 493 square metres or around 0.04 per cent. Although this is short of the proposed 0.15 per cent a number of factors influenced the final square meterage. During the course of test excavation, impact for some PAD areas was refined requiring less test excavation as follows:

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Test excavation was increased for some areas of PAD during test excavation based on the following:

• Increased excavation required to determine extent of site

- Increased excavation due to the requirement for one or more repatriation test pits (RTP) (see section 8.6.2)
- Increased excavation required to follow the extent of an archaeological feature.

The sample achieved is considered to be adequate for determining the nature of all PADs subject to test excavation and where test excavation was not considered adequate or was not conducted across the entire PAD these areas remain PADs.

8.4. Notification

In accordance with Requirement 15c of the Code of Practice notice in writing was provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject area
- Name and contact details of the legal entity with overall responsibility for the Project
- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations
- Test excavation methodology (Everick Heritage 2021b: Appendix C).

8.5. Constraints

Weather was a major constraint to the test excavation program. From February through to the end of March, temperatures were extreme and often in the region of 40 degrees Celsius which slowed progress and the ability to work long days in the field. From mid April on unseasonable wet weather delayed fieldwork with roads being closed to vehicle traffic and access into some areas not being possible.

Access was constrained by the need to provide adequate notice to landholders for access which in conjunction with rain delays exacerbated timeframes. Covid struck the teams, both archaeologists and RAPs, in the first few months of fieldwork and led to a decrease in team numbers.

8.6. Test excavation methodology

Test excavation followed the methodology that was prepared by Everick (2021b: Appendix C) and approved by the RAPs. The methodology employed is summarised below.

8.6.1. Test excavation units

Test excavation comprised a combination of 1 m x 1 m Test Pits (TP) and 0.5 m x 0.5 m Shovel Test Pits (STP) that proceeded to an archaeologically sterile layer. Test excavation units were combined where required. Each landform was first investigated first by one 1 m x 1 m TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units.

The exact location of test excavation units within the disturbance zones were determined in the field in consultation with the RAPs and in accordance with the sampling strategy. The location of these needed to be flexible to allow for minor adjustment in the field to avoid any obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD was excavated in 50 millimetre (mm) spits (vertical depth). Dependent on the results of the initial excavation unit sediments were then excavated in 100 mm spits.

Test excavation was undertaken manually by trowel, shovel or mattock. Excavation proceeded to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture and was agreed on in consultation with the RAPs.

Test excavation of PADs ceased where enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

8.6.2. Repatriation Test Pits

Based on early consultation with the RAPs it was determined that all archaeological material excavated or salvaged would be placed back on Country as close as possible to the area from which they originated. In the selection of a location for repatriation of excavated and collected cultural material, Transgrid needed to consider the following future disturbances:

- Construction (if relocated prior to completion of construction)
- Operational vegetation maintenance of the easement and/or operational access routes
- Operational maintenance of transmission line infrastructure (towers, footings, guys, earthing, conductor, earth wire)
- Maintenance of operational access tracks
- Landowner activities, such as access tracks, fences, cultivation (noting that management of landowners activities are not under Transgrid's control unless they specifically have a potential to impact on Transgrid's assets or require consultation/approval from Transgrid under the provisions of the *Electricity Supply Act 1995* or Transgrid easement guidelines, Living and working with electricity transmission lines).

It was therefore determined the optimal location for relocation/repatriation of cultural material, without factoring in specific in field infrastructure locations and any landform/topographic constraints, is considered to be on the edge of the transmission line easement in the 1st or 4th quarter and sufficiently distant from transmission line and other infrastructure to avoid potential harm from operational activities (Figure 8-1). The optimal location for repatriation identified by Transgrid is represented by the green rectangles.



Figure 8-1: Not to scale. Showing the recommended exclusion zones and offsets for transmission lines (220 kV and above) from Living and working with electricity transmission lines (Transgrid 2021), which details restrictions for land owners in relation to transmission line easements and infrastructure

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A Repatriation Test Pit (RTP) measuring 1 m x 1 m was excavated within the exclusion zone in PADs where test excavation recovered cultural materials, or where it was determined that surface collection would require reburial. All material from the RTPs was sieved and any cultural material recorded and bagged as above.

8.6.3. Sieving

Excavated deposit was placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments were dry sieved through 5 mm mesh onto tarps and the spoil was used to backfill test pits manually following recording. All excavation units were closed on completion.

8.6.4. Recording

8.6.4.1. Test excavation units

The location of each excavation unit was recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit was given a unique identification number. A context sheet for each excavation unit was completed in the field. Details recorded included date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings were prepared for a representative sample of excavation unit. A photograph was taken of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating were collected and curated appropriately when encountered during excavation.

All cultural material retrieved from test excavation was given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont Ł Tyvek ® paper.

8.6.4.2. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) has been submitted to the Aboriginal Heritage Information Management System (AHIMS) database to document the test excavation results where archaeological deposit was uncovered and a site identified or existing site updated.

8.6.5. Management of recovered archaeological material and objects after excavation

All recovered cultural material is currently stored in locked cabinets in a locked room in office premises at [*information redcated for public display*]. All analyses have been undertaken on the premises and only samples retrieved for dating purposes have been removed.

Consultation with the RAPs has established that following construction the cultural material will be reburied in the excavated RPT as close as possible to the location from which it came.

8.7. Analyses

8.7.1. Stone artefact analysis

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Figure 8-2: Project area (blue), landscape features and assemblage locations (red)

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8.7.2. Faunal remains analysis Stage 2 (2b)

8.7.2.1. Vertebrate assemblage

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8.7.2.2. Invertebrate assemblage

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8.8. Dating

Table 8-1: Results of radiocarbon dating of samples from Stage 2 (2b).

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Figure 8-3: PEC-W-PAD 10 ext, TP 9 (PEC-W-263). OSL sediment samples being taken

8.9. Results

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Table 8-2: Summary of new AHIMS sites and existing AHIMS sites requiring updates as identified from the Stage 2 (2b) test excavation program

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Table 8-3: Summary of results of the test excavation for Stage 2 (2b)

9. Scarred tree assessment

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

Consulting arborists, ENSPEC, were engaged by Everick Heritage on behalf of SecureEnergy to conduct the assessment of those trees recorded by NOHC (2021a; 2021b) and those newly recorded by Everick Heritage (2022a). ENSPEC arborists have extensive experience in the assessment and salvage of cultural scarred trees (<u>https://arboriculture.org.au/sponsors/enspec</u>). Their final report is provided in Appendix F. The assessment methodology of scars or modifications was based on the following:

- the visible feature, such as a wound, scar or manipulation of the tree form
- position of the feature
- shape and size of the feature
- visible tool marks
- location of the tree
- species of tree
- growth characteristics of the tree species
- age of the feature as judged by reactive growth of the tree and degradation of exposed wood.

Most of the trees in the Project area are old, and some of them are dead. As a result, some trees or features were too degraded to make an effective assessment (ENSPEC 2022: 4).

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Figure 9-1: Assessment of scarred trees across Project Area (ENSPEC 2022: Table 1

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Table 9-1: Summary of arborists assessment of scarred trees in Stage 2 (2b) based on ENSPEC (2022: Table 6; Table 9). Vegetation management is required for those trees highlighted

10. Cultural values assessment

10.1. Cultural landscapes

Cultural landscapes are defined as:

A place or area valued by an Aboriginal group (or groups) because of their long and complex relationship with that land. It expresses their unity with the natural and spiritual environment. It embodies their traditional knowledge of spirits, places, land uses, and ecology. (US/ICOMOS 1996 in Andrews et al 2006).

Andrews et al (2006) suggest the following guiding principles for evaluating Aboriginal cultural landscapes.

- The long associated Aboriginal group or groups have participated in the identification of the place and its significance, through the consultation process. This principle ensures that Aboriginal peoples will be consulted, involved and participate in the identification of frameworks and sites.
- Spiritual, cultural, economic, social and environmental aspects of the group's long attachment with the identified place, including continuity of use and traditions, social and kinship relationships, intimate knowledge of the area, and spiritual affiliations illustrate its cultural value.
- The interrelated cultural and natural attributes of the identified place make it a valued cultural landscape. Recognising the integrated nature of Aboriginal relationship to place, including the inseparability of cultural and natural values. Tangible evidence may be largely absent, with the attributes primarily in oral and spiritual traditions and in activities related to the place. However, there could be tangible attributes which include natural resources, archaeological sites, burials/graves, material culture, and written or oral records.

This guiding principle also recognises natural components such as ecosystem, climate, geology, topography, water, soils, views, and dominant and culturally significant fauna and flora in the context of the associated Aboriginal people's relationship to the place.

 The cultural and natural attributes that embody the significance of the place are identified through traditional knowledge of the associated Aboriginal group(s) including traditional environmental knowledge, narratives, place names, language, traditional uses, rituals, and behaviour related to the identified place. It recognises that some knowledge cannot be shared, but available knowledge

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must be sufficient to demonstrate the significance of the place in the culture of the associated group.

• The cultural and natural attributes that embody the significance of the place may be additionally understood through academic studies such as histories, including oral history and ethno-history, archaeology, anthropology, and environmental sciences.

Aboriginal cultural knowledge was traditionally bequeathed through oral traditions from generation to generation. Within all Aboriginal communities there was a time of dislocation and upheaval associated with the arrival of colonial settlers. This widespread disruption resulted in much of the detailed knowledge and understanding of many of the elements of the cultural landscape being lost from the Aboriginal community, nonetheless many Aboriginal people maintain a strong connection to the land of their ancestors and collectively possess a wealth of knowledge passed down through the generations.

10.2. Methodology

The cultural assessment in this report includes information collected through background research, and from consultation undertaken with the RAP representatives during the survey and test excavation programs and during consultation periods for the RAP review. This information was collected by Vanessa Edmonds (Principal, Everick Heritage). To provide a greater perspective on cultural values this assessment covers both Stages 1 and 2 of the Project area.

10.3. Identified Aboriginal cultural heritage values

The following cultural values have been identified through background research. Comments on cultural heritage values by the RAPs have been incorporated into this section following the RAP review.

Cultural heritage value and theme	Description	Source
Dareton Places where Aboriginal people live and work	Focus of settlement and residence for Aboriginal people in the region	<u>http://www.wentworth.nsw.gov.au/3</u> <u>-heritage-of-the-wentworth-</u> <u>shire.aspx</u>
Namatjira Avenue, Dareton	Established in 1968 Namatjira Avenue was characterised by numerous improvised dwellings built by itinerant	<u>https://www.theage.com.au/nationa</u> l/dark-days-on-namatjira-avenue-

Table 10-1: Identified Aborigi	nal cultural heritage values
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Cultural heritage value and theme	Description	Source
Places where Aboriginal people live	Aboriginal labourers who worked as fruit pickers. Once a small group of weatherboard homes and shanty dwellings. Now more permanent, better built homes can be found in this area. The Dareton Aboriginal settlement at Namatjira Drive, supports a large population of descendants of local tribal communities.	<u>20021223-gduyz9.html</u>
River Murray Area of high archaeological significance demonstrating antiquity of Aboriginal occupation	There is archaeological evidence for continuous Aboriginal occupation of the River Murray Mallee Zone for the last 22,000 years	See Table 5-1 Appendix E
Darling River, Old Pooncarie Mission (Murleeka)	Established along the Darling River north of Pooncarie somewhere between 1910- 1913. Old Pooncarie Mission is proposed to be registered as an Aboriginal Place	Michael (Mick) Kelly - Old Pooncarie Mission (Murleeka) Aboriginal Place Nomination (OEH 2015)
Places where Aboriginal people lived and worked	Many families lived at the reserve which became known as the 'Mission'. At least 20 people were in continual residence until 1933 when it was closed down and the people relocated to Menindee.	
	Present day Aboriginal family names with ties to the Pooncarie Mission include; the Quayles, Hunts, Mitchells, O'Donalds, Wymans, Johnsons, Clarkes, Mortons, Bugmys and descendants of the Nanya tribe who were brought to Pooncarie from the Lake Victoria region in the early 1900s. (Kelly 2015/16: 16)	
	The river provided the Barkintji/Paakantiji people with an extensive range of resources including plants and animals. Old Pooncarie Mission represents a broader significant cultural landscape which links a series of river bends and lagoons within southern Barkintji/Paakantiji country. (Kelly 2015: 16)	
Darling River	Bourke to Wentworth is listed as an Indicative Place for its natural values.	Australian Heritage Database – Register of the National Estate –

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Cultural heritage value and theme	Description	Source
	The Statement of Significance is as follows:	Place ID 17418
	The least disturbed river section in the Murray-Darling basin. The most significant river traversing the semiarid zone in Australia, and as a riverine environment that has both representative and unusual examples of geomorphic features and processes, especially clay dunes and anabranch systems of past and present river systems.	
Fletchers Lake Area of high cultural and archaeological significance Places where Aboriginal people lived	Fletchers Creek is an ephemeral creek system that connects to Tuckers Creek from the Murray River during very high flows. It is located midway between Wentworth and Dareton. In past years there was a small Aboriginal community living in improvised dwellings around the southern end of the lake. Jason Smith's family was one of those living there.	Jason Smith (Dareton LALC)
	BMEET rangers integrate traditional and contemporary ecological knowledge in conjunction with Elders and partners, to restore and enhance the biodiversity of the wetland are also involved in the in the identification and protection of their cultural sites.	<u>https://www.niaa.gov.au/indigenou</u> <u>s-affairs/environment/barkindji-</u> <u>maraura-rangers</u> Dameion Kennedy (Damos Family Dream)
	The area around Fletchers Lake is of extremely likely to possess significant archaeological sites, particularly along the outlet creek and is culturally important to the Barkindji Maraura people.	Hassell Planning Consultants 1989
Barkindji Maraura Elders Environmental Team Aboriginal employment – Working on Country	Established in 2011 to address problems such as drugs, alcoholism and unemployment for young Aboriginal people in the community BMEET works on many Working on Country programs such as monitoring ecology and water flows at Fletchers Lake. The Barkindji Maraura Rangers carry out ecological assessments and on-ground works at wetland sites in the Fletchers Lake Reserve.	Arthur Kirby, Malcom King (BMEET Elders) https://www.abc.net.au/pm/content /2014/s4014164.htm https://www.indigenous.gov.au/savi ng-fletchers-lake-helps-turn-lives- around
	rueninication and protection of their	

Cultural heritage value and theme	Description	Source
	cultural sites.	
Nulla Station Places where Aboriginal people lived and worked	Nulla was the home of the Mitchell family from sometime before 1902 until the 1940s. Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren and great grandchildren are part of the Dareton Aboriginal community.	Hardy 1976: 186
Lake Victoria/Rufus River (80 km west of the Project Area) Conflict between Aboriginal people and early settlers	Maraura challenged the Overlanders driving sheep and cattle to South Australia. Open warfare occurred between Aboriginal people and Overlanders between 1838 and 1841	Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130.

Group interviews were conducted during the test excavation program based on broad questions. The questions and some of the broader answers are provided below:

What do you like about working on this project?

- Getting to work on Country
- Working together in a team to protect our culture
- Getting to see places and cultural heritage on areas we have not been able to get to before
- Working with the archaeologists/new people and learning new things
- Seeing all the different coloured rocks (artefacts)
- Helping record and protect our heritage
- Holding those stone artefacts in your hands and feeling how the old people might have used them.

What do you least like about working on this project?

- Knowing the cultural heritage is going to be destroyed
- Won't get a chance to get back out on this Country

What do you consider the most important sites we have found?

• All sites are as important as each other

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10.4. Statement of cultural values

Based on the research and discussions with the RAPs, the Project area is assessed as being of high cultural value. During all stages of the Project the RAP field representatives reiterated how important it was for them to be able to walk over Country they had not previously been able to access, to see and record the diverse range of archaeological values present and connect with their Ancestors.

¹ Outside the Project boundary

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11. Significance assessment

11.1. Significance assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide (OEH 2011: 10) provides guidelines for identification and assessment of cultural significance assessment with reference to the Burra Charter (Australia ICOMOS 2013) and the NSW Heritage Office guidelines (2001):

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

Scientific values should be further considered in light of the following criteria (OEH 2011: 10) and rated low, moderate or high:

- 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?

11.2. Scientific significance assessment

A summary of the scientific significance for all new Aboriginal sites and objects identified by the ASR and the ATER for Stage 2 (2b) is provided in Table 11-1.

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11.3. Social significance assessment

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11.4. Historic significance assessment

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11.5. Aesthetic significance assessment

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11.6. Summary statement of significance

Table 11-1: Summary of scientific significance of Stage 2 (2b) sites recorded by Everick Heritage. Only NOHC (2021a; 2021b) sites reassessed through test excavation by Everick Heritage are included. It should be noted that NOHC 2021b) significance was based on a sites potential to contain subsurface deposit

12. Impact assessment

12.1. Minimisation of impact

Key issue conditions in the Infrastructure Approval relating to avoidance and salvage of cultural heritage specify the following:

D30 The Proponent must implement all reasonable and feasible measures to avoid and minimise harm to heritage items and potential archaeological deposits (PADs) identified in the EIS and the Aboriginal Cultural Heritage Strategy required by condition D29, prior to carrying out any development that could harm the items or deposits.

Additionally, in accordance with AH1 of the RMMs:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

SecureEnergy has made refinements to the design and construction methodology and succeeded in minimising impacts by:

- using existing access tracks and firebreaks where possible
- locating temporary construction areas away from identified Aboriginal objects where possible

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• reducing tree clearance through arborists assessment and adoption of a revised clearing methodology.

12.2. Impacts to archaeological sites

NOHC (2021b: 15) provide the following definition of direct and direct Project impacts:

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12.3. Ecologically sustainable development principles

The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) specifies that Ecologically Sustainable Development (ESD) principles must be considered when assessing harm and recommending mitigation measures in relation to Aboriginal objects.

The following relevant ESD principles are outlined in Section 3A of the EPBC Act:

- Decision-making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations (the 'integration principle').
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the Precautionary Principle).
- The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the Principle of Intergenerational Equity).
- The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making (Conservation of Biodiversity).
- Improved valuation, pricing and incentive mechanisms should be promoted (Improved Valuation, Pricing and Incentive).

OEH (2011: 13) states that consideration of these principles should result in:

- An understanding of the cumulative impact of the proposal on Aboriginal objects or places in relation to other identified sites in the region.
- Ascertaining how wherever possible or practicable harm to significant Aboriginal objects or places can be avoided.
- Establishing and assessing the risks and consequences of various options.
- Assessing the costs and benefits of various options for future generations.
- Suggesting actions proposed to help promote intergenerational equality.

12.3.1. The Integration Principle

The Aboriginal heritage values of the Project area have been fully considered in the Aboriginal Cultural Heritage Strategy (Everick Heritage 2022c), the Addendum ASR (Everick Heritage 2022a), the ATER (Everick Heritage 2022b), the CHAR and Addendum CHAR (NOHC 2021a; 2021b), the Stage 1 (2a) ACHAR (Everick Heritage 2022e) and this ACHAR. These values have been considered with regard to the planning and approvals process for the Project area and therefore, comply with the integration principle by considering long term and short term environmental and social effects.

12.3.2. The Precautionary Principle

The combination of background research and test excavation results have been used to assess the probable nature of the archaeological nature of the Stage 2 (2b) Project area as described in this ACHAR. Exclusion zones, surface salvage of stone artefacts and salvage excavation of larger more scientifically significant sites has been recommended as mitigation against loss of scientific and cultural information. Of high importance is the relatively low need for impact assessments for large scale or even small scale developments in the region and the combined studies for this Project provide a window of opportunity to investigate past Aboriginal land use for the benefit of the current and future Aboriginal population as well as other member of the scientific and non-scientific community.

12.3.3. The Principle of Intergenerational Equity

The principle of intergenerational equity has been addressed through the assessments undertaken by NOHC (2021a; 2021b) and Everick Heritage (2022a; 2022b; 2022d; 2022e). These assessments ensure that information regarding the Project area is available for future generations. In addition, salvage of selected sites across the Project area will provide an educational opportunity for the Aboriginal community and additional information which will benefit the Aboriginal community for future generations.

12.3.4. Conservation of Biodiversity

Cultural values associated with biodiversity are interwoven with the lives of Aboriginal people and their use of the landscape. To this end the arborists assessment of tree removal requirements has significantly reduced the requirement for tree clearance along the Project area. Where there is a requirement for tree removal it has been recommended that the stump is retained in situ where possible to avoid ground disturbance and erosion of sediments through wind and water runoff.

12.3.5. Improved Valuation, Pricing and Incentive

Both Transgrid and SecureEnergy are committed to cultural heritage protection as a key component of project development. The costs and time required to ensure these high standards of assessment and protection measures have been implemented from the commencement of the Project. Transgrid through SecureEnergy have striven to comprehensively assess impacts, avoid impacts (where feasible), work with the Aboriginal community, and implement mitigation and management measures which

strike a balance between meeting the state's critical infrastructure needs and protecting Aboriginal heritage values, for the betterment of all.

12.3.6. Summary statement of ecologically sustainable principles

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12.4. Cumulative impact

A cumulative impact is the combined effects of environmental or social impacts that occur because of a range of activities or developments within a particular local area or region that impact on Aboriginal cultural heritage. Ideally cumulative impacts should be assessed from a baseline of data relating to the incremental impact of the actions of a development when added to other past, present and reasonably foreseeable future impacts.

NOHC (2022b) provided a cumulative impact assessment for the project based on the following comparable developments proposed and existing within the region:

13. Management and mitigation measures

The following management and mitigation measures were based on consideration of:

- The results of the background research and archaeological survey results
- The currently known nature of impacts of the Project
- Infrastructure Approval conditions
- The Revised Mitigation Measures
- The results and recommendations provided in the ATER (Appendix D).

Condition D31 of the Infrastructure Approval states

The Proponent must ensure the development does not cause any harm to heritage items identified for avoidance in the approved Aboriginal Cultural Heritage Strategy or any Aboriginal heritage items located outside the approved development footprint.

Avoidance of impact to Aboriginal cultural heritage is the preferred option in all instances, however it is acknowledged that where existing disturbance occurs within the Project area it is often preferable to minimise further disturbance to the landscape and potentially to as yet unidentified Aboriginal cultural heritage. Section 12.1 provides information on how impacts to PADs and sites in the Stage 2 (2b) Project area have been minimised. Table 13-1 provides a list of sites identified during the Addendum ASR (Appendix C), additional survey (Appendix E) and the ATER (Appendix D), their significance, potential impact and summary mitigation measures with particular reference to the RMMs. Wherever possible impacts to sites and PADs would be avoided and an exclusion zone would be implemented as the preferred mitigation measure (AH7).

Where avoidance is not possible the recommended management measure is for salvage – either surface collection of stone artefacts (AH6) or salvage excavation of sites possessing higher archaeological significance that can contribute to our understanding of Aboriginal occupation and utilisation of the Project area landscape. In general, where isolated hearths and small, sparse scatters of shell are present no salvage is recommended. In a small number of cases test excavation has established a subsurface in situ component to these sites salvage excavation has been recommended.

13.1. Minimisation of impact

AH1 of the RMMs states:

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The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

In addition, AH4 of the RMMs states:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

SecureEnergy has made refinements to the design and construction methodology and succeeded in avoiding impacts to PADs and Aboriginal sites and objects by:

- using existing access tracks where possible
- locating temporary construction areas away from identified Aboriginal objects where possible

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• reducing tree clearance through arborists assessment.

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13.2. Aboriginal consultation

AH2 of the RMMs states:

Aboriginal stakeholder consultation will be carried out in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a). Engagement with Registered Aboriginal Parties (RAPs) will consist of the following:

- > Aboriginal heritage site surveys (AH3) review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas)
- > test excavation activities (AH4) review of proposed methodologies and involvement in the test excavation activities in the field
- > review of the draft addendum report/s (relating to surveys (AH3), test excavations (AH4) and scar trees (AH5), and consultation on the draft reports which will typically be in the form of a RAP meeting
- > provision of final addendum report/s will be provided to RAPs (AH3, AH4, AH5)
- > involvement in establishment of Aboriginal heritage exclusion zones prior to construction commencing (AH7).

Further cultural information will be gathered during consultation undertaken in association with these activities. All addendum reports to the Aboriginal Cultural Assessment Report (CHAR) will be provided to RAPs for comment, and input will be considered, and actioned wherever practicable

In accordance with AH2, representatives from the RAPs identified in section 4.1 participated in the additional survey and test excavation, surface collection and exclusion zone fencing. They will also be involved in salvage activities. The results of the addendum and additional survey as well as preliminary test excavation results have been presented to Aboriginal Focus Group (AFG) meetings and other informal meetings.

This ACHAR has been provided to the RAPs for 28 day review and during that time an AFG (AFG 6) has been held to discuss the results of the test excavation, scarred tree assessment, cultural values assessment and salvage excavation methodology. This ACHAR has incorporated any RAP inputs from the review and AFG 6.

13.3. Clearance to proceed

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

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The proposed staging approach for the Aboriginal Cultural Heritage Strategy (required in accordance with condition D29 of the Infrastructure Approval) was approved by the Planning Secretary on 1 February 2022. The staging approach identifies that construction may commence in additional survey areas, outside of PADs and sites once the Addendum ASR has been prepared and consulted with RAPs and Heritage NSW. The Addendum ASR (Appendix C) is now complete and has been consulted on and approved by the RAPs following an AFG and 28 day review period.

The staging approach also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas (Appendix E). Based on the results of the additional survey presented in the Addendum ASR (Appendix C) and survey letter reports (Appendix E), clearance to proceed with Project works is allowed in additional survey areas excluding those areas identified as PADs or extended PADS. Therefore, in accordance with AH3 of the RMMs construction can proceed within those additional survey areas outside of any identified PADs or sites identified in Table 7-1 and Table 7-2 and with reference to the maps provided in section 14. The results of the Addendum ASR, the ATER and this ACHAR will continue to inform design refinements for the Project.

It is acknowledged that Aboriginal heritage items may be found anywhere along the Project corridor even in areas of low archaeological sensitivity. Therefore, SecureEnergy has developed an Unexpected Heritage Finds Procedure EnergyConnect (NSW-Western Section) which would be implemented should unexpected Aboriginal cultural heritage items be found during construction in areas identified for clearance. This procedure is provided in Figure 13-1. In addition, SecureEnergy (2021) has developed a Discovery of Suspected Human Remains Procedure EnergyConnect (NSW-Western Section) for the approved Stage 2 Heritage Management Plan which would be implemented should suspected human remains be discovered during construction in areas identified for clearance (Figure 13-2).

13.4. Additional survey

AH3 of the RMMs states:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Further refinements to the design and construction methodology may be required and may result in part from the outcomes of this additional heritage survey. In accordance with AH3 of the RMMs if works to any additional areas outside those previously subjected to heritage assessment and survey, these

areas will require survey as described in the Aboriginal Archaeological Survey Methodology (Everick Heritage 2022a: Appendix C). This mitigation measure also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas (Appendix E).

13.5. Scarred trees

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

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Details of these scarred trees are provided in Tables 6-16, Table 6-18 and Table 6-20 in the ATER (Appendix D) and their location is shown in Figure 15-9.

The revised clearing approach (compared to the approach assumed in the EIS and Addendum ACHAR (NOHC 2021b) being adopted means that the majority of remaining scarred trees within the Project

boundary will not need to be removed or directly affected. These will have exclusion zones in place where required and will be registered with AHIMS.

AH5 of the RMMs states:

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to DPIE Heritage NSW.

Where it is necessary to remove any scarred tree, or impact on the scarred portion of the tree then, in consultation with the RAPs, the following methodology would be implemented to create 3D models of scarred trees:

- The built-in LiDAR scanner on an iPad Pro will be used to capture a 3D scan of the tree
- The technician will walk with the iPad Pro LiDAR Scanner in a radius around the tree
- The LiDAR Scanner emits infrared light at the tree and detects this light as it is reflected off the surface. The distance to the surface is recorded and used to build the 3D model. No damage is caused to the tree during this process, as this uses the same scanner that is used for facial identification.

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The requirement for removal of this tree has been discussed with the RAPs at AFG 6 and they were shown a digital output from the 3D scanning of another scarred tree. The RAPs indicated they were in agreement with the 3D scanning and removal of the tree and would participate in both these processes. The RAPs have been requested to discuss placement of tree once removed.

Should further removal or vegetation management be required for culturally scarred trees, consultation with the RAPs must be undertaken beforehand. Exclusion zone fences will be installed around all culturally scarred trees prior to construction (AH7) with participation from the RAPs.

13.6. Surface collection

AH6 of the RMMs states:

All portions of artefact scatters that are to be directly impacted will require surface collection prior to construction commencement in those areas.

Additionally, based on the outcomes of the test excavation, items or PADs will be subject to surface collection or salvage prior to the commencement of construction in those areas.

The activities will be documented in a surface collection report.

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13.7. Aboriginal heritage exclusion zones

AH7 of the RMMs states:

Aboriginal heritage exclusion zones will be established to protect

- > known features/items of significance that have been identified to remain in-situ throughout construction (and not subject AH6)
- > scarred trees that are to remain in-situ.

Suitable controls will be identified in the heritage management sub-plan, which may include site fencing and sediment control. Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the RAPs prior to the commencement of construction at each location.

Areas of PADs that are located within areas of vegetation clearance where ground disturbance will not occur will be managed through construction methodologies and will not be delineated as exclusion zones. These methodologies will be developed in the heritage sub-plan.

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13.8. Salvage excavation

In accordance with D32 of the Infrastructure Approval below:

D32 Prior to carrying out any activity that could harm heritage items, the Proponent must salvage and relocate all heritage items identified for salvage and relocation in the updated and approved Aboriginal Cultural Heritage Strategy to a suitable alternative location, in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010).

Sites of higher significance, such as those with stratified sub-surface deposit are proposed to be subject to salvage excavation. Specifically, the following sites have exhibited archaeological significance through subsurface testing and open area salvage excavation is recommended across the major areas of impact, that is the tower disturbance areas if these sites are to be impacted:

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Open area excavation would vary depending on the location of the identified site extent within the tower disturbance footprint. Where subsurface archaeological deposits have been identified within the impact areas as a result of the test excavation, the key factors to consider are the nature of the archaeological deposit and the extent of impact from the works.

13.9. Community led educational video

During AFG 6, Everick Heritage suggested that a community based documentary style video could be produced of various aspects of the salvage activities as an educational resource for both the present

day community and future generations. The video could be used as an educational resource or just a record of the heritage activities. It could include among other aspects:

- Photogrammetry of the scarred trees to be removed
- Footage of the salvage excavations
- Interviews with participants talking about connections to people and place
- Drone footage along some of the Project area

The aim of the documentary video would be:

for the material to be presented with an Aboriginal voice. This is Aboriginal people speaking for their own heritage, history, place, country and story. (National Trust of Australia (WA) 2012)

The RAPs were highly in favour of this recommendation as were SecureEnergy and Transgrid. It is anticipated that further discussion and implementation of the documentary video would occur with the assistance of Everick Heritage, SecureEnergy and Transgrid and participation and input by the RAPs.

13.10. No further salvage

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13.11. Cultural heritage awareness training

AH9 of the RMMs states:

Cultural and historic heritage awareness training will be carried out for all personnel working on the proposal prior to the personnel participating in construction activities. The

training shall cover features of heritage significance within and adjacent to project locations and project protocols that must be complied with to minimise and manage potential impacts to those features.

The RAPs have requested that cultural heritage awareness training for all employees, contractors and sub-contractors working within the Project area be undertaken by RAP representatives on Country. This would be a discussion topic between SecureEnergy and the RAPs.

13.12. Monitoring

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13.13. Repatriation of cultural material

All cultural heritage material retrieved through test excavation (other than samples collected for dating purposes), surface collection and salvage excavation must be reburied at the location of the closest RPT to where the cultural material was retrieved from. Repatriation of the cultural material must be undertaken by appropriately experienced archaeologists in conjunction with the RAPs. Aboriginal Site Recording Forms must be completed and submitted to AHIMS following the reburial. The repatriation of all cultural heritage material is of the highest priority for the success of this Project.

The specific method of reburial will be confirmed in consultation with the Aboriginal community and may include methods such as reburial in bark or community woven dilly bags. It is reasonable to expect that a smoking ceremony for each reburial may occur. Timing for the reburial of cultural material will be in agreement between the RAPs, Transgrid and SecureEnergy.

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Heritage Management Procedure UNEXPECTED HERITAGE FINDS PROCEDURE



Figure 13-1: Unexpected Heritage Finds Procedure (SecureEnergy 2022)

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Figure 13-2: Discovery of Suspected Human Remains Procedure (SecureEnergy 2022)

EV.1240 EnergyConnect (NSW – Western Section) | Stage 2 (2b) - Aboriginal Cultural Heritage Assessment (45860-G-70005-REP-U-00026) | Prepared for SecureEnergy Joint Venture | Page 112 Table 13-1: Assessment of impacts to archaeological sites within and adjacent to the Project boundary and RMMs for sites and objects identified during the NOHC (2021a; 2021b) survey, Everick Heritage (2022a) additional survey and test excavation

Information redacted for public display

EVERICK HERITAGE

14. Survey maps

Information redacted for public display

15. Test excavation maps

Information redacted for public display

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Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. Shovel Test Pits were used to determine the presence and extent of archaeological deposit in a controlled excavation of 100 mm spits

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits$

Appendix A – Infrastructure Approval

EV.1240 EnergyConnect (NSW – Western Section) | Stage 2 (2b) - Aboriginal Cultural Heritage Assessment (45860-G-70005-REP-U-00026) | Prepared for SecureEnergy Joint Venture | Page 165

Infrastructure approval

Section 5.19 of the Environmental Planning & Assessment Act 1979

I grant approval to the application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- provide for regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Minister for Planning and Public Spaces

	Sydney	28 September 2021	
SCHEDULE 1			
Application Number:	SSI 10040		
Proponent:	TransGrid		
Approval Authority:	Minister for Planni	ing and Public Spaces	
Land:	Land in Wentwort as described in development layo	th Shire local government area, the EIS and shown on the ut plans	
Development:	Project EnergyCon Development of transmission line transmission netw and upgrading th between Buronga Victoria border	nnect (NSW – Western Section). a new 330 kilovolt (kV) connecting the NSW and SA vorks (via Buronga substation) ne existing transmission line a substation and the NSW /	
Critical State Significant Infrastructure:	Development for NSW Electricity I Clause 15 of Sch <i>Planning Policy (S</i> 2011	Project EnergyConnect (SA to nterconnector) as described in edule 5 of <i>State Environmental</i> <i>itate and Regional Development</i>)	



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DEFINITIONS

The definitions below apply to terms used in this approval, unless otherwise stated or the context indicates otherwise.

Term	Definition
Aboriginal object	The same meaning as in the National Parks and Wildlife Act 1974 (NSW)
Aboriginal stakeholders	Registered Aboriginal Parties (RAPs) from the EIS
Ancillary facility	A temporary facility for construction of the development including an office, accommodation, and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory and material stockpile area
AS	Australian Standard
BCA	Building Code of Australia
BC Act	Biodiversity Conservation Act 2016
BCS	Biodiversity, Conservation and Science Directorate of the Department of Planning, Industry and Environment
Conditions of this approval	Conditions contained in Schedules 1 to 2 inclusive
Construction	All physical works to enable the operation, including but not limited to the construction of transmission infrastructure and ancillary facilities carried out before the commencement of operation, excluding pre-construction minor works, road upgrades and operation of the accommodation camps.
Council	Wentworth Shire Council
Decommissioning	 The deconstruction and removal of the: ancillary facilities; existing 220 kV transmission line between Buronga substation and the NSW / Victoria border (Line 0X1); and the temporary bypass transmission line between Tower 1 and Tower 19 of existing transmission line 0X1.
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning, Industry and Environment
Development	The development as generally described in Schedule 1 of this approval, the carrying out of which is approved under the terms of this approval
Development area	The area subject to disturbance and/or development, as shown on the development layout plans and depicted in the EIS
Development layout plans	The area of the development as depicted on the figures in Appendix 1
DPI	Department of Primary Industries
DPIE Water	The Department's Water Division
EIS	 The Environmental Impact Statement titled EnergyConnect (NSW – Western Section, Environmental Impact Statement), prepared by WSP Australia Pty Limited, dated October 2020, including the Proponent's: EnergyConnect (NSW – Western Sections) Submissions Report, dated April 2021; EnergyConnect (NSW – Western Sections) Amendment Report, dated April 2021; additional information letter dated 10 August 2021; Biodiversity Development Assessment Report dated 10 August 2021; and Biodiversity offset strategy summary letter dated 10 August 2021.
EMF	Electric and Magnetic Fields
EMS	Environmental Management System

Term	Definition
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	NSW Environment Protection Authority
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
EPL	Environment Protection Licence under the POEO Act
Feasible	Means what is possible and practical in the circumstances
FRNSW	Fire and Rescue NSW
GPS	Global Positioning System
Heavy Vehicle	As defined under the Heavy Vehicle National Law (NSW), but excluding light and medium rigid trucks and buses no more than 8 tonnes and with not more than 2 axles
Heritage Act	Heritage Act 1977
Heritage item	An Aboriginal object, an Aboriginal place, or a place, building, work, relic, moveable object, tree or precinct of heritage significance, that is listed under any of the following: the <i>National Parks and Wildlife Act 1974,</i> the State Heritage Register under the Heritage Act 1977, a state agency heritage and conservation register under section 170 of the Heritage Act 1977, a Local Environmental Plan under the EP&A Act, the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), or anything identified as a heritage item under the conditions of this approval
Heritage NSW	Heritage Division within the Department of Premier and Cabinet
ICNIRP	International Commission on Non-Ionizing Radiation Protection
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance Note: "material harm" is defined in this approval
Land	Has the same meaning as the definition of the term in Section 1.4 of the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedule 2 of this approval where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Landowner	Has the same meaning as "owner" in the <i>Local Government Act 1993</i> and in relation to a building means the owner of the building
Material harm	 Is harm that: (a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment). This definition excludes "harm" that is authorised under either this approval or any other extent of the environment.
Maximise	any other statutory approval Implement all reasonable and feasible mitigation measures to achieve the
	specified outcome
Minimise	Implement all reasonable and feasible mitigation measures to reduce the impacts of the development
Minister	NSW Minister for Planning and Public Spaces, or delegate

Term	Definition
Non-associated residence	 Means: a residence on privately-owned land in respect of which the owner has not reached an agreement with the Proponent in relation to the development (as provided by this approval); or a residence on privately-owned land in respect of which the owner has reached an agreement with the Proponent in relation to the development (as provided by this approval), but the agreement does not cover the relevant impact; or the performance measure for such impact under that agreement has been exceeded.
Non-compliance	An occurrence, set of circumstances or development that is a breach of this approval
NSW	New South Wales
OEMP	Operational Environmental Management Plan
Operation	The carrying out of the approved purpose of the development upon completion of construction, but does not include commissioning trials of equipment or use of temporary facilities. <i>Note: There may be overlap between the carrying out of construction and</i> <i>operation if the phases of the development are staged. Commissioning trials of</i> <i>equipment and temporary use of any part of the development are within the</i> <i>definition of construction.</i>
POEO Act	Protection of the Environment Operations Act 1997
Planning Secretary	Secretary of the Department of Planning, Industry and Environment
Pre-construction minor works	 Includes: i) the following activities: surveys building and road dilapidation surveys; investigative drilling, excavation or salvage; establishing temporary site office (in locations meeting the criteria identified in the conditions of this approval) installation of environmental impact mitigation measures, fencing, enabling works; ii) construction of minor access roads and minor adjustments to services/utilities, etc, for the activities identified in i) above; and iii) minor clearing or translocation of native vegetation for the activities identified in i) and ii) above.
Privately-owned land	Land that is not owned by a public agency or publicly-owned commercial entity (or its subsidiary)
Proponent	The person identified as such in Schedule 1 of this approval and any other person carrying out any part of the development from time to time
Public infrastructure	Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Residence	Existing or approved dwelling at the date of grant of this approval
RFS	NSW Rural Fire Service
SA	South Australia
SEPP	State Environmental Planning Policy
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
Site	All land to which the development application applies as shown in Appendix 1

Term	Definition
Standard construction hours	7 am to 6 pm Monday to Friday, and 8 am to 1 pm on Saturdays
TfNSW	Transport for NSW
Upgrades and Upgrading	The carrying out of works in accordance with the conditions of this approval (including replacing plant, equipment or machinery and updating relevant technology) to improve the efficiency of the development or to enable or enhance its continued operation, and the carrying out of maintenance works (excluding road upgrades)
Watercourse	A river, creek or other stream, including a stream in the form of an anabranch or tributary, in which water flows permanently or intermittently, regardless of the frequency of flow events. In a natural channel, whether artificially modified or not, or in an artificial channel that has changed the course of the stream. It also includes weirs, lakes and dams

SUMMARY OF REPORTING REQUIREMENTS

Reports and notifications that must be provided to the Planning Secretary under the terms of this approval are listed in the following table. Note that under condition A5 of this approval the Proponent may seek the Planning Secretary's agreement to a later timeframe for submission (other than in relation to the immediate written notification of an incident required under condition E6).

Condition	Report / Notification	Timing ¹	Purpose
Part A – Administrative			
A15	Community Communication Strategy	Prior to commencing construction	Information
A16	Appointment of Environmental Representative	Prior to commencing the development	Approval
A19	Environmental Representative Responsibilities	From commencing the development until commencing operation	Information / Approval
Part B - Co	nstruction Environmental Mana	agement	
B1	CEMP	Prior to commencing construction	Approval
B2	CEMP Sub-Plans	Prior to commencing construction	Approval
Part C - Op	eration Environmental Manage	ment	•
C1	OEMP or EMS	Prior to commencing operation	Approval
Part D – Key Issues			
Noise and	Vibration		
D3	Out-of-Hours Work Protocol	Prior to commencing out-of-hours works	Approval
D10	Operational Noise Review	Within 12 months of this Approval	Approval
D10	Appointment of Noise Expert	Prior to appointment of noise expert	Endorsement
D11	Operational Noise Monitoring	Within 6 months of commencing operation	Information
Heritage			
D29	Aboriginal Cultural Heritage Strategy	Prior to commencing construction	Approval
D34	Appointment of Heritage Expert	Prior to appointment of heritage expert	Endorsement
Traffic and Transport			
D37	Traffic Strategy	Prior to commencing construction	Approval
D39	Pre-construction Dilapidation Report	Prior to commencing construction	Approval
D39	Post-construction Dilapidation Report	Within 1 month of completion of construction, upgrading or decommissioning	Approval

¹ Where a development is staged, all required approvals must be obtained before the commencement of the relevant stage.

Condition	Report / Notification	Timing ¹	Purpose
Bushfire Safety			
D47	Emergency Plan	Prior to commencing construction	Information
Other			
D52	Accommodation Camp Management Plan	Prior to establishing the accommodation camps	Information
D53	Local Business and Employment Strategy	Prior to commencing construction	Information
Part E – Environmental Management, Reporting and Audit			
E2	Staging strategy, plan or program	Prior to commencing construction (or operation if proposed) of the first of the proposed stages	Approval
E3	Notification of commencement of construction, operations, upgrading or decommissioning	Prior to commencing the relevant phase	Information
E4	Final Layout Plans	Prior to commencing construction	Information
E5	Work as Executed Plans	Prior to commencing operations	Information
E6	Notification of Incident	Immediately upon becoming aware of the incident	Information
E7	Notification of Non- Compliance	Within seven days upon becoming aware of any non-compliance	Information

SCHEDULE 2

PART A

ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A1 In meeting the specific performance measures and criteria of this approval, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction, operation, rehabilitation, upgrading or decommissioning of the development.

TERMS OF APPROVAL

- A2 The development may only be carried out:
 - a) in compliance with the conditions of this approval;
 - b) in accordance with all written directions of the Planning Secretary;
 - c) generally in accordance with the EIS; and
 - d) generally in accordance with the Development Layout in Appendix 1.
- A3 The Proponent must comply with any requirement/s of the Planning Secretary arising from the Department's assessment of:
 - a) any strategies, plans or correspondence that are submitted in accordance with this approval;
 - b) any reports, reviews or audits commissioned by the Department regarding compliance with this approval; and
 - c) the implementation of any actions or measures contained in these documents.
- A4 The conditions of this approval and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(d). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c) or A2(d), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.
- A5 Any document that must be submitted within a timeframe specified in or under the terms of this approval may be submitted within a later timeframe agreed with the Planning Secretary. This condition does not apply to the immediate written notification required in respect of an incident under condition E6.

LAPSE OF APPROVAL

A6 This approval will lapse if the Proponent does not physically commence the development within 5 years of the date on which it is granted.

EVIDENCE OF CONSULTATION

- A7 Where conditions of this approval require consultation with an identified party, the Proponent must:
 - a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and
 - b) provide details of the consultation undertaken including:
 - (i) the outcome of that consultation, matters resolved and unresolved; and
 - (ii) details of any disagreement remaining between the party consulted and the Proponent and how the Proponent has addressed the matters not resolved.

PROTECTION OF PUBLIC INFRASTRUCTURE

- A8 Unless the Proponent and the applicable authority agree otherwise, the Proponent must:
 - a) undertake any works on or in the vicinity of public infrastructure in consultation with the applicable public authority or service provider responsible for that public infrastructure;
 - b) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by the development; and
 - c) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

This condition does not apply to any damage to roads caused as a result of general road usage which is expressly provided for in the conditions of this approval.

9

DEMOLITION

A9 The Proponent must ensure that all demolition work on site is carried out in accordance with AS 2601-2001: The Demolition of Structures (Standards Australia, 2001).

STRUCTURAL ADEQUACY

A10 The Proponent must ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA; and where the BCA is not applicable, to the relevant Australian Standard.

Notes:

- Under Part 6 of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the development.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.

COMPLIANCE

A11 The Proponent must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this approval relevant to activities they carry out in respect of the development.

OPERATION OF PLANT AND EQUIPMENT

- A12 All plant and equipment used on site, or in connection with the development, must be:
 - a) maintained in a proper and efficient condition; and
 - b) operated in a proper and efficient manner.

APPLICABILITY OF GUIDELINES

- A13 References in the conditions of this approval to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this approval.
- A14 However, consistent with the conditions of this approval and without altering any limits or criteria in this approval, the Planning Secretary may, when issuing directions under this approval in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

COMMUNITY COMMUNICATION STRATEGY

A15 Prior to the commencement of construction, the Proponent must prepare a Community Communication Strategy to provide mechanisms to facilitate communication between the Proponent and the community (including adjoining affected landowners) during construction.

The Community Communication Strategy must:

- a) identify landowners for potentially impacted receivers;
- b) ensure that the landowners identified in (a) are consulted during construction;
- c) set out procedures and mechanisms for the regular distribution of information to the wider community;
- d) establish a public liaison officer(s) to engage with the local community; and
- e) set out procedures and mechanisms:
 - through which the community can discuss or provide feedback to the Proponent;
 - through which the Proponent will respond to enquiries or feedback from the community; and
 - to resolve any issues and mediate any disputes that may arise in relation to construction of the development.

The Proponent must implement the Community Communication Strategy for the duration of construction.

ENVIRONMENTAL REPRESENTATIVE

- A16 Prior to commencing the development, an Environmental Representative (ER) must be approved by the Planning Secretary and engaged by the Proponent.
- A17 The Planning Secretary's approval of an ER must be sought no later than one (1) week before commencing the development.

- A18 The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the documents listed in condition A2, and is independent from the design and construction of the development. The ER must meet only the requirements set out in section 2.2, 2.3,2.4 and 3 in the *Environmental Representative Protocol* (Department of Planning and Environment, October 2018).
- A19 From commencing the development, until commencing operation, or as agreed with the Planning Secretary, the approved ER must:
 - a) review the documents identified in conditions A15, B1, B2, D3, D10, D11, D29, D37 D47, D52 and D53, and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:
 - (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or
 - (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Department for information or are not required to be submitted to the Department);
 - b) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; and
 - c) consider any minor amendments to be made to the plans / strategies in conditions A15, D11, D52, D53, E3, E4, E5, E6, E7 that involve updating or are of an administrative nature and do not increase impacts to nearby sensitive receivers, and ensure they are consistent with the terms of this approval and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval.
- A20 The Proponent must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in condition A19, as well as the complaints register for any complaints received (on the day they are received).

PART B

CONSTRUCTION ENVIRONMENTAL MANAGEMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- B1 Prior to commencing construction, a Construction Environmental Management Plan (CEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the EIS will be implemented and achieved during construction to the satisfaction of the Planning Secretary.
- B2 The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan in Table 1.

	Required CEMP Sub-plan	Relevant government agencies and stakeholders to be consulted for each CEMP Sub-plan		
(a)	Noise and Vibration	Council		
(b)	Soil and Water	DPIE Water Council		
(c)	Biodiversity	BCS Council		
(d)	Heritage	Heritage NSW Aboriginal stakeholders		
(e)	Traffic and Transport	TfNSW Council		

Table 1: CEMP Sub-plans

- B3 Details of all information requested by an agency to be included in a CEMP Sub-plan as a result of consultation must be provided with the relevant CEMP Sub-Plan.
- B4 Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event prior to commencing construction.
- B5 Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, must be implemented for the duration of construction. Where construction of the development is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been approved by the Planning Secretary.

Management Plan Requirements

- B6 The CEMP and CEMP Sub-plans required under this approval must be prepared by suitably qualified and experienced persons in accordance with relevant guidelines, and include where relevant:
 - a) a summary of relevant background or baseline data;
 - b) details of:
 - (i) the relevant statutory requirements (including any relevant approval or licence conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - c) any relevant commitments or recommendations identified in the EIS;
 - d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
 - e) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development (including a table summarising all the monitoring and reporting obligations under the conditions of this approval); and
 - (ii) effectiveness of the management measures set out pursuant to paragraph d);
 - f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - g) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - h) a protocol for managing and reporting any:
 - (i) incident, non-compliance or exceedance of any impact assessment criterion and performance criterion;
 - (ii) complaint; or
 - (iii) failure to comply with other statutory requirements;

- i) set out the procedures that would be implemented to:
 - (i) keep the local community and relevant agencies informed about the construction and environmental performance of the development;
 - (ii) receive, handle, respond to, and record complaints;
 - (iii) resolve any disputes that may arise;
 - (iv) respond to any non-compliance;
 - (v) respond to emergencies; and
- j) a description of the roles and environmental responsibilities, authority and accountability for all relevant employees, as well as training and awareness; and
- k) a protocol for periodic review of the CEMP and associated Sub-plans and programs.

The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

PART C

OPERATIONAL ENVIRONMENTAL MANAGEMENT

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

- C1 An Operational Environmental Management Plan (OEMP) must be prepared to detail how the performance outcomes, commitments and mitigation measures made and identified in the EIS will be implemented and achieved during operation. This condition (condition C1) does not apply if condition C2 of this approval applies.
- C2 An OEMP is not required for the development if the Proponent has an Environmental Management System (EMS) or equivalent as agreed with the Planning Secretary, and demonstrates, to the satisfaction of the Planning Secretary, that through the EMS:
 - a) the performance outcomes, commitments and mitigation measures, made and identified in the EIS, and specified relevant terms of this approval can be achieved;
 - b) issues identified through ongoing risk analysis can be managed;
 - c) there is a clear plan depicting all the monitoring to be carried out in relation to the development, including a table summarising all the monitoring and reporting obligations under the conditions of this approval;
 - d) there is a strategic framework for environmental management of the development;
 - e) the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development is clear; and
 - f) procedures are in place for:
 - keeping the local community and relevant agencies informed about the operation and environmental performance of the development;
 - receiving, handling, responding to, and recording complaints;
 - resolving any disputes that may arise;
 - responding to any non-compliance; and
 - responding to emergencies.
- C3 Prior to commencing operation, the OEMP or EMS or equivalent as agreed with the Planning Secretary must be prepared to the satisfaction of Planning Secretary.
PART D

KEY ISSUE CONDITIONS

NOISE AND VIBRATION

Construction Hours

- D1 Road upgrades, construction, upgrading and decommissioning activities may only be undertaken between:
 - a) 7 am to 6 pm Monday to Friday;
 - b) 8 am to 1 pm Saturdays; and
 - c) at no time on Sundays and NSW public holidays;

unless the Planning Secretary agrees otherwise.

- D2 The following construction, upgrading and decommissioning activities may be carried out outside the hours specified in condition D1 above:
 - a) the delivery or dispatch of materials as requested by the NSW Police Force or other public authorities for safety reasons;
 - b) emergency work to avoid the loss of life, property or to prevent material harm to the environment; or
 - c) works carried out in accordance with the hours and noise limits specified in any negotiated agreements with sensitive receivers (owners and occupiers), provided the negotiated agreements are in writing and finalised before the commencement of works.
- D3 An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of works which are outside the hours defined in conditions D1, D2, and D7 The Protocol must be approved by the Planning Secretary before commencing works. The Protocol must:
 - a) be prepared in consultation with Council;
 - b) provide a process for the consideration of out-of-hours works against the relevant noise and vibration criteria, including the determination of low and high-risk activities;
 - c) provide a process for the identification of mitigation measures for potential impacts, including respite periods in consultation with any affected receivers;
 - d) provide a process for the identification of out-of-hours works undertaken by third parties in the vicinity of the site, and coordination of out-of-hours works with these third parties to achieve respite periods in locations where receivers may be affected by concurrent activities;
 - e) identify an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where:
 - low risk activities can be undertaken without the approval of the Planning Secretary and with the approval of the ER; and
 - high risk activities that are approved by the Planning Secretary; and
 - f) identify Department, Council and community notification arrangements for approved out of hours work.

Construction and Decommissioning

- D4 The Proponent must take all reasonable and feasible steps to minimise the construction, upgrading or decommissioning noise of the development in the locations where the noise is audible to sensitive receivers, including any associated traffic noise.
- D5 The Proponent must implement mitigation measures:
 - a) to ensure that the noise generated by any construction, upgrading or decommissioning activities is managed in accordance with the requirements for construction 'noise affected' management levels established in accordance with *Interim Construction Noise Guideline* (DECC, 2009); and
 - b) with the aim of achieving the road traffic noise assessment criteria for residential land uses from *NSW Road Noise Policy* (DECCW, 2011).
- D6 The Proponent must comply with the following vibration limits:
 - a) vibration criteria established using the *Assessing vibration: a technical guideline* (DEC, 2006) (for human exposure);
 - b) BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"; and
 - c) vibration limits set out in the *German Standard DIN 4150-3*: *Structural Vibration effects of vibration on structures* (for structural damage).

- D7 Blasting may only be carried out on the site between 9 am and 5 pm Monday to Friday and between 9 am to 1 pm on Saturday. No blasting is allowed on Sundays or public holidays.
- D8 The Proponent must ensure that any blasting carried out on the site does not exceed the criteria in Table 2.

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
	120	10	0%
Any non- associated residence	115	5	5% of the total number of blasts or events over a rolling period of 12 months

Table 2: Blasting criteria

Operation

- D9 The Proponent must implement all reasonable and feasible measures with the aim of ensuring that the noise generated by the operation of the development does not exceed 40 dB(A) LAeq,15min, at the reasonably most affected point of the residence, in accordance with the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence.
- D10 Within 12 months of the date of this approval, the Proponent must prepare an Operational Noise Review to confirm noise predictions and control measures that would be implemented for the operation of the development. The Review must:
 - a) be prepared by a suitably qualified and experienced person whose appointment has been endorsed by the Planning Secretary;
 - b) be prepared in consultation with the landowner of impacted residences;
 - c) identify residences predicted to experience noise levels that exceed 40 dB(A) LAeq,15min at the reasonably most affected point of the residence, determined in accordance with the NSW Noise Policy for Industry (EPA, 2017);
 - d) detail the noise mitigation measures to achieve the noise criteria identified, including the timing of implementation;
 - e) provide evidence of consultation with affected landowners;
 - f) include a consultation strategy to seek feedback from directly affected landowners on the noise mitigation measures; and
 - g) identify procedures for the management of operational noise complaints.

The Proponent must implement any identified mitigation measures prior to the commencement of operation.

Operational Noise Monitoring

- D11 Within 6 months of the commencement of operations (or the commencement of operation of a stage, if the development is to be staged), the Proponent must:
 - a) undertake noise monitoring to determine whether the development is complying with the relevant conditions of this approval; and
 - b) submit a copy of the monitoring results to the Department.
- D12 The Proponent must undertake further noise monitoring of the development if required by the Planning Secretary.

Noise and Vibration CEMP Sub-Plan

- D13 The Noise and Vibration CEMP Sub-Plan required under condition B2 must:
 - a) ensure the requirements in conditions D1 to D12 are complied with;
 - b) include a description of the reasonable and feasible measures that would be implemented to minimise noise and vibration impacts of the development;
 - c) include a detailed description of the noise and vibration management system for the development;
 - d) include a protocol for the identification, notification and management of works that exceed the noise management levels; and
 - e) include a monitoring program that evaluates and reports on the effectiveness of the noise and vibration management system.

AIR QUALITY

- D14 In addition to the performance outcomes, commitments and mitigation measures specified in the EIS, the Proponent must take all reasonable steps to:
 - a) minimise the off-site dust, fume, blast emissions and other air pollutants of the development; and
 - b) minimise the surface disturbance of the site.

SOIL AND WATER

Water Supply

D15 The Proponent must ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of the development to match its available water supply. Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Proponent is required to obtain the necessary water licences for the development.

Erosion and Sedimentation

- D16 The Proponent must:
 - a) minimise erosion and control sediment generation; and
 - ensure all land disturbances have appropriate drainage and erosion and sediment controls designed, installed and maintained in accordance with Managing Urban Stormwater - Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater – Soils and Construction Volume 2C Unsealed Roads (DECC, 2008);

Pollution of Waters

- D17 Unless otherwise authorised by an EPL, the Proponent must ensure the development does not cause any water pollution, as defined under Section 120 of the POEO Act.
- D18 The Proponent must:
 - a) ensure that appropriate components of the concrete batching plants and substation are suitably bunded; and
 - b) minimise any spills of hazardous materials or hydrocarbons, and clean up any spills as soon as possible after they occur.
- D19 The Proponent must ensure that any groundwater dewatering activities do not discharge to watercourses.

Riparian Areas

- D20 The Proponent must ensure:
 - a) all activities on waterfront land are constructed in accordance with the *Guidelines for Controlled* Activities on Waterfront Land (2012), unless DPIE Water agrees otherwise; and
 - b) the geomorphic condition of the major rivers and distributary channels crossed by the development is not impacted.

Flooding

- D21 The Proponent must ensure that the development:
 - a) does not materially alter the flood storage capacity, flows or characteristics in the development area or off-site; and
 - b) is designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site,

unless otherwise agreed by Council.

Acid Sulfate Soils

D22 The Proponent must ensure that any construction activities in identified areas of acid sulfate soil risk are undertaken in accordance with the *Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998).*

Salinity

D23 The Proponent must ensure that any construction activities in identified areas of moderate to high salinity are undertaken in accordance with the *Salinity Training Manual* (DPI, 2014) and *Book 4 Dryland Salinity: Productive use of Saline Land and Water* (NSW DECC, 2008).

Soil and Water CEMP Sub-Plan

- D24 The Soil and Water CEMP Sub-Plan required under condition B2 must include provisions for:
 - a) ensuring the requirements in conditions D15 to D23 are complied with;
 - b) managing flood risk during construction;
 - c) investigating, assessing and managing contaminated land, soils and groundwater in the development area;
 - d) investigating, assessing and managing the potential for asbestos and other hazardous materials in the development area; and
 - e) managing any unexpected and / or suspected contaminated land, asbestos and unexploded ordinance excavated, disturbed or otherwise discovered during construction.

BIODIVERSITY

Restrictions on Clearing and Habitat

D25 Unless otherwise agreed with the Planning Secretary, the Proponent must:

- a) ensure that no more than:
 - 19.6 hectares (ha) of BC Act listed Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW Southwestern Slopes bioregions;
 - 0.04 ha of habitat for BC Act listed flora species Acacia acanthoclada (Harrow Wattle);
 - 0.32 ha of habitat for BC Act and EPBC Act listed flora species Atriplex infrequens (A saltbush);
 - 1.51 ha of habitat for BC Act listed flora species Austrostipa nullanulla (A spear-grass);
 - 14 individuals of BC Act listed Santalum murrayanum (Bitter Quandong); and
 - 6.91 ha of habitat for BC Act and EPBC Act listed fauna species *Polytelis anthopeplus monarchoides* (Regent Parrot) (eastern subspecies);
 - is cleared for the development; and
- b) minimise:
 - the impacts of the development on hollow-bearing trees;
 - the impacts of the development on threatened bird and bat populations; and
 - the clearing of native vegetation and key habitat.

Biodiversity Offset Package

- D26 Prior to carrying out any development that would impact on biodiversity values, the Proponent must prepare a Biodiversity Offset Package (Package) that is consistent with the EIS, in consultation with BCS and to the satisfaction of the Secretary in writing. The Package must include, but not necessarily be limited to:
 - (a) details of the specific biodiversity offset measures to be implemented and delivered in accordance with the EIS;
 - (b) the cost for each specific biodiversity offset measure, which would be required to be paid into the Biodiversity Conservation Fund if the relevant measure is not implemented and delivered (as calculated in accordance with Division 6 of the Biodiversity Conservation Act 2016 (NSW) and the offsets payment calculator that was established as at 29 July 2021);
 - (c) the timing and responsibilities for the implementation and delivery of the measures required in the Package; and
 - (d) confirmation that the biodiversity offset measures will have been implemented and delivered no later than 31 December 2023.

Following approval, the Proponent must implement and deliver the Biodiversity Offset Package.

D27 Prior to carrying out any development that could impact the biodiversity values requiring offset, the Proponent must establish an escrow account and pay into that account \$48 million, in accordance with the Deed of Agreement with the Planning Secretary executed on 13 September 2021. The Proponent must comply with the terms of the Deed.

Note: this condition provides security to the Minister for the performance of the Proponent's obligations under this approval in relation to biodiversity offsets and release funds for payment into the Biodiversity Conservation Trust in the event that the biodiversity offsets (either in whole or part) are not delivered in accordance with the Package by the Proponent.

Biodiversity CEMP Sub-Plan

a)

- D28 The Biodiversity CEMP Sub-Plan required under condition B2 must include:
 - a description of the measures that would be implemented for:
 - minimising the amount of native vegetation clearing within the approved development footprint;
 - minimising the loss of key fauna habitat, including tree hollows;
 - minimising the impacts on fauna on site, including undertaking pre-clearance surveys;
 - minimising the potential indirect impacts on threatened flora and fauna species, migratory species and 'at risk' species;
 - rehabilitating and revegetating disturbance areas;
 - protecting native vegetation and key fauna habitat outside the approved disturbance area;
 - maximising the salvage of resources within the approved disturbance area including vegetative and soil resources – for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the site;
 - collecting and propagating seed (where relevant);
 - controlling weeds;
 - controlling erosion; and
 - bushfire management;
 - b) details of the Proponent's commitment to make a one off \$150,000 funding contribution targeted at further scientific study into the impacts of electric and magnetic fields on birds in Australia;
 - c) preparation and implementation of a two year bird impact monitoring program at the commencement of operations; and
 - d) a detailed program to monitor and report on the effectiveness of these measures.

HERITAGE

- D29 Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:
 - a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;
 - b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);
 - c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;
 - d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and
 - e) include an updated Aboriginal cultural heritage assessment report, which:
 - is based on the findings of the subsurface testing in b) and surveys in c);
 - describes any potential additional impacts to heritage items;
 - identifies further mitigation measures, including avoidance or salvage;
 - includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
 - provides an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.

Avoidance and Salvage

- D30 The Proponent must implement all reasonable and feasible measures to avoid and minimise harm to heritage items and potential archaeological deposits (PADs) identified in the EIS and the Aboriginal Cultural Heritage Strategy required by condition D29, prior to carrying out any development that could harm the items or deposits.
- D31 The Proponent must ensure the development does not cause any harm to heritage items identified for avoidance in the approved Aboriginal Cultural Heritage Strategy or any Aboriginal heritage items located outside the approved development footprint.
- D32 Prior to carrying out any activity that could harm heritage items, the Proponent must salvage and relocate all heritage items identified for salvage and relocation in the updated and approved Aboriginal Cultural Heritage Strategy to a suitable alternative location, in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010).

D33 The Proponent must ensure the development does not cause any harm to heritage items PEC-W-H-1 and PEC-W-SE-H1.

Heritage CEMP Sub-Plan

- D34 The Heritage CEMP Sub-Plan required under condition B2 must:
 - a) be prepared by a suitably qualified and experienced person whose appointment has been endorsed by the Planning Secretary;
 - b) include a description of the measures that would be implemented for:
 - addressing the outcomes of the additional assessment, testing and surveys identified in condition D29;
 - protecting the heritage items identified in conditions D31 and D33, including fencing off the heritage items (where required) prior to carrying out any development that could harm the heritage items, and protecting any items located outside the approved development corridor;
 - salvaging and relocating the heritage items identified in condition D32;
 - minimising and managing the impacts of the development on heritage items within the development corridor, including:
 - a strategy for the long-term management of any heritage items or material collected during the test excavation or salvage works;
 - a contingency plan and reporting procedure if:
 - heritage items outside the approved disturbance area are damaged;
 - previously unidentified heritage items are found; or
 - Aboriginal skeletal material is discovered;
 - ensuring workers on site receive suitable heritage inductions prior to carrying out any development on site, and that records are kept of these inductions; and
 - ongoing consultation with Aboriginal stakeholders during the implementation of the plan; and
 - c) include a program to monitor and report on the effectiveness of these measures and any heritage impacts of the development.

TRAFFIC AND TRANSPORT

Designated Heavy and Over-Dimensional Vehicle Routes

D35 All over-dimensional vehicles associated with the development must only travel to and from the site via the Primary Access Routes described in the EIS, as identified in the figure in Appendix 2, unless the Planning Secretary agrees otherwise.

Notes:

- The Proponent is required to obtain relevant permits under the Heavy Vehicle National Law (NSW) for the use of over-dimensional vehicles on the road network.
- D36 All heavy and light vehicles associated with the development:
 - a) must travel to and from the site via the Primary Access Route described in the EIS, as identified in the figure in Appendix 2; and
 - b) may travel to and from the site via the Secondary Access Routes and Water Supply Routes, subject to the requirements in conditions D37 and D38, to the satisfaction of the relevant roads authority, unless the Planning Secretary agrees otherwise.

Traffic Strategy

- D37 Prior to commencing construction, the Proponent must prepare a Traffic Strategy, in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary, which:
 - a) for all access routes:
 - identifies the location and type of any necessary road upgrades (including roads, intersections, crossing points and access points), including consideration of relevant amenity impacts;
 - ensures that any road upgrades comply with the Austroads Guide to Road Design (as amended by TfNSW supplements), unless the relevant roads authority agrees otherwise;
 - includes a detailed assessment of potential impacts of any necessary road upgrades (such as heritage and biodiversity impacts), including consideration of appropriate mitigation measures;
 - identifies whether intersections, crossing points and access points would be permanent or temporary; and
 - includes measures for notifying, seeking feedback from and addressing the concerns of impacted residents along the routes;
 - b) for Secondary Access Routes and Water Supply Routes:

- provides detailed usage of the routes, including maximum daily numbers of heavy and light vehicles and approximate durations of use;
- includes an assessment of dust impacts to any residences along the routes and identifies mitigation measures to minimise any impacts; and
- identifies any residences along the routes that would experience road traffic noise above the relevant assessment criteria from Table 3 in NSW Road Noise Policy (DECCW, 2011) due to project-related traffic and identifies mitigation measures to minimise impacts.
- D38 Prior to commencing construction, the proponent must implement the road upgrades and the mitigation measures identified in the Traffic Strategy in condition D37, to the satisfaction of the relevant roads authority and the Planning Secretary, respectively.

Road Maintenance

- D39 The Proponent must:
 - a) undertake an independent dilapidation survey to assess the:
 - existing condition of all local roads on the transport route (including local road crossings) prior to construction, upgrading or decommissioning works; and
 - condition of all local roads on the transport route (including local road crossings):
 - within 1 month of the completion of construction, upgrading or decommissioning works, or within a timeframe agreed to by the relevant roads authority;
 - on an annual basis during construction, or within a timeframe agreed to by the relevant roads authority;
 - b) repair (or pay the full costs associated with repairing) any damage to local roads on the transport route (including local road crossings), if dilapidation surveys identify that the road has been damaged by the development during construction, upgrading or decommissioning works;
 - in consultation with the relevant roads authority, to the satisfaction of the Planning Secretary.

Traffic and Transport CEMP Sub-Plan

D40 The Traffic and Transport CEMP Sub-Plan required under condition B2 must include:

- a) details of the transport route to be used for all development-related traffic;
 - b) details of the road upgrade works required by condition D38 of this approval;
 - c) details of the measures that would be implemented to:
 - minimise traffic safety impacts of the development and disruptions to local road users during construction, upgrading or decommissioning works, including:
 - a description of the proposed dilapidation surveys required by condition D39 of this approval;
 - a description of the proposed measures for managing traffic flow around the work sites, construction compounds and accommodation camps;
 - temporary traffic controls, including detours and signage;
 - procedures for stringing cables and transmission lines across roads;
 - notifying the local community about development-related traffic impacts;
 - procedures for receiving and addressing complaints from the community about development- related traffic;
 - minimising potential cumulative traffic impacts with other projects in the area;
 - minimising potential conflict between development-related traffic and rail services, stock movements and school buses, in consultation with local schools, including preventing queuing on the public road network;
 - implementing measures to minimise development-related traffic on the public road network outside of standard construction hours;
 - minimising dirt tracked onto the public road network from development-related traffic;
 - details of the employee shuttle bus service (if proposed), including pick-up and drop-off points and associated parking arrangements for construction workers, and measures to encourage employee use of this service;
 - encouraging car-pooling or ride sharing by employees;
 - scheduling of haulage vehicle movements to minimise convoy length or platoons;
 - responding to local climate conditions that may affect road safety such as fog, dust, wet weather and flooding;
 - ensuring loaded vehicles entering or leaving the site have their loads covered or contained;
 - responding to any emergency repair or maintenance requirements;
 - provisions for maintaining emergency vehicle access at all times;
 - a traffic management system for managing over-dimensional vehicles; and
 - fatigue management.
 - comply with the traffic conditions in this approval;
 - d) include a drivers code of conduct that addresses:
 - travelling speeds;
 - procedures to ensure that drivers to and from the development adhere to the designated overdimensional and heavy vehicle routes;

- procedures to ensure that drivers to and from the development implement safe driving practices; and
- include a detailed program to monitor and report on the effectiveness of these measures and the code of conduct; and
- a flood response plan detailing procedures and options for safe access to and from the site in the e) event of flooding.

VISUAL AMENITY

Visual Impact Mitigation

Unless the Planning Secretary agrees otherwise, for a period of 2 years from the commencement of D41 operations, the owners of R1489, R2022 and R2023 may ask the Proponent to implement visual impact mitigation measures on their land to minimise the visual impacts of the development on their residence (including its curtilage).

Upon receiving such a written request from the owner of these residences, the Proponent must implement appropriate mitigation measures (such as landscaping and vegetation screening) in consultation with the owner.

These mitigation measures must be reasonable and feasible, aimed at reducing the visibility of the transmission line and towers from the residence and its curtilage, and commensurate with the level of visual impact on the residence.

All agreed mitigation measures must be implemented within 12 months of receiving the written request, unless the Planning Secretary agrees otherwise.

If the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Planning Secretary for resolution.

To avoid any doubt, mitigation measures are not required to be implemented to reduce the visibility of transmission lines and towers from any other locations on the property other than the residence and its curtilage.

Visual Appearance

- D42 The Proponent must:
 - take reasonable steps to minimise the off-site visual impacts of the development; and a)
 - b) not mount any advertising signs or logos on site, except where this is required for identification or safety purposes.

Lighting

- D43 The Proponent must:
 - take all reasonable steps to minimise the off-site lighting impacts of the development; and a) b)
 - ensure that any external lighting associated with the development:
 - is installed as low intensity lighting (except where required for safety or emergency purposes);
 - does not shine above the horizontal; and
 - complies with Australian/New Zealand Standard AS/NZS 4282:2019 Control of Obtrusive Effects of Outdoor Lighting.

HAZARD AND RISK

Dangerous Goods

The Proponent must ensure that the storage, handling, and transport of dangerous goods is undertaken in D44 accordance with the relevant Australian Standards and guidelines, particularly AS1940 The storage and handling of flammable and combustible liquids and AS/NZS 1596:2014 The storage and handling of LP Gas, the Dangerous Goods Code, and the EPA's Storing and Handling of Liquids: Environmental Protection - Participants Manual.

Electric and Magnetic Fields

The Proponent must ensure that the design, construction and operation of the development is managed to D45 comply with the applicable electric and magnetic fields (EMF) limits in the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to time-varying electric and magnetic fields (1Hz – 100kHz) (ICNIRP, 2010).

BUSHFIRE SAFETY

Operating Conditions

- D46 The Proponent must:
 - a) minimise the fire risks of the development, including managing vegetation fuel loads on-site;
 - b) ensure that the development:
 - complies with the relevant asset protection requirements in the RFS's *Planning for Bushfire Protection* 2019 (or equivalent) and Standards for Asset Protection Zones;
 - is suitably equipped to respond to any fires on site, including provision of a 20,000 litre water supply tank fitted with a 65 mm Storz fitting and a FRNSW compatible suction connection located at each of the construction compounds and accommodation camps;
 - incorporates the recommendations of a fire risk assessment as per TransGrid's design standards;
 - c) ensure that buildings within the compounds and accommodation camps comply with Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* (or equivalent) and RFS's *Planning for Bushfire Protection 2019;*
 - d) develop procedures to manage potential fires on site, in consultation with the RFS and FRNSW;
 - e) assist the RFS, FRNSW and emergency services as much as practicable if there is a fire in the vicinity of the site; and
 - f) notify the relevant local emergency management committee following completion of construction of the development, and prior to commencing operations.

Emergency Plan

- D47 Prior to commencing construction, the Proponent must develop and implement a comprehensive Emergency Plan and detailed emergency procedures for the development, in consultation with the local Fire Control Centre, and provide a copy of the plan to the local Fire Control Centre. The Proponent must keep two copies of the plan on-site in a prominent position adjacent to the site entry point(s) to the Buronga Substation at all times. The plan must:
 - a) be consistent with:
 - RFS's Planning for Bushfire Protection 2019 (or equivalent);
 - RFS's Development Planning A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan;
 - the Fire and Rescue NSW Act 1989;
 - the Work Health and Safety (WHS) Act 2011;
 - b) identify the fire risks and hazards and detailed measures for the development to prevent or mitigate fires igniting;
 - c) include procedures that would be implemented if there is a fire on-site or in the vicinity of the site;
 - d) list works that should not be carried out during a total fire ban;
 - e) include availability of fire suppression equipment, access and water;
 - f) include procedures for the storage and maintenance of any flammable materials;
 - g) detail access provisions for emergency vehicles and contact details for both a primary and alternative site contact who may be reached 24/7 in the event of an emergency;
 - h) include a figure showing site infrastructure, any Asset Protection Zones and the on-site water supply tank(s);
 - i) include location of hazards (physical, chemical and electrical) that may impact on fire fighting activities and procedures to manage identified hazards during fire fighting activities;
 - j) include details of the location, management and maintenance of any Asset Protection Zone and who is responsible for the maintenance and management of the Asset Protection Zone;
 - k) include bushfire emergency management planning;
 - I) include details of the how RFS would be notified, and procedures that would be implemented, in the event that:
 - there is a fire on-site or in the vicinity of the site;
 - there are any activities on site that would have the potential to ignite surrounding vegetation; or
 - there are any proposed activities to be carried out during a bushfire danger period that have the potential to ignite surrounding vegetation; and
 - m) include details on how live transmission infrastructure can be safely isolated in an emergency.

WASTE

- D48 Waste generated during construction, operation, upgrading and decommissioning must be dealt with in accordance with the following priorities:
 - a) waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;

- b) where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and
- c) where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.
- D49 The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the *Protection of the Environment Operations Act 1997*, the *Protection of the Environment Operations (Waste) Regulation 2014*, and orders or exemptions under the regulation.
- D50 Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, or to any other place that can lawfully accept such waste.
- D51 All waste that is removed from site must be classified in accordance with the EPA's *Waste Classification Guidelines*, with appropriate records and disposal dockets retained for audit purposes.

ACCOMMODATION CAMP

- D52 Prior to establishing the accommodation camps, the Proponent must prepare an Accommodation Camp Management Plan to the satisfaction of Council, unless the Planning Secretary agrees otherwise. The plan must:
 - a) ensure utilities at the accommodation camps, including water, wastewater, waste and electricity, are designed and located in accordance with Council specifications and relevant standards, in consultation with Council;
 - b) ensure the accommodation camp complies with conditions D21 and D46;
 - c) ensure any treated wastewater from the accommodation camps used for dust suppression during construction:
 - complies with the Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) guidelines for irrigation water quality;
 - meets the requirements of the Public Health Act 2010;
 - d) include measure for dust suppression within the accommodation camps;
 - e) provide the site layout including building locations, vehicle access and movement, site servicing and utilities infrastructure; and
 - f) include measures to support local suppliers in servicing the camp where possible.

Following approval, the Proponent must implement the Accommodation Camp Management Plan.

LOCAL BUSINESS AND EMPLOYMENT STRATEGY

D53 Prior to commencing construction, the Proponent must prepare a Local Business and Employment Strategy for the development in consultation with Council. This strategy must investigate options for prioritising the employment of local and Aboriginal workforce and suppliers for the construction of the development, where feasible.

The Proponent must implement the Accommodation and Employment Strategy.

REHABILITATION

D54 Within 6 months of the completion of construction, upgrading or decommissioning, unless the Planning Secretary agrees otherwise, the Proponent must rehabilitate the areas where ancillary facilities, accommodation camps and earthwork material sites are located, to the satisfaction of the Planning Secretary. This rehabilitation must comply with the objectives in Table 3.

Feature	Objective
Ancillary facilities, accommodation camps, earthwork material sites, the existing 220 kV transmission line between Buronga substation and the NSW / Victoria border (Line 0X1), and the temporary bypass transmission line between Tower 1 and Tower 19 of existing transmission line 0X1.	 Safe, stable and non-polluting Progressively rehabilitate the site as soon as possible following disturbance To be decommissioned and removed, unless the Planning Secretary agrees otherwise
Land use	Restore land capability to pre-existing use
Community	Ensure public safety at all times

PART E

ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

REVISION OF STRATEGIES, PLANS AND PROGRAMS

- E1 The Proponent must review and, if necessary, revise the strategies, plans or programs required under this approval to the satisfaction of the Planning Secretary within 3 month of the:
 - submission of an incident report under condition E6;
 - submission of an audit report under condition E11; or
 - any modification to the conditions of this approval.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

- E2 With the approval of the Planning Secretary, the Proponent may:
 - a) prepare and submit any strategy, plan or program required by this approval on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);
 - b) combine any strategy, plan or program required by this approval (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and
 - c) update any strategy, plan or program required by this approval (to ensure the strategies, plans and programs required under this approval are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).

If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this approval.

If approved by the Planning Secretary, updated strategies, plans or programs supersede the previous versions of them and must be implemented in accordance with the condition that requires the strategy, plan or program.

If the Planning Secretary agrees, a strategy, plan or program may be staged without addressing particular requirements of the relevant condition of this approval if those requirements are not applicable to the particular stage.

NOTIFICATIONS

Notification of Department

E3 Prior to commencing construction, operations, upgrading or decommissioning of the development or, the Proponent must notify the Department in writing via the Major Projects website portal of the date of commencing the relevant phase.

If any of these phases of the development are to be staged, then the Proponent must notify the Department in writing prior to commencing the relevant stage, and clearly identify the development that would be carried out during the relevant stage.

Final Layout Plans

- E4 Prior to commencing construction, the Proponent must submit detailed plans of the final layout of the development to the Department via the Major Projects website, including:
 - a) details on siting of transmission towers, ancillary infrastructure and / or ancillary facilities; and
 - b) showing comparison to the approved layout.

The Proponent must ensure that the development is constructed in accordance with the Final Layout Plans.

Work as Executed Plans

E5 Prior to commencing operations, the Proponent must submit plans that confirm the constructed layout of the development and showing comparison to the final layout plans to the Planning Secretary, via the Major Projects website.

Incident Notification

E6 The Department must be notified via the Major Projects website portal immediately after the Proponent becomes aware of an incident. The notification must identify the development (including the development

application number and the name of the development if it has one), and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in Appendix 3.

Non-Compliance Notification

- E7 The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Proponent becomes aware of any non-compliance.
- E8 A non-compliance notification must identify the development and the application number for it, set out the condition of approval that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.
- E9 A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Notification of Landowners

E10 Prior to the commencement of construction, the Proponent must notify the owners of the owners of R1489, R2022 and R2023 of their rights under condition D41.

INDEPENDENT ENVIRONMENTAL AUDIT

E11 Independent Audits of the development must be conducted and carried out at the frequency described and in accordance with the *Independent Audit Post Approval Requirements* (2020), unless otherwise agreed or directed by the Planning Secretary.

ACCESS TO INFORMATION

- E12 The Proponent must:
 - a) make the following information publicly available on its website as relevant to the stage of the development:
 - (i) the EIS;
 - (ii) current statutory approvals for the development;
 - (iii) approved strategies, plans or programs required under the conditions of this approval;
 - the proposed staging plans for the development if the construction, decommissioning and/or operation of the development is to be staged;
 - a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this approval;
 - (vi) a record of complaints, which is to be updated on a monthly basis;
 - (vii) any independent environmental audit, and the Proponent's response to the recommendations in any audit; and
 - (viii) any other matter required by the Planning Secretary; and
 - b) keep this information up to date.

APPENDIX 1 – DEVELOPMENT LAYOUT











APPENDIX 2 – OVER-DIMENSIONAL AND HEAVY VEHICLE ACCESS ROUTE

NSW Government Department of Planning, Industry and Environment

APPENDIX 3 – INCIDENT NOTIFCATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

- 1. A written incident notification addressing the requirements set out below must be submitted to the Planning Secretary via the Major Projects website within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under condition E6 or, having given such notification, subsequently forms the view that an incident has not occurred.
- 2. Written notification of an incident must:
 - a) identify the development and application number;
 - b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - c) identify how the incident was detected;
 - d) identify when the Proponent became aware of the incident;
 - e) identify any actual or potential non-compliance with conditions of approval;
 - f) describe what immediate steps were taken in relation to the incident;
 - g) identify further action(s) that will be taken in relation to the incident; and
 - h) identify a development contact for further communication regarding the incident.
- 3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Proponent must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
- 4. The Incident Report must include:
 - a) a summary of the incident;
 - b) outcomes of an incident investigation, including identification of the cause of the incident;
 - c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
 - d) details of any communication with other stakeholders regarding the incident.

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Appendix B – Consultation log and documentation

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Appendix C – Addendum Aboriginal Archaeological Survey Report

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EnergyConnect (NSW – Western Section) Additional Survey Areas

Addendum Aboriginal Archaeological Survey Report

Written for Secure Energy Joint Venture (45860-G-70005-REP-U-00010)

May 2022

Wentworth Local Government Area

Report Reference:

Edmonds V. 2022. EnergyConnect (NSW – Western Section) Additional Survey Areas: Addendum Aboriginal Archaeological Survey Report (45860-G-70005-REP-U-00010. Everick Heritage Pty Ltd unpublished report prepared for Secure Energy Joint Venture.



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Executive summary

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Approval for the Project under Part 5, Division 5.2 of the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021.

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b). The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures (RMMs):

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

AH3 of the RMMs states that an Aboriginal heritage survey must be carried out with Registered Aboriginal Parties (RAPs) where ground or vegetation disturbance activities are required in all locations outside of the previous heritage survey area prior to works occurring in any such areas. Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to undertake the Aboriginal archaeological survey for those disturbance areas identified as being outside the orridor previously surveyed by NOHC (2021a) (Figure 1-2-Figure 1-5).

On February 1, 2022, the Planning Secretary approved the Project's proposed staging approach for the Aboriginal Cultural Heritage Strategy, required by condition D29 of the Infrastructure Approval. The staging approach permits the commencement of construction in areas outside of Potential Archaeological Deposits (PADs) once the ASR has been prepared and consulted with RAPs and Heritage NSW, subject to complying with other relevant conditions of the Infrastructure Approval. Therefore, a further objective of this Addendum Aboriginal Archaeological Survey Report (ASR) is to identify areas that were subject to additional survey that are outside of PADs and now available to commence construction.

The survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. The survey teams comprised one Everick Heritage archaeologist and two or three RAP representatives. A number of Transgrid and SecureEnergy staff also accompanied the survey teams to assist with land access and orientation. A full list of key survey participants is provided in Appendix B.

Information redacted for public display

In general, the results of the survey reflected predictions and observations regarding site type and location presented in section 6.2.2 and section 6.2.3.

The mitigation measures provided in the Table 9-2 and Table 9-3 were based on consideration of:

- The results of the background research and archaeological survey results
- The currently known nature of impacts of the Project
- The Revised Mitigation Measures.

Avoidance of impact to Aboriginal cultural heritage is the preferred option in all instances, however it is acknowledged that where existing disturbance occurs within the Project area it is often preferable to minimise further disturbance to the landscape and to potentially as yet unidentified Aboriginal cultural heritage. Table 9-2 and Table 9-3 present an assessment of the potential impacts to sites, objects and PADs identified during the additional survey. Where practical, impacts to sites and PADs would be avoided by implementing an exclusion zone as a mitigation measure.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHAR	Addendum Cultural Heritage Assessment Report
AFG	Aboriginal Focus Group
AH	Aboriginal Heritage
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AS	Artefact scatter
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)
CHAR	Cultural Heritage Assessment Report
Code of Practice	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Requirement	nts Aboriginal cultural heritage consultation requirements for proponents 2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System

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DPIE Department of Planning, Industry and Environment (now Department of Planning and Environment (DPE))

EIS	Environmental Impact Assessment
EnergyConnect	Project EnergyConnect
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Diversity Conservation Act 1999 (Cth)
Everick Heritage	Everick Heritage Pty Ltd
GPS	Global Positioning System
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
НС	Hearth complex
IA	Isolated artefact
IH	Isolated hearth
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OC	Open campsite
OEH	Office of Environment and Heritage (now Heritage NSW)

PAD	Potential Archaeological Deposit
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border
RAP	Registered Aboriginal Party
RMMs	revised mitigation measures, identified in Appendix G of the Response to DPIE Request for Information
Response to DPIE Reque	st for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled EnergyConnect (NSW – Western Section) Response to DPIE Request for Information
SecureEnergy	SecureEnergy Joint Venture
S	means section
SM	means shell midden
SNI	South Australia and New South Wales Interconnector
ST	Scarred tree

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Assessment (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Table 1-1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to undertake the Aboriginal archaeological survey for those areas of the Project not yet surveyed.

Table 1-1: Revised mitigation measures relative to additional survey from the Addendum CHAR (NOHC 2021b: Table 11.1)

Reference	Mitigation measure	Timing	Applicable locations
AH3	An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.	Detailed design and construction	All locations
	These surveys will be carried out in accordance with the <i>Code of Practice for Archaeological</i> <i>Investigations of Aboriginal Objects in NSW</i> (2010).		
	If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.		
	Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:		
	• detail findings of the survey activities		
	 detail where test excavation is required in accordance with AH4 to inform detailed design 		
	 outline any additional mitigation strategies beyond those required by AH5 to AH12 		
	• be presented to the RAPs for comment.		
	Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations.		

1.2. Project area

The Project area for the additional survey comprises the EnergyConnect NSW – Western Section – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This Aboriginal Archaeological Survey Report (ASR) applies to those disturbance areas (additional) identified

as being outside the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b) (Figure 1-2 - Figure 1-5).

1.3. Project objectives

An Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a) was prepared to address the additional survey areas and is provided in Appendix C. The objectives of this ASR are to:

- Inspect those areas identified as additional to the Project corridor and not previously assessed by NOHC
- Consult with the registered Aboriginal parties (RAP) regarding archaeological and cultural values identified for the Project Area as well as any mitigation strategies.
- Document the findings of additional archaeological survey in an Archaeological Survey Report (ASR)
- Provide recommendations and management strategies for any Aboriginal sites or objects potentially impacted by the Project.
- Provide guidance to the proponent as to the requirements for any further archaeological assessment or consultation which might be required.

On February 1, 2022, the Planning Secretary approved the Project's proposed staging approach for the Aboriginal Cultural Heritage Strategy, required by condition D29 of the Infrastructure Approval. The staging approach permits the commencement of construction in areas outside of Potential Archaeological Deposits (PADs) once the ASR has been prepared and consulted with Registered Aboriginal Parties (RAPs) and Heritage NSW, subject to complying with other relevant conditions of the Infrastructure Approval. Therefore, a further objective of this ASR, is to identify areas that were subject to additional survey that are outside of PADs and now available to commence construction.

This ASR has been undertaken in accordance with the Code of Practice for the Protection of Aboriginal Objects in New South Wales (Code of Practice) (Department of Environment, Climate Change & Water [DECCW] 2010a) and AH3 of the RMMs (Table 1-1).

1.4. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) prepared this ASR with inputs to data from the Everick Heritage survey team as follows:
- Aaron Fogle (Principal, Everick Heritage)
- Caitlin Marsh (Senior Archaeologist, Everick Heritage)
- Jason Giang (Archaeologist, Everick Heritage)
- Matt Finlayson (Archaeologist, Everick Heritage)
- Emma Dougherty (Archaeologist, Everick Heritage)
- Pav Klein (GIS, Everick Heritage) prepared the mapping.

APPENDIX 1 – DEVELOPMENT LAYOUT



Figure 1-1: The Project area



Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria

Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling

Figure 1-4: Areas requiring further survey along the Project area – Buronga substation

Figure 1-5: Areas requiring further survey along the Project area – Murray River

2. Description of works

2.1. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

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Through the development of detailed design and construction methodology to date, some project works were identified that were outside of the areas previously surveyed by NOHC (as identified in the Addendum CHAR (Cultural Heritage Assessment Report) (NOHC 2021a; Table 12.3) including those noted above and represented in the maps in Appendix D.

Areas to be surveyed were confirmed by SecureEnergy prior to and during the survey and were generally in line with the areas described in the Aboriginal Archaeological Survey Methodology (Everick Heritage 2021a) (Appendix C).

2.2. Disturbance area A Project works (applicable areas)

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services are to be trenched.

The following sections briefly describe 'applicable locations' in accordance with Table 1-1, although the individual areas for specific works described above have not been identified they fall within the overall calculated area requiring survey.

2.2.1. Transmission line corridor

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2.2.2. Access tracks

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2.2.3. Water supply points

NOHC (2021b) has provided desktop assessments for proposed water supply points and recommended that archaeological survey is conducted in areas where ground disturbance is required for pipe infrastructure, as per RMM AH3. Ground disturbance may be required for the following water supply points:

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For any water supply points that require ground disturbance (eg installation of a new stand pipe), these areas would be subject to the survey processes defined in the methodology included in Appendix C.

2.2.4. Construction compound and laydown areas

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2.3. Summary

The additional survey areas comprise a total of 1,236,335 square metres (123.6 hectares) spread across the entire length, of the Project area. Additional survey areas are all generally consistent with the development layout in Appendix 1 of the Infrastructure Approval. Details of additional survey areas by land system are provided in Table 7-1.

It is noted that not all areas subject to additional survey will be required as part of the project works. Detailed design and construction methodology continue to be refined, as described in Section 2.1 of this report. The results of the additional survey, as described in this ASR, will be considered in the design refinement, where practical, as required in accordance with RMM AH1.

3. Legislative background

3.1. Commonwealth legislation

3.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

3.2. State legislation and codes of practice

3.2.1. National Parks and Wildlife Act 1974 (NSW)

The National Parks and Wildlife Act 1974 (NSW) (NPW Act) provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act*.

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

3.3. National Parks and Wildlife Regulation 2009 (NSW)

3.3.1.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by

specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW* Act.

The additional survey and ASR has been undertaken in line with the requirements of the Code of Practice.

3.3.1.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, the Infrastructure Approval requires that steps 2-4 are repeated. This report fufils requirements to Stage 2 and will form an appendix to the Aboriginal Cultural Heritage Assessment Report (ACHAR).

Part 6 of the NPW Act, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. An Aboriginal cultural heritage assessment report (ACHAR) is a written report detailing the results of the assessment and recommendations for actions to be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment.

This ASR will support an addendum ACHAR for the Project.

4. Consultation

4.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process and by Transgrid through to the handover to SecureEnergy. The documentation of consultation will be provided in the forthcoming ACHAR.

4.2. Consultation regarding the Aboriginal Archaeological Survey Methodology

An Aboriginal Archaeological Survey Methodology was prepared for the additional survey (Everick Heritage 2021a) (Appendix C) and submitted to the RAPs for 28 day review and comment on the 2 November 2021.

During the review period a presentation was provided to RAPs at the Coomealla Club, Dareton on the 4 November 2021. Various individual RAPs were also consulted in person and via video conference across early to mid November 2021 regarding the methodology. The discussions mainly centred on employment aspects of the Project and also on the aspect of artefacts remaining or being returned to Country. The full documentation of consultation will be provided in the forthcoming ACHAR.

4.3. RAP participation in the additional survey

Additional survey was conducted across six days from the 14-19 December 2021. The RAPs participated in the additional survey and a list of RAP participants is provided in Appendix B.

4.4. Consultation regarding the additional survey results

The draft ASR was provided to the RAPs for 28 day review on the 1 April 2022. Two AFGs were held at the Wentworth Grande to discuss the survey results and recommendations provided during the review

period on the following dates:

- 6 April 2022
- 2 May 2022

On the last AFG the recommendations were described in detail to the group to ensure there was adequate understanding of those recommendations. No comments specific to the ASR were provided by the 6 May 2022 and this report was finalised for distribution on the 7 May 2022.

5. Environmental context

5.1. Physiography and climate

Physiographically, the Project Area lies within the south eastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council [LCC] 1987). Droughts are common.

5.2. Land systems

Eighteen land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Project area. These 18 land systems above can be placed into four major geomorphic categories as follows:

- Sandplains Belvedere, Bulgamurra, Hatfield, Menilta, Overnewton, Roo Roo, Trelega.
- Dunefields Arumpo, Haythorpe, Leaghur, Mandelman
- Alluvial Plains Anabranch, Canally, Darling, Riverland, Wentworth
- Playas and Basins Huntingfield, Morona.

A detailed description of the land systems including landforms, vegetation and related archaeological sensitivity is provided in Table 6-4.

5.3. Land use history

The Project area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Until recently however, there has been no large-scale clearance of the land in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas. Recreational use of the riverbanks is common. Section 6.1 discusses contact history of the area in detail.

6. Ethnohistoric and archaeological context

6.1. Ethnohistoric context

The central group of Aboriginal people living along the river now known as the Darling called it the Barka, hence the origins of the name Barkindji, a term now used to refer to the cluster of related tribes sharing a common language (Barkandji or Paakantyi) and living along the lower reaches of the Darling (Hardy 1976).

According to Tindale (1974), two Paakantyi speaking tribes have a potential association with the Project Area. These are the Kureinji and the Maraura (or Mararawa). The Kureinji tribe is said to have occupied the Murray River between Euston and Wentworth but very little else is known about this group of people. The Maraura were located along the Murray River between Wentworth and Paringa (South Australia), along the western side of the Darling and from Avoca northwest to Popiltah Lake (Tindale 1974: 130, 197, see also Withers 1989, in Martin 1996). The meaning of the term Maraura has been examined by Martin (1996) who has indicated that the term could have been used to describe a dialect group, part of a dialect group, a cluster of closely related dialect groups or the whole Barkindji language.

Tindale (1974: 130-131), worked with a Maraura informant, Robert McKinley, who provided him with accounts of some of his tribe's traditions. The Maraura were, according to McKinley (or McKinlay), an aggressive people who had migrated south down the Darling River. They intermarried with neighbouring hordes from surrounding tribes from both sides of the river (whether Murray or Darling is not stated but assumed to be the Murray) but would not allow their own womenfolk to be taken more than 50 km from their own tribal area (Tindale 1974:131). The influence of the Barkindji also stretched east along the Murray. With their more secure resources of the Murray River frontage tribal areas were smaller and the contrast between tribes greater (Hardy 1976: 4). Most of these tribes, who distinguished the difference between themselves by the word 'no' repeated (eg Latji Latji, Tati Tati) were unfriendly towards the Barkindji, however the Kureinji recognised the Maraura or Barkindji as kinsmen (Hardy 1976: 4).

In the early 1830s, it was the Maraura who challenged the Overlanders driving sheep and cattle to South Australia via Lake Victoria, approximately 80 km west of the Project area (Buchanen in Lance 1990: 25; Hardy 1976: 47; Martin 1996: 8-9; Tindale 1974: 130). Open warfare between the Maraura and Overlanders ensued between 1838 and 1841 culminating in the famous Rufus River Massacre (Hardy 1976; Hope 1998: 23; Martin 1996). There are different interpretations of why the Maraura so fiercely defended Lake Victoria. Martin (1996: 10) argues it was in defence of the burial areas and/or spiritual significance of the lake, while others claim the Maraura coveted European items of food, clothing and blankets or that the attacks were based on competition for food resources impacted on by the sheep and cattle (Hope 1998: 33).

Colonial settlers quickly realised the importance of the Murray-Darling junction as an area central to trade and began to settle there by the 1840s, driving the local Aboriginal tribes inland. There appears to be no mention of Kureinji in records from the 1840s onwards and Barkindji were the dominant group occupying the Project Area by that time (Thompson 1997: 7).

In 1855, an Aboriginal mission station was established by the Anglicans at Yelta, on the southern bank of the Murray opposite Wentworth, and this mission provided a refuge for many Maraura people. By the 1860s, so many people at the mission had died from diseases that only one family remained and the mission was closed in 1868 (Hardy 1976: 127; Martin 1996: 10). Remnants of the local tribes managed to survive by traditional subsistence methods in the sandhill and mallee country of the hinterland but it is also thought there may have been movement of people downstream to missions at Morunde, near Swan Hill, Manuka, near Mannum and Point MacLeay at the Murray Mouth because they provided rations and a certain degree of safety (Hardy 1976: 109; Martin 1996: 10).

By the early 1860s, those Barkindji tribes along the Darling River frontage were under severe pressure of displacement from their traditional lands by pastoralists. Most Barkindji worked on stations or were employed as trackers for the police. Working on stations meant it was possible for the Barkindji to live a semi-traditional existence with rations supplementing traditional hunting and gathering.

Dependence on Aboriginal labour by squatters lessened during the 1870s, particularly along the river frontages where better transport and communications attracted non-Aboriginal workers. By 1910, displacement from stations was chronic and refugees from southern stations along the Darling came to camp at Pooncarie and around the outskirts of Wilcannia. Pooncarie Aboriginal Reserve was established about 1910 along with others at White Cliffs, Tibooburra and Milparinka (Hardy 1976: 135, 185). By this time, Barkindji population numbers had severely decreased through starvation caused by displacement and introduced diseases.

Demand for Aboriginal labour decreased again after 1920, with the further subdivision of properties, the exception being those owned by Kidman who still willingly employed Aborigines (Hardy 1976: 186). Nulla Station and its Outstation, Waterjelly (now Warwick Station), was the home of the Mitchell family from sometime before 1902 until the 1940s. Harry Mitchell was head stockman at Nulla for many years and a number of his grandchildren were born at Nulla. These grandchildren are now Elders in the Barkindji community at Dareton.

In summary, although displacement and disease affected the Barkindji population there many Barkindji descendants still living in and around Coomealla (Dareton), Buronga and Mildura.

6.2. Archaeological context

6.2.1. Database searches

6.2.1.1. Aboriginal Heritage Information Management System

GIS data for all Aboriginal Heritage Information Management System (AHIMS) within and close to the Project area was provided to Everick Heritage prior to the survey. A copy of all the Aboriginal Site Recording Forms (ASRF) for sites registered by NOHC for the Project area were also supplied to Everick Heritage. These sites excluded scarred trees which were to be assessed by an arborist prior to any registration. No further AHIMS search was undertaken prior to the additional survey.

6.2.1.2. Other database searches

The following heritage registers were accessed on the 24 February 2022:

- World Heritage List (Australian Heritage Council/ UNESCO
- The National Heritage List (Australian Heritage Council)
- Commonwealth Heritage List (Australian Heritage Council)
- Register of the National Estate (Australian Heritage Council). The Register of the National Estate (RNE) is a non-statutory list which it retained as archive of the previous listing process
- The State Heritage Register (Heritage NSW)
- Wentworth Local Environment Plan (LEP) (2011)
- AHIP Public Register (previous 5 years only)

Database search results are provided in Table 6-1. Several Indigenous Places are recorded on the Register of the National Estate for the Wentworth region however information regarding their nature and location is restricted. It is likely these will relate to Lake Victoria.

Table 6-1: Australian Heritage Database search results

6.2.2. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes, 120 kms to the north of the Project Area. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope et al. 1983). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

These sites share a number of common elements consisting invariably of shell midden with small components of each site being made up of stone artefacts, hearths, hearthstones, and other faunal material. Ancestral Human Remains (burials) are rare in these sites or locations and the only dated burial in the area comes from Mallee Cliffs, 5 km to the east of the Project area (Pardoe 1988). The cultural horizon of each site is generally shallow, although the horizon itself may be buried by as much as one metre of sterile sediment. The exceptions to this generalisation are Red Cliffs, on the south side of the Murray in Victoria, where the shell was stratified through 1.4 m of deposit, and at Gol Gol car park, just west of the Project area where Lance (1993; 1994) found approximately one metre of stratified cultural deposit.

In 1977, McIntyre (1977; 1981) conducted an archaeological survey of a 220 kV transmission line commencing at Red Cliffs, along the Murray River in Victoria and continuing northwest through to Broken Hill (Figure 6-1). McIntyre (1977; 1981) analysed the distribution of sites in relation to specific geomorphic features or landforms and concluded that the Darling River survey unit was the most productive archaeological area along the Broken Hill transmission corridor. This conclusion is supported by more recent surveys undertaken along the Darling by Edmonds (1998; 1999a; 1999b; 2000).

One of McIntyre's (1977) sites at Sturts Billabong (AHIMS ID 39-5-0010), along the Darling River 1 km to the west of the Project area, has been the subject of further research (Littleton and Blair 1993). The site at Sturts Billabong consists of a large sand dune measuring approximately 500 m x 150 m. It is possible

that the site is located in the general vicinity of Sturt's first camp on the Darling River when he journeyed up there between 1844-1846. The centre of this dune has eroded to reveal 36 human burials, numerous burnt clay heat retainers from old fireplaces or hearths, and about 22 small campsites or stone artefact scatters. There are also sparse remains of freshwater mussel, fish and yabby scattered about. At least 22 scarred trees surround the dune.

In 1990, Lance prepared a Plan of Management for Lake Victoria. As part of this Plan, Lance (1990) undertook a site survey of specific areas around Lake Victoria, including a 3 m wide transect north of the lake along the cleared boundary fence between Nulla and Noola properties. The local environment along this transect comprised sand dunes. Eight shell middens (LVN 1-8) were located. The northernmost middens (LVN 3-8) comprised small or large scatters of freshwater mussel shell and some contained in situ shell deposits. Burnt calcrete heat retainers and occasional silcrete and chert stone artefacts were also found in association with these sites. The two southernmost sites (LVN 1-2) were larger shell midden complexes containing a wide range of raw stone materials and artefact types. One of these sites also contained Ancestral Human Remains.

Lance (1990: 93) surmised there was a strong preference shown by Aborigines for camping on sandy soils. These would have been drier than the interdunal clays, elevated above the general landscape for better views and cool breezes and would have provided shade trees. Furthermore, Lance (1990: 93) states that the size and number of sites located along the Nulla-Noola transect was limited by the amount of exposure present. He proposed that site density can be expected to be extremely high on the crests of dunes found within several kilometres of Lake Victoria. Beyond this distance, sites would still be common but would occur at a much lower density. According to Lance (1990: 93) numerous small scatters of shell were noted but not recorded along farm tracks on Nulla Station particularly where these cross dunes. It would also appear from Lance's (1990) results that site complexity may decrease with distance travelled north from Lake Victoria, particularly with regard to stone raw materials, artefact type and numbers.

Evidence for widespread occupation of the Lake Victoria landscape, that is, the southern beaches, islands and barrier, the higher shores and lunette, along the river channels linking the lake to the Murray River and along the River Murray banks, only appears in the last 2,500 years. There may be some bias in this evidence due to younger sediments around the lake shoreline covering older sediments although it would appear that most of the major Aboriginal cemeteries date to within the last 2,500 years and that this may reflect changes in both population size and social complexity (see also Pardoe 1988).

Middens mostly occurred as shallow accumulations of individual shell heaps comprising freshwater mussel shell. The fragmentary nature of much of the shell exposed on the surface of these sites made it difficult to distinguish between lake mussel shell (*Velesunio ambiguus*) and river mussel shell (*Alathyria jacksoni*) although it is most likely that the distribution of river mussel was confined to the river margins whilst the lake mussel was confined to middens found north and west of Lake Victoria (2002b: 43). River snail (*Notopala sublineata*) was only noted at one site, an extensive midden on the riverbank along the western side of the Darling and occurred as single shell lenses or one-off meals within a larger midden complex.

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Figure 6-1: Distribution of sites recorded by McIntyre along or close to the Project area near the Darling. The dashed line indicates the SNI corridor assessed by Edmonds (2002a; 2002b; 2003).

Figure 6-2: SNI Interconnector poste EIS route plus modifications in the alignment (Edmonds 2003)

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6.2.3. The Project area

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by NOHC (2021a; 2021b). The following sections 6.2.3.1 to section 6.2.3.5 provide a summary of the assessment, survey methodology and results.

6.2.3.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 6-4. This suggested that:

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6.2.3.2. Field survey

Field survey of the survey area was undertaken by NOHC between 22 June and 3 July 2020 with the field survey of the [information redacted for public display] being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity

Re-locate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian transects of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

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6.2.3.3. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 6-2). NOHC (2021a) state that:

A total of 74.69 per cent of the surveyed ground area was inspected during the survey, with 67.35 per cent providing useable archaeological exposures.

Table 6-2: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

6.2.3.4. Results

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Table 6-3: Site type by number and percentage recorded by NOHC (2021a)

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The following general observations were made by NOHC (2021a) regarding the results of their survey:

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Figure 6-3: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

6.2.3.5. Recommendations

6.3. Land systems, landforms and archaeological sensitivity

Based on the known background archaeology for the entire western region of NSW, Clark, Witter and Johnston (in prep) have prepared a document which details the archaeological landscapes of western NSW. The document is based on those land systems defined by the Soil Conservation of NSW (1991). Table 6-4 summarises the archaeological sensitivity of land systems and landforms potentially occurring along the Project, as defined by Clark et al (in prep). It would appear that NOHC (2021a; 2021b) have used this type of land system mapping to assist in the development of Figure 6-4 and Table 6-2 although this methodology is not detailed within the CHAR (NOHC 2021a; 2021b).

The information provided for land systems and the archaeological sensitivity of landforms within those systems described by Clark et al (in prep) and further refined by Edmonds (2002) and NOHC (2021a; 2021b) in relation to the Project region and Project area, will be used to understand the archaeological sensitivity of disturbance areas requiring further survey along the Project area. It must be noted that the Witter et al (in prep) document was always intended to be a work in progress with information added as further archaeological work in the region was undertaken. Originally commenced in 1999, it remains an incomplete document, but has been used for multiple surveys within the Project region by Edmonds (eg 2002a; 2002b; 2003).

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Figure 6-4: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 6-5: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1

Table 6-4: Land systems, landforms and archaeological sensitivity (Witter et al in prep)
6.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

6.4.1. Shell middens

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6.4.2. Open campsites

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6.4.3. Hearths

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6.4.4. Ancestral human remains

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6.4.5. Isolated artefacts

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6.4.6. Culturally scarred trees

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7. Archaeological survey

7.1. Aims

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of the archaeological survey as identified by the Aboriginal Archaeological Survey Methodology (Appendix B) were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

An additional aim identified prior to the survey was to reinspect the following AHIMS registered sites which had not been found during the NOHC survey:

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7.2. Timing and personnel

The survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. The survey teams comprised one Everick Heritage archaeologist and two or three RAP representatives. A number of Transgrid and SecureEnergy staff also accompanied the survey

teams to assist with land access and orientation. A full list of key survey participants is provided in Appendix B.

7.3. Survey strategy

RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously surveyed areas. The archaeological survey aimed to visually inspect 100 per cent of all areas not previously surveyed, as detailed in Appendix D, therefore no sampling strategy was required. Areas to be surveyed were confirmed by SecureEnergy prior to the survey and were generally in line with the works described in section 2.2.

The Aboriginal Archaeological Survey Methodology (Appendix C) stated that a vehicular reconnaissance prior to the survey would be undertaken by the archaeologists and RAPs of extensive, previously disturbed access tracks requiring upgrade to establish whether any areas require detailed pedestrian inspection. However, at the time of survey it was decided this was not practical due to timing and access although a small number of vehicle transects were undertaken during the survey itself.

7.4. Survey methodology

The survey was conducted on foot and occasionally by vehicle where there were areas of extensive existing tracks in land systems of low archaeological sensitivity. Only one survey team member had possession of a Global Positioning System (GPS), consequently only one set of transects was recorded for each team.

All sites and/or objects were identified during field survey, their location recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using the system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes were also be made. A photographic record will be kept of all survey units and landforms where these are informative and appropriate photographic scales will be used.

The following details were recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

7.4.1. Aboriginal sites and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria was used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD were identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary.

7.4.2. Aboriginal Site Recording

Aboriginal Site Recording Forms (ASRF) have been submitted to the AHIMS for all Aboriginal objects and sites identified during the survey.

Aboriginal sites, objects and PADs identified during the additional survey were numbered sequentially based on the naming and numbering system implemented by (NOHC 2021a; 2021b).

7.5. Survey coverage

The additional survey areas total 1,358,432 square metres (136 hectares). The majority of the additional survey areas were covered. Notable exceptions include:

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Table 7-1: Survey coverage of land systems and archaeologically sensitive landforms

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7.6. Survey results

7.6.1. Summary

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7.6.2. Site types

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Figure 7-1:

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Figure 7-2:

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Figure 7-3: Site type by number

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Figure 7-4:

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Figure 7-5:

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Figure 7-6:

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Figure 7-7:

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Figure 7-8:

7.6.3. Survey coverage

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Figure 7-9:

7.6.4. Archaeological sensitivity of land systems and landforms

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Figure 7-10:

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Figure 7-11:

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Figure 7-12:

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Figure 7-13:

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Figure 7-14:

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Figure 7-15: Numbers and types of sites per land system

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Figure 7-16: Numbers of site types per landform

Table 7-2: Site gazetteer

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Table 7-3: PAD gazetteer

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8. Significance assessment

8.1. Significance assessment criteria

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. The Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (the Guide) (OEH 2011: 10) provides guidelines, in accordance with the Burra Charter (Australia ICOMOS 2013) and the Heritage NSW (Heritage Office 2001) for significance assessment with assessments being required to consider the following criteria:

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

This ASR primarily considers the scientific values of the sites and objects. Social, historic and aesthetic values will be considered within the ACHAR following discussion of cultural values with the RAPs. Scientific values should be considered in light of the following criteria:

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

It is important to note that heritage significance is a dynamic value and will be considered in the ACHAR. This ASR only presents the scientific or archaeological significance of newly recorded sites and objects. Ratings are low, moderate or high.

8.2. Scientific significance

A summary of the scientific significance for all new Aboriginal sites and objects identified is provided in Table 8-1.

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Table 8-1: Summary of scientific significance

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9. Mitigation measures

The following mitigation measures were based on consideration of:

- The results of the background research and archaeological survey results
- The currently known nature of impacts of the Project
- The Revised Mitigation Measures.

Avoidance of impact to Aboriginal cultural heritage is the preferred option in all instances, however it is acknowledged that where existing disturbance occurs within the Project area it is often preferable to minimise further disturbance to the landscape and potentially to as yet unidentified Aboriginal cultural heritage. Table 9-2 and Table 9-3 present an assessment of the potential impacts to sites, objects and PADs identified during the additional survey. Where practical impacts to sites and PADs would be avoided and an exclusion zone would be implemented as the preferred mitigation measure.

9.1. Minimisation of impact

AH1 of the RMMs states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

In addition, AH4 of the RMMs states:

In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.

SecureEnergy has made refinements to the design and construction methodology and succeeded in avoiding impacts by:

- using existing access tracks where possible
- locating temporary construction areas away from identified Aboriginal objects where possible

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Following the additional survey SecureEnergy were able to make minor changes to avoid or minimise impacting on a small number of PADs. These include:

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SecureEnergy must continue to review design and construction methodology in an effort to avoid or minimise impacts to Aboriginal sites, objects and areas of PAD and with regard to the mitigation measures provided in section 9.7.

9.2. Aboriginal consultation

AH2 of the RMMs states:

Aboriginal stakeholder consultation will be carried out in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a).

Engagement with Registered Aboriginal Parties (RAPs) will consist of the following:

- > Aboriginal heritage site surveys (AH3) review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas)
- > test excavation activities (AH4) review of proposed methodologies and involvement in the test excavation activities in the field
- > review of the draft addendum report/s (relating to surveys (AH3), test excavations (AH4) and scar trees (AH5)), and consultation on the draft reports which will typically be in the form of a RAP meeting
- > provision of final addendum report/s will be provided to RAPs (AH3, AH4, AH5)
- > involvement in establishment of Aboriginal heritage exclusion zones prior to construction commencing (AH7).

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Further cultural information will be gathered during consultation undertaken in association with these activities. All addendum reports to the Aboriginal Cultural Assessment Report (CHAR) will be provided to RAPs for comment, and input will be considered, and actioned wherever practicable

In accordance with AH2 the RAPs identified in Appendix B participated in the additional survey. The preliminary results of the additional survey were presented to an Aboriginal Focus Group (AFG) meeting on the 9 February 2022 (section 4.4).

This ASR must be provided to the RAPs for 28 day review and during that time it is recommended that a further AFG meeting is held to discuss the results of the additional survey and the recommendations. The final ASR will incorporate any RAP inputs from the review and AFG.

9.3. Clearance to proceed

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

The proposed staging approach for the Aboriginal Cultural Heritage Strategy (required in accordance with condition D29 of the Infrastructure Approval) was approved by the Planning Secretary on 1 February 2022. The staging approach identifies that construction may commence in additional survey areas, outside of PADs and sites once the ASR is prepared and consulted with RAPs and Heritage NSW. The staging approach also satisfies that requirement in AH3 of the RMMs to produce a letter report for any additional survey areas. Based on the results of the additional survey presented in this ASR, clearance to proceed with Project works is allowed in additional survey areas excluding those areas identified as PADs or extended PADS. Therefore, in accordance with AH3 of the RMMs construction can proceed within those additional survey areas outside of any identified PADs or sites identified in Table 7-2 and Table 7-3 and with reference to the figures provided in Appendix D.

The results of this ASR have been and will continue to inform design refinements for the project. Where design has avoided the identified PAD and/or site, works are permitted to commence once this ASR has been prepared and consulted.

It is acknowledged that Aboriginal heritage items may be found anywhere along the Project corridor even in areas of low archaeological sensitivity. Therefore, SecureEnergy has developed an Unexpected

Heritage Finds Procedure EnergyConnect (NSW-Western Section) which would be implemented should unexpected Aboriginal cultural heritage items be found during construction in areas identified for clearance. This procedure is provided in Figure 9-1. In addition, SecureEnergy (2021) has developed a Discovery of Suspected Human Remains Procedure EnergyConnect (NSW-Western Section) for the approved Stage 1 Heritage Management Plan which would be implemented should suspected human remains be discovered during construction in areas identified for clearance.

9.4. Additional survey

AH3 of the RMMs states:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Further refinements to the design and construction methodology may be required and may result in part from the outcomes of this additional heritage survey. In accordance with AH3 of the RMMs (Table 1-1) if works to any additional areas outside those previously subjected to heritage assessment and survey, these areas will require survey as described in the Aboriginal Archaeological Survey Methodology (Appendix C).

9.5. Test excavation

AH4 of the RMMs states:

Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root-ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and significance of subsurface archaeological deposits.

Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.

Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will: detail findings of the test excavation activities

All new PADs assessed as being of moderate or high archaeological potential must be subject to test excavation where direct impact is likely in accordance with the Test Excavation Methodology (Everick Heritage 2021b). Applicable locations are provided in Table 9-3.

A test excavation report in accordance with the Test Excavation Methodology (Everick Heritage 2021b) must be prepared for all test excavations undertaken in support of the addendum ACHAR.

9.6. Scarred trees

AH5 of the RMMs states:

All scarred trees identified during archaeological survey will be assessed by a qualified arborist to determine tree age and likely cause of the scarring in order to confirm the scientific significance prior to any impact to the scarred trees.

Impacts to all scarred trees (including those of cultural significance) will be avoided where possible through design or construction methodology and must only be removed for permanent infrastructure and/or to meet Vegetation Clearance Requirements at Maximum Line Operating Conditions (TransGrid, 2003).

If any scarred tree cannot be avoided, the tree will be subject to 3D scanning, followed by salvage of the scarred trunk. The results of this assessment will be reported on in addendum reports.

Reports will be provided to RAPs for comment and to Heritage NSW

Four new culturally scarred trees were identified during the survey. As follows:

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These have been registered on the AHIMS database and will be assessed by an arborist in accordance with AH5 of the RMMs. Recommendations for exclusion zones (AH7), 3D scanning and/or salvage will be detailed in the addendum ACHAR.

9.7. Surface collection

AH6 of the RMMs states:

All portions of artefact scatters that are to be directly impacted will require surface collection prior to construction commencement in those areas.

Additionally, based on the outcomes of the test excavation, items or PADs will be subject to surface collection or salvage prior to the commencement of construction in those areas. The activities will be documented in a surface collection report.

All surface stone artefacts directly impacted by the Project will be subject to surface collection prior to construction in those areas as part of the salvage process. For the most part surface artefacts identified during the additional survey are isolated finds or small low density scatters which are of low scientific significance. In addition, many are located along existing access tracks. Therefore, the preference is for surface collection over the creation of new disturbance in the landscape which might increase the potential for erosion and potentially impact on unidentified Aboriginal objects. Applicable locations are provided in Table 9-2.

9.8. Aboriginal heritage exclusion zones

AH7 of the RMMs states:

Aboriginal heritage exclusion zones will be established to protect

- > known features/items of significance that have been identified to remain in-situ throughout construction (and not subject AH6)
- > scarred trees that are to remain in-situ.

Suitable controls will be identified in the heritage management sub-plan, which may include site fencing and sediment control. Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the RAPs prior to the commencement of construction at each location.

Areas of PADs that are located within areas of vegetation clearance where ground disturbance will not occur will be managed through construction methodologies and will not be delineated as exclusion zones. These methodologies will be developed in the heritage sub-plan.

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Heritage Management Procedure UNEXPECTED HERITAGE FINDS PROCEDURE





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Heritage Management Procedure DISCOVERY OF SUSPECTED HUMAN REMAINS PROCEDURE

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Figure 9-2: Discovery of Suspected Human Remains Procedure (SecureEnergy 2021)

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Table 9-1: Assessment of direct and indirect (that is within 10 m of Area A or B) and RMMs for sites and objects identified during the additional survey

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.
Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

Appendix B – Field personnel

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Appendix C – Survey methodology

EnergyConnect (NSW – Western Section)

Aboriginal Archaeological Survey Methodology

Written for SecureEnergy (Ref: 45860-G-70005-PR-G-00001)

December 2021

Wentworth Local Government Area

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4	V. Edmonds and R. Mazlin	Final amended	Section 6.5.2	20.12.21	T. robins

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Executive summary

On 29 August 2019, the New South Wales (NSW) Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

The Environmental Impact Assessment (EIS) for the NSW – Western Section (the Project) of EnergyConnect was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) the Project is yet to be determined by the Australian Minister for the Environment.

AH3 of the RMMs from the Response to DPIE Request for Information (Transgrid 2021b) states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

The Project area for this survey methodology comprises the EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100

metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b) (Figure 1-2).

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Cultural Heritage Assessment Report (CHAR) and Addendum CHAR (NOHC 2021a; 2021b), RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology provides background information on the previous Aboriginal cultural heritage assessments undertaken (section 4.2), land system sensitivity modelling (sections 4.3 and 4.4) and a summary of the impact assessment of the current design and construction methodology on areas requiring further survey (section 5). The methodology offers an Aboriginal consultation strategy (section 3), a survey strategy and methodology (sections 6.3 and 6.4) and requirements for reporting on survey (section 6.5).

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance areas

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology.

The broad aims and objectives of the Aboriginal consultation strategy (section 3.4) will be:

- To re-establish RAP connection with the Project and introduce the SecureEnergy team
- To establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads, if no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- To organise roster of available RAP field participants and their contacts
- To discuss how RAP engagement is to be managed by the Project
- To agree on process and timing for further consultation and communications.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum CHA	R Addendum Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATSIHP Act	Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)A
Code of Practice	e Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Re	quirementsAboriginal cultural heritage consultation requirements for proponents2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
Draft Conditions	s Draft Conditions of Approval Revision 3 (August 2021)
EIS	Environmental Impact Assessment
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Diversity Conservation Act 1999 (Cth)

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Everick Heritage Everick Heritage Pty Ltd

GPS	Global Positioning System
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
ha	hectares
km	kilometres
m	metres
mm	millimetres
NOHC	Navin Officer Heritage Consultants Pty Ltd
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OEH	Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border
RAP	Registered Aboriginal Party
RMMs	revised mitigation measures, identified in Appendix G of the Response to DIE Request for Information
Response to DPI	E Request for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled <i>EnergyConnect (NSW – Western Section) Response to DPIE Request for Information</i>
S	means section
SNI	South Australia and New South Wales Interconnector
STP	Shovel test pit(s)

test excavation methodology Aboriginal archaeological test excavation methodology

TP Test pit(s)

1. Introduction

1.1. Project background and legislative context

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of EnergyConnect critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border (the Project) (and to which this methodology relates)
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

A referral under the Commonwealth *Environment Protection and Diversity Conservation Act 1999 (Cth)* (EPBC Act) was submitted on 27 May 2020. The Australian Department of Agriculture, Water and the Environment (DAWE) determined the project to be a controlled action on 26 June 2020 and thus, it would be assessed using the bilateral assessment process. As such, the project also requires approval from the Australian Minister for the Environment under the EPBC Act.

The Environmental Impact Assessment (EIS) was prepared for the project in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. A Submissions Report was prepared for the Project in response to submissions from government agencies, organisations and the public and was finalised on 14 April 2021.

Transgrid also prepared a separate Amendment Report (Transgrid 2021a) to document design changes and additional environmental assessment undertaken since exhibition of the EIS. The Amendment Report describes the updated project for which approval has been sought and was finalised on 14 April 2021.

On 7 May 2021, Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied.

Approval for the Project under the EP&A Act was granted by the NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Under the EPBC Act the Project is yet to be determined by the Australian Minister for the Environment.

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd to prepare the Aboriginal archaeological survey methodology for those areas of the Project not yet surveyed.

1.2. Project area

The Project area for this survey methodology comprises the EnergyConnect NSW – Western Section – SA/NSW border to Buronga and Buronga to the NSW/Victorian border as depicted in Figure 1-1. This survey methodology applies to those disturbance areas identified as being outside the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC) (2021a; 2021b) (Figure 1-2).

1.3. Previous archaeological investigation

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

• EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) has been prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)

The Addendum CHAR forms Appendix E of the Amendment Report and identifies revised mitigation measures. The revised mitigation measures from the Addendum CHAR then feed into the revised mitigation measures (RMMs) identified in Appendix G of the Response to DPIE Request for Information (Transgrid 2021b). AH3 of these RMMs states that:

An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.

1.4. Aims and objectives

The primary aims of this survey methodology are to:

- Inform a survey program based on the results of the Addendum CHAR, RMMs and refined design and construction methodology.
- Provide the survey methodology to the registered Aboriginal parties (RAPs) and Heritage NSW for the Project for discussion, comment and agreement.

This survey methodology has been prepared in line with the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

This survey methodology will be conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Authors and contributors

Vanessa Edmonds (Principal-Sydney, Everick Heritage) prepared the majority of this document. Vanessa has a Bachelor of Arts (Australian Prehistory and Archaeology) and a Masters of Letters (Archaeology & Palaeoanthropology both from the University of New England along with over 35 years' experience in

cultural heritage management across Australia and is a Full Member of the Australian Association of Consulting Archaeologists Inc.

Vanessa undertook previous surveys along an earlier version of the transmission line corridor (South Australia - NSW Interconnector) in conjunction with some of the Aboriginal stakeholders identified for the current Project area and has a comprehensive understanding of the archaeological and cultural landscape of the Project area. Vanessa has also undertaken numerous Aboriginal cultural heritage assessments within the Project region having owned and operated her own consulting practice based in Dareton and Mildura for 22 years.

Robbie Mazlin (Archaeologist, Everick Heritage) provided input into the calculations for the sampling strategy wording and mapping. Upload of GIS data and analysis was undertaken by Patrick Burke (Principal-GIS, Everick Heritage).





Figure 1-1: The Project area

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Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria

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Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling

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Figure 1-4: Areas requiring further survey along the Project area – Buronga substation

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Figure 1-5: Areas requiring further survey along the Project area – Murray River

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2. Legislative context

2.1. Commonwealth legislation

2.1.1. Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

Most State Aboriginal heritage databases provide protection for those sites with physical evidence. The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHP Act) deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, archaeological sites and objects registered under the State Act will also be Aboriginal places subject to the provisions of the ATSIHP Act.

There is no cut-off date and the ATSIHP Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The ATSIHP Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the ATSIHP Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.2. State legislation and codes of practice

2.2.1. National Parks and Wildlife Act 1974 (NSW)

The *National Parks and Wildlife Act 1974 (NSW) (NPW Act)* provides statutory protection to all Aboriginal places and objects. An Aboriginal object is defined as:

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

An Aboriginal Place is declared by the Minister under section 86 of the *NPW Act.* Aboriginal Places are recognised for their special significance to Aboriginal culture. Aboriginal Places gazetted under the NPW Act are listed on the State Heritage Register established under the *Heritage Act 1977 (NSW)*.

Part 6 of the *NPW Act* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean:

destroying, defacing, damaging or moving an object from the land.

The protection provided to Aboriginal objects applies regardless of the level of their significance or issues of land tenure. Aboriginal objects and places are afforded statutory protection in that it is an offence to knowingly or unknowingly desecrate and Aboriginal object or place under section 86 of the *NPW Act.*

In accordance with section 89A, any person who is aware of the location of an Aboriginal object must notify the Chief Executive in the prescribed manner within a reasonable time of becoming aware of that object. The prescribed manner is through preparation and submission of an Aboriginal Site Recording Form (ASRF) to the Aboriginal Heritage Information Management System (AHIMS) (DECCW 2010a: 14).

In order to undertake a proposed activity which is likely to involve harm to an Aboriginal object or Aboriginal Place it is necessary to apply to Heritage NSW for an Aboriginal Heritage Impact Permit (AHIP). AHIPs are issued by Heritage NSW under section 90 of the *NPW Act* and permit harm to certain Aboriginal objects and Aboriginal Places.

The Project has been designated CSSI under the EP&A Act and is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act and any AHIP application is not required.

2.2.2. National Parks and Wildlife Regulation 2009 (NSW)

2.2.2.1. Code of Practice

The Code of Practice (DECCW 2010a) was adopted by Clause 3 of the *National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation)* and introduced in October 2010 by Heritage NSW (previously DECCW then Office of Environment & Heritage [OEH]).

The purpose of the Code of Practice is to:

• Establish the requirements that must be followed when carrying out archaeological investigation in NSW, where a proposed activity is likely to involve harm to an Aboriginal object or Aboriginal Place.

The Code of Practice also explains what information is required in relation to an archaeological investigation and to support the process of investigating and assessing Aboriginal cultural heritage by

specifying the minimum standards for archaeological investigation undertaken in NSW under the *NPW* Act.

2.2.2.2. Consultation Requirements

The NPW Regulation states that the proposed applicant must carry out Aboriginal community consultation in accordance with Clause 80 C before applying for an AHIP or in the case of the Project, where harm to an Aboriginal object or Aboriginal Place is proposed. The Consultation Requirements establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making in the ACHA process. The Consultation Requirements comprises four stages which must be adhered to:

- Stage 1 Notification of 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 cultural heritage assessment report.

Although all four stages have been previously completed for the Project, changes to design and construction methodology require that steps 2-4 are repeated. The survey methodology would be presented at Stage 2.

2.2.2.3. Aboriginal Cultural Heritage Assessment

Division 2 s 61 of the NPW Regulation, states that anyone proposing to carry out an activity that may harm an Aboriginal object or a declared Aboriginal place must investigate, assess and report on the harm that may be caused by the activity they propose. A cultural heritage assessment report is a written report detailing the results of the assessment and recommendations for actions to be taken before, during and after an activity to manage and protect Aboriginal objects and declared Aboriginal places identified by the investigation and assessment.

3. Consultation strategy

3.1. Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders as follows:

- Muragadi
- Murra Bidgee Mullangari
- Merrigarn
- Dareton Local Aboriginal Land Council
- Arthur Kirby
- Barkandji Native Title Claim Group Aboriginal Corporation (RNTBC)
- Barkandji Native Title Claim Group Aboriginal Corporation
- Barkindji Maraura Elders Environment Team (BMEET)
- Riverina Murray Regional Alliance
- Ricky Handy
- Hector Hudson
- Kingsley Abdulla
- Warren Clarke
- Barkindji-Maraura Elders Council
- Ta-Ru of Management/Maroura Barkindji Traditional Owners
- Biodiversity and Conservation Department of Planning, Industry and Environment
- C/- Damos Family Dream
- Alynthia Kennedy.

Consultation was ongoing throughout EIS process through to April 2021. It must be noted if there has been a lapse of 12 months in the consultation process for a Project, Heritage NSW may expect the process to be recommenced from Stage 1 of the Consultation Requirements (section 2.2.2.2).

3.2. Registered Aboriginal Party engagement

As part of AH2 of the RMMs it is stated that engagement with RAPs will consist of the following:

Aboriginal heritage site surveys (AH3) – review of proposed methodologies and involvement in the survey activities in the field (for ground or vegetation disturbance outside of previously surveyed areas).

Consequently, this survey methodology will be presented to the RAPs listed in section 3.1 for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

3.3. Consultation process

Open, honest and ongoing communication between Transgrid, SecureEnergy, the RAPs and the Project archaeologists is vital to the success of the Project. To comply with Stage 4 of the Consultation Requirements this draft survey methodology will be presented to the RAPs for discussion and comment. Any comments arising from the discussion will be incorporated into the final survey methodology.

Virtual or in person meetings are proposed to be held in the region to present the Aboriginal Cultural Heritage Strategy. It is proposed that this survey methodology would be provided to the RAPs with the test excavation methodology (Everick Heritage in prep). Following receipt of the methodologies and at some stage during the 28 day review period it is proposed that further virtual or in person meetings with the RAPs will be held to:

- Re-engage the RAPs with the Project.
- Present the methodologies
- Engage with the RAPs
- Provide a venue for discussion and comment.

Where key individuals or representatives of key organisations are unable to attend meetings, or where Covid restrictions are still in place, virtual meeting options will be implemented, with the Environmental team and Everick to present the methodologies and record comments. There is also potential for up to three meetings to be held within the Project region to accommodate stakeholder travel and time constraints if virtual meetings are not possible.

The proposed process for consultation with RAPs is as follows:

- Provide survey and test excavation methodologies together
- Follow up with phone calls to RAPs to ascertain availability for stakeholder meeting and preferred venue (likely to be Dareton, Wentworth, Buronga, Mildura)
- Send meeting invites and agenda for stakeholder meeting(s)
- Follow up with phone calls to RAPs to ascertain attendance at meeting or alternate one on one meeting
- Hold virtual or in person stakeholder meeting(s) providing resources such as a powerpoint presentation in addition to roll out maps relating to the areas across which the methodologies relate
- Finalise survey and test excavation methodologies incorporating any comments or recommendations from the RAPs and send out to RAPs.

Whilst this process is likely to take a maximum 28 day period it is anticipated that by approaching RAPs on an individual basis where necessary either in person or by phone the process may be able to be shortened.

3.4. Consultation aims

The broad aims and objectives of the consultation process will be:

- Re-establish RAP connection with the Project and introduce the SecureEnergy team
- Establish agreement on the survey strategy and methodology, in particular:
 - Where known existing disturbance occurs across disturbance areas, such as existing major access roads like Milpara Road, no further survey is required (section 6.3)
 - Clearance of surveyed areas of low archaeological potential via a letter report to allow works to commence prior to the finalisation of a survey report in accordance with AH3 of the RMMS:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed

- Organise roster of available RAP field participants and their contacts
- Discuss how RAP engagement is to be managed by the Project
- Agree on process and timing for further consultation and communications.

4. Archaeological context

This section provides a brief summary of the archaeological landscape as background to the survey methodology in accordance with Requirement 1-4 of the Code of Practice. Note that an updated Aboriginal Heritage Information Management System (AHIMS), in accordance with Requirement 1b, is not considered necessary at this stage of the Project. Transgrid has provided the AHIMs Aboriginal Site Recording Forms (ASRF) as prepared by NOHC (2021a; 2021b) for all newly recorded sites.

4.1. Regional context

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes 55 kilometres (km) to the north of the Project. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

4.2. The Project area

Two Aboriginal Cultural Heritage Assessment Reports have been prepared for the Project by NOHC (2021a; 2021b). The following sections 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6 provide a summary of the assessment, survey methodology and results.

4.2.1. Predictive modelling

NOHC (2021a) conducted background studies across a one kilometre wide corridor between the SA/NSW border and Buronga substation and a 200 m wide corridor between Buronga substation and

the NSW/Victoria border at Monak (proposal study area) for the length of the proposed transmission line (approximately 157 km). Within this corridor, a narrower corridor was subject to survey, which generally comprised a 100 m wide corridor with some broader sections where construction facilities are proposed or design options were likely.

Based on a previous land system sensitivity model prepared by Edmonds (2002) along former alignments of the proposal as well as selective preliminary ground-truthing, NOHC (2021a: Figure 6.6) prepared a pre-survey predictive site model as shown in Figure 4-2. This suggested that:

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4.2.2. Field survey

Field survey of the survey area was undertaken between 22 June and 3 July 2020 with the field survey of the Wentworth construction and accommodation camp being completed on the 17 February 2021. Survey was included for geotechnical investigations. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Relocate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The survey consisted of three teams conducting pedestrian survey of the survey area. The survey teams were made of up to five participants who were spaced at 10 to 20 m intervals depending on the 'estimated probability of encountering Aboriginal sites', the interpretation of which is assumed to be:

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility and exposures. (NOHC 2021a: 20)

Each team walked along the length of the survey area. Where feasible, all old-growth native trees in the survey area were inspected for the presence of culturally derived scars.

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4.2.3. RAP field representatives

The following Aboriginal representatives participated in the field survey:

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4.2.4. Survey coverage

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a: Table 12.3) provided summary estimates for the amount of coverage per landform across the alignment and an indication of the ground surface exposure and average ground visibility present in each case (Table 4-1). NOHC (2021a) state that:

A total of 74.69 per cent of the surveyed ground area was inspected during the survey, with 67.35 per cent providing useable archaeological exposures.

Table 4-1: Landform coverage summary and sites recorded per landform (from NOHC 2021a: Table 12.3)

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4.2.5. Results

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Table 4-2: Site type by number and percentage recorded by NOHC (2021a)

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The following general observations were made by NOHC (2021a) regarding the results of their survey:

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Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

4.2.6. Recommendations

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4.3. Land systems, landforms and archaeological sensitivity

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Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

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Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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Table 4-3: Land systems, landforms and archaeological sensitivity (Witter et al in prep)

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4.4. Description of site types

The following sections provide a brief description of the site types found in the Project region.

4.4.1. Shell middens

Shell middens dominate the study region and occur in a variety of locations. These include both current and prior watercourse and lagoon channels, high cliffs and escarpments overlooking the Murray, Darling and Anabranch floodplain, sand deposits adjacent to the floodplain and in lunettes around swamps or lakes. Middens are also common on dune crests within a four kilometre radius of Lake Victoria (Leaghur land system).

The composition of middens can be seen as a reflection of both site location, activities practised and age. River mussel (*Alathyria jacksoni*) is predominant in deposits along the Murray River and major creeks, while freshwater mussel (*Velesunio ambiguus*) is common in sites adjacent to lakes, swamps and watercourses with a weaker current. Occasionally, the freshwater snail (*Vivipara notopala hamelyi*) can also be found as a component in middens.

The age of a particular midden deposit can be assessed through C14 dating of charcoal or shell, or inferred through geomorphological context and post-depositional changes to the shell. The dating of midden deposits has demonstrated an Aboriginal association with the Murray River wetlands of the region for the previous 22,000 years, and for this reason shell middens are considered a highly significant site type for studying Aboriginal culture in the region. Dates for shell midden excavations in the region indicate that sites on the present floodplain and riverbank are likely to range from about 13,000 years through to the present. Older middens, that is up to 22,000 years BP will most likely be located along the ancestral riverbank and in lunette sediments around lakes and swamps.

4.4.2. Open campsites

Open campsites or surface scatters containing stone artefacts are also a relatively common occurrence within the region. Surface scatters may also contain hearths, shell and animal bone. On the Alluvial Plains this site type is generally restricted to high terraces and sand bodies located on the floodplain adjacent to drainage features. Elsewhere in the Project area landscape, they are restricted to the margins of drainage features.

Raw material types are dominated by silcrete mainly from the quarried sources at Berribee on Lindsay Island (Victoria) or Lake Mungo (NSW), with a lesser component of chert. Quartz is very rare as a raw material, principally owing to its limited natural occurrence in the area. Stone artefacts are also a minor component of shell middens, indicating that some activities involving artefact use, manufacture or maintenance was practised on sites dominated by shellfish gathering and processing activities.

4.4.3. Hearths

Hearths are also known as ovens or fireplaces and are roughly circular features mainly comprising lumps of burnt/baked clay, calcrete or termite nest, sometimes in an ash and charcoal matrix. Occasionally food remains, such as burnt and unburnt fish, mammal and bird bone and shell (including emu egg) can be found associated with the hearths indicating that these features were used as ovens for cooking food. Often isolated or small numbers of stone artefacts can be found associated with hearths. Hearths often form part of a midden or campsite but they are also found as isolated occurrences or in groups forming hearth complexes. They are generally found close to drainage features in the landscape.

4.4.4. Ancestral human remains

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4.4.5. Isolated artefacts

Isolated Artefacts comprise isolated occurrences of flaked/ground stone artefacts or manuports, usually no more than two to three within an arbitrarily defined area.

4.4.6. Culturally scarred trees

Scarred trees generally consist of River Red Gums (Eucalyptus camaldulensis) or Black Box (*E. largiflorens*) and are usually found on floodplains, terraces or banks less than 500 m from a water source. Rarely, scars may also be found on Mallee. The minimum age range for scarred Red Gums will vary between 100 and around 300 years BP.

Culturally derived scars are distinguished from naturally occurring scars by their oval or symmetrical shape and occasional presence of stone or steel axe marks on the scar's surface. Size and shape of the scar will depend on the use for which the bark was intended. Bark was used for a variety of purposes, including the manufacture of dishes, containers, canoes and the construction of huts. Other types of scarring include toeholds cut in the trunks or branches of trees for climbing purposes to reach birds nests, holes cut in trunks to remove possums, bird eggs and honey, and removal of bark to indicate the presence of burials in the area.

5. Impact assessment

5.1. Mitigation measures

AH3 of the RMMs are provided in Table 5-1. Furthermore, AH1 from the Addendum CHAR (NOHC 2021b: Table 11.1) states:

The detailed design and construction methodology, and associated final disturbance area, will be developed to avoid impacts to features/items of Aboriginal archaeological significance as far as practical. Avoidance and minimisation of impact to features/items and Potential Archaeological Deposits (PADs) of moderate or higher archaeological significance will be prioritised.

Reference	Mitigation measure	Timing	Applicable locations
AH3	An Aboriginal heritage survey will be carried out with RAPs where ground or vegetation disturbance activities are required in all locations outside of the previously surveyed heritage survey area (including water supply points), prior to works occurring in any such areas.	Detailed design and construction	All locations
	These surveys will be carried out in accordance with the <i>Code of Practice for Archaeological</i> <i>Investigations of Aboriginal Objects in NSW</i> (2010).		
	If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.		
	Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:		
	• detail findings of the survey activities		
	 detail where test excavation is required in accordance with AH4 to inform detailed design 		
	 outline any additional mitigation strategies beyond those required by AH5 to AH12 		

Table 5-1: Revised mitigation measures from the Addendum CHAR (NOHC 2021b: Table 11.1)

be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations.

5.2. Detailed design and construction methodology

Detailed design and development of construction methodology for the project is an ongoing, iterative process. In accordance with RMM AH1, as far as practical, the detailed design and construction methodology for the project will avoid or minimise impacts to features/objects of Aboriginal archaeological significance. SecureEnergy has:

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Through the development of detailed design and construction methodology to date, some project works have been identified that are outside of the areas previously surveyed by Navin Officer (as identified in the Addendum CHAR (NOHC 2021a; Table 12.3)) including those noted above and described in this methodology.

Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the additional heritage survey described in this methodology). If any additional areas are required outside the area(s) previously subjected to heritage assessment and survey, these areas will require survey as described in this methodology.

Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology. Consultation with the RAPs regarding the updates to disturbance areas will be undertaken throughout the survey and test excavation process and resulting reports (section 6.5).

5.3. Disturbance area A Project works (applicable areas)

The design of Disturbance A works for the Project was provided by SecureEnergy in GIS format. Disturbance Area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). The GIS database was queried to determine the extent of the Project alignment previously surveyed by NOHC (2021a; 2021b) against the design to determine which works may require further survey. These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance.

Table 5-2 identifies a total of 1,139,503 square metres (114 hectares) to be surveyed. The following sections briefly describe 'applicable locations' in accordance with Table 5-1, although the individual areas for specific works have not been identified but fall within the overall calculated area requiring survey. The areas identified in Table 5-2 are approximate at the time of preparation of this survey methodology, however, further refinements of the disturbance area are expected. Surveyed areas would be identified in the Archaeological Survey Report described in section 6.5.3.

5.3.1. Transmission line corridor

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5.3.2. Access tracks

Numerous access tracks and bellmouths have been identified both within and outside those areas previously surveyed. Existing access tracks may also require upgrading or maintenance, generally in the form of grading. A reconnaissance survey by the archaeologists and RAPs (section 6.3) will be undertaken to identify any areas along existing access tracks that require further detailed inspection.

5.3.3. Water supply points

NOHC (2021b) has provided desktop assessments for proposed water supply points and recommended that archaeological survey (as described in this survey methodology) is conducted in areas where ground disturbance is required for pipe infrastructure, as per RMM AH3. Ground disturbance may be required for the following water supply points:

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For any water supply points that require ground disturbance (e.g. installation of a new stand pipe), these areas would be subject to the survey processes defined in this methodology.

Table 5-2: Details of required additional survey by land system

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6. Archaeological survey

6.1. Aboriginal Cultural Heritage Strategy

In accordance with the Conditions of Approval (September 2021), Condition D29 requires preparation of an Aboriginal Cultural Heritage Strategy as outlined below:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;

This survey methodology will inform the Aboriginal Cultural Heritage Strategy to satisfy condition D29 c).

6.2. Aims and objectives of archaeological survey

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH3, the aims and objectives of archaeological survey would be to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

6.3. Survey strategy

In accordance with Requirement 5a of the Code of Practice requires a survey sampling strategy to be developed. This would be required in instances where the entire area in question is not surveyed. However, RMM AH3 requires an Aboriginal heritage survey to be undertaken in all locations outside of the previously. The archaeological survey will aim to visually inspect 100 per cent of all areas not previously surveyed, as outlined in Figure 1-2, therefore no sampling strategy is required. Survey units will be based on land system and an identification number assigned for each works area surveyed. Areas to be surveyed would be confirmed by SecureEnergy prior to the survey but would be generally in line with the areas described in this methodology (section 6.4).

A vehicular reconnaissance survey will be undertaken by the archaeologists and RAPs of extensive, previously disturbed access tracks requiring upgrade to establish whether any areas require detailed pedestrian inspection. The timing for this reconnaissance would be in tandem with the archaeological survey program.

Survey will be undertaken for survey units within land systems of lower potential archaeological sensitivity in order to provide letters of clearance for works to commence where there is no archaeological potential (section 6.5.2).

6.4. Survey methodology

6.4.1. Survey teams

Each survey team will comprise one archaeologist and would aim to include two RAP representatives. In the interests of communication and safety, two teams will work in close proximity. Further teams will be employed where necessary to facilitate coverage in a timely manner.

6.4.2. Survey requirements

In accordance with Requirement 5b of the Code of Practice the following survey requirements will be implemented.

The survey will be conducted on foot in accordance with the survey strategy outlined in section 6.3. The methodology will be to undertake a series of pedestrian transects across the entire Project Area to be

subject to further survey targeting ground surface exposures for evidence of Aboriginal sites and objects and landforms of potential archaeological sensitivity which constitute PAD.

One survey team member will have possession of a Global Positioning System (GPS), consequently only one set of transects will be recorded for each team. Start and end points for each survey transect will be taken.

In accordance with Requirement 8 of the Code of Practice, where sites and/or objects are identified during field survey, their location will be recorded with a GPS (using GDA2020 NSW Lambert) using an Arrow GPS Unit and an iPad. The platform used for this mapping of data is called Field Maps / Survey123, which records the GPS points, track logs, and enables photographs to be taken with the GPS data. Accurate site plans can be prepared from this system. Datum and grid co-ordinates will be eastings and northings in MGA94.

Survey notes are also described using the system. Within the Field Maps / Survey123 system, notes are made of observable disturbance, vegetation communities and soil exposures where visible. Handwritten survey notes may also be made. A photographic record will be kept of all survey units and landforms where these are informative and appropriate photographic scales will be used.

The following details will be recorded for each survey unit:

- Land system
- Landforms
- Ground surface exposure and nature of exposure
- Visibility as a result of vegetation
- Degree of disturbance
- Nature of current and historical land use
- Significance of the location for the Aboriginal community.

6.4.3. Survey coverage

In accordance with Requirement 9-10 of the Code of Practice, information regarding visibility and exposure in each survey unit will be recorded in order to assess the effectiveness of the survey coverage. This information will be utilised, in conjunction with land system and landform sensitivity to evaluate the

effectiveness of the survey coverage and enable predictions regarding archaeological potential (where visibility and exposure are low) of survey units to provide appropriate management recommendations.

6.4.4. Aboriginal site and potential archaeological deposit identification

In accordance with Requirement 6 of the Code of Practice, the following criteria will be used when recording evidence of Aboriginal cultural heritage:

- the spatial extent of the visible objects, or direct evidence of their location
- obvious physical boundaries where visible
- identification by the Aboriginal community on the basis of cultural information.

Areas of PAD will be identified based on the assessed archaeological sensitivity of the landform or its association with a visible site boundary. Broad brush PAD boundaries will be avoided wherever possible.

6.5. Reporting

6.5.1. Aboriginal Site Recording Forms

An Aboriginal Site Recording Form (ASRF) would be submitted as soon as is practicable to the AHIMS database to document any Aboriginal objects identified through survey.

6.5.2. Letters of heritage clearance

AH3 of the RMMs states that:

If no sites are found or if sites are found and they will not be impacted, then a letter report will be provided that gives notification of this and clearance to proceed.

It is proposed that these 'letters' would be in a format downloaded from Field Maps / Survey123 system and provided to the RAPs. In addition, all key survey results will be presented to RAPs.

6.5.3. Archaeological survey report

AH3 of the RMMs from Appendix G of the Response to DPIE Request for Information states that:

Where sites are located and will be impacted, a draft survey addendum report/s to the ACHAR will be prepared for each of these survey areas. The report(s) will:

- detail findings of the survey activities
- detail where test excavation is required in accordance with AH4 to inform detailed design
- outline any additional mitigation strategies beyond those required by AH5 to AH12
- be presented to the RAPs for comment.

Final reports will be provided to RAPs and to Department of Planning, Industry and Environment (Planning and Assessment) for their information prior to the commencement of construction that impacts these locations

An Addendum Archaeological Survey Report (ASR) detailing the results of the survey would be prepared once fieldwork activities are concluded. The ASR would be completed to the requirements outlined in the Code of Practice Requirement 11 and would include all information contained in the proposed 'letters of heritage clearance'. The draft Addendum ASR will provide mitigation measures for identified sites and PADs and recommendations where further test excavation is required for PADs. The draft Addendum ASR will be presented to the RAPs for comment and discussion.

6.6. Procedure for the discovery of Human Remains

If suspected human remains are discovered during the survey, the following actions would be undertaken:

- The remains must not be harmed/further harmed
- Immediately cease all works at that particular location
- Secure the area so as to avoid further harm to the remains
- Notify the NSW Police and the Environment Line (Department of Planning, Industry and Environment) on 131 555 as soon as practicable and provide any details of the remains and their location
- Do not recommence any work at that particular location unless authorised in writing by the Aboriginal Heritage Regulation Team, Heritage NSW, Department of Premier and Cabinet.

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a 1 m x 1 m or 2 m x 1 m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits

Appendix D – Figures showing additional survey areas

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Appendix D – Aboriginal Archaeological Test Excavation Report

EnergyConnect (NSW – Western Section)

Stage 2 (2b)- Aboriginal Archaeological Test Excavation Report

Prepared for Secure Energy Joint Venture (45860-G-70005-REP-U-00018)

September 2022

Wentworth Local Government Area

Report Reference:

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Executive summary

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake a number of conditions relating to Aboriginal cultural heritage as detailed within Infrastructure Approval SSI 10040 granted on 28 September 2021.

Condition D29 e) of the Infrastructure Approval stipulates the requirement for the preparation of an updated Aboriginal cultural heritage assessment report (ACHAR). Accordingly, this ACHAR has been prepared for Stage 2 (2b) of EnergyConnect (NSW-Western Section), that is Line (L) 1 Tower (T) 138 just west of the Darling Anabranch through to Line 1 Tower 293 at the New South Wales and South Australia Border, Renmark Road. Test excavations have been conducted to assess the nature of the potential archaeological deposits (PADs) as identified in previous surveys by Navin Officer Heritage (2021b) and Everick Heritage (2022a). This Aboriginal technical excavation report (ATER) details the results of these excavations.

Test excavations

The test excavations for both Stage 1 (2a) and Stage 2 (2b) were conducted between the 10 February to the 28 June 2022. The test excavation teams generally comprised two archaeologists and four RAP representatives. The sampling strategy employed for the excavations categorized the works areas in three locations with the aim being to excavate approximately 0.15 per cent of the proposed disturbance footprint. The three categories of works areas include:

- Disturbance area A tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks from existing roads), alignment centreline and access tracks between tower sites.
- Disturbance area B based on an arborist's assessment for the requirement for tree removal (B4 and B10 clearance)

The test excavation methodology employed the excavation of a combination of $1 \text{ m} \times 1 \text{ m}$ Test Pits (TP) and 0.5 m x 0.5 m Shovel Test Pits (STP) in order to achieve the proposed sampling outcome. These excavation units would be excavated until an archaeologically sterile layer was reached. In each landform, one TP would be excavated first in 50 mm spits (vertical depths), with the following test excavation units excavated in 100 mm spits depending on the results of the initial TP. Additionally, 1 m x 1 m repatriation test pits (RTP) were excavated to serve as the location in which recovered cultural

materials would be repatriated (reburied). All excavated material was sieved with a 5 mm mesh sieve onto tarp and used as backfill for the excavation units following recording.

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Recommendations

Where the mitigation of impact to Aboriginal sites through avoidance cannot be achieved, the archaeological salvage of recorded archaeological sites is recommended. The recommended salvage or mitigation measures for the Aboriginal sites located within the Project Area are provided in Table 8-1. These preliminary salvage or mitigation measures have been made based on the results of the test excavations and meetings with the SecureEnergy design team and will be further discussed with the RAPs throughout the consultation period.

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Definitions and abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
Addendum ASR	Addendum Aboriginal Archaeological Survey Report
Addendum CHAR	Addendum Cultural Heritage Assessment Report
AFG	Aboriginal Focus Group
AH	Aboriginal Heritage
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
An	Anabranch
Ар	Arumpo
AS	Artefact scatter
ASR	Aboriginal Archaeological Survey Report
ASIRF	Aboriginal Site Impact Recording Form
ASRF	Aboriginal Site Recording Form
ATER	Aboriginal Archaeological Test Excavation Report
Ве	Belvedere
CCA	Centreline clearance area
CG	course-grained
CHAR	Cultural Heritage Assessment Report

Code of Practice	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Requireme	nts Aboriginal cultural heritage consultation requirements for proponents 2010
CSSI	critical State significant infrastructure
DAWE	Australian Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water (now Heritage NSW)
DGPS	Differential Global Positioning System
DPIE	Department of Planning, Industry and Environment (now Department of Planning and Environment (DPE))
EIS	Environmental Impact Statement
EnergyConnect	Project EnergyConnect
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
Everick Heritage	Everick Heritage Pty Ltd
Ext	extension (to existing PAD)
FG	fine-grained
GPS	Global Positioning System
g	grams
the Guide	Guide to Investigating, Assessing and Reporting on Aboriginal cultural heritage in NSW
Hf	Hatfield
ha	hectares
Ну	Haythorpe

HC	Hearth complex				
Hu	Huntingfield				
IA	Isolated artefact				
IH	Isolated hearth				
km	kilometres				
Le	Leaghur				
L	Line				
LALC	Local Aboriginal Land Council				
m	metres				
mm	millimetres				
MNI	Minimum Number of Individuals				
Мо	Morona				
NISP	Number Of Individual Specimens				
NOHC	Navin Officer Heritage Consultants Pty Ltd				
NPW Act	National Parks and Wildlife Act 1974 (NSW)				
NPW Regulation	National Parks and Wildlife Regulation 2009 (NSW)				
NSW	New South Wales				
ос	Open campsite				
OEH	Office of Environment and Heritage (now Heritage NSW)				
OSL	Optically Stimulated Luminescence				
Ov	Overnewton				
PAD	Potential Archaeological Deposit				
the Project	EnergyConnect (NSW – Western Section) – SA/NSW border to Buronga and Buronga to the NSW/Victorian border				
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RAP	Registered Aboriginal Party				
RMMs	revised mitigation measures, identified in Appendix G of the Response to DPIE Request for Information				
RTP	Repatriation Test Pit				
Response to DPIE Reque	DPIE Request for Information the 'additional letter dated 10 August 2021' referenced in the definition section of the Infrastructure Approval, document is also titled EnergyConnect (NSW – Western Section) Response to DPIE Request for Information				
Rr	Roo Roo				
SecureEnergy	SecureEnergy Joint Venture				
S	section				
SM	shell midden				
SNI	South Australia and New South Wales Interconnector				
ST	Scarred tree				
STP	shovel test pit				
Т	Tower				
ТР	test pit				
We	Wentworth				
WNSWAP	Western New South Wales Archaeological Program				

1. Introduction

1.1. Project background

On 29 August 2019, the NSW Minister for Planning and Public Spaces declared the NSW portion of Project EnergyConnect (EnergyConnect) critical State significant infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons. Within NSW, EnergyConnect is therefore subject to assessment under Part 5, Division 5.2 of the EP&A Act.

Transgrid have two environmental planning approval applications for the sections within NSW:

- EnergyConnect (NSW Western Section) SA/NSW border to Buronga and Buronga to the NSW/Victorian border
- EnergyConnect (NSW Eastern Section) Buronga to Wagga Wagga.

The Environmental Impact Statement (EIS) for EnergyConnect (NSW – Western Section) (the Project) was prepared in October 2020 and was placed on public exhibition from 30 October 2020 to 10 December 2020. On 7 May 2021, the then Department of Planning, Industry and Environment (DPIE) requested additional information to assist with the assessment of the Project. In response, Transgrid prepared and provided the additional information letter dated 10 August 2021 (Response to DPIE Request for Information) (Transgrid 2021b), which included further revised mitigation measures (RMMs) which are to be applied (Table 1-1).

Approval for the Project under the EP&A Act was granted by the then NSW Minister for Planning and Public Spaces (Infrastructure Approval SSI 10040) on 28 September 2021. Key issue conditions relating for Aboriginal cultural heritage (D29) specify that:

Prior to commencing construction, the Proponent must provide an Aboriginal Cultural Heritage Strategy, prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The Strategy must:

a) identify any additional risk zones outside the potential archaeological deposits (PADs) where construction must not commence until subsurface testing in b) and surveys in c) are complete;

b) describe additional subsurface testing that will be undertaken to confirm the significance of the PADs that would be impacted by the final transmission infrastructure design and ancillary facilities in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010);

c) describe additional Aboriginal heritage surveys that will be undertaken where ground disturbance activities are required outside of the heritage survey area;

d) include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings; and

- e) include an updated Aboriginal cultural heritage assessment report, which:
- is based on the findings of the subsurface testing in b) and surveys in c);
- · describes any potential additional impacts to heritage items;
- identifies further mitigation measures, including avoidance or salvage;
- includes detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and
- provides an updated and consolidated list of sites that would be protected and remain insitu throughout construction and sites that would be salvaged and relocated to suitable alternative locations

Transgrid have engaged SecureEnergy, a joint venture between Elecnor and Clough Projects Australia Pty Ltd to design and construct their portion of the EnergyConnect project. SecureEnergy has engaged Everick Heritage Pty Ltd (Everick Heritage) to undertake activities to satisfy condition D29 a) to e) of the Infrastructure Approval and RMMs relevant to Aboriginal heritage (Navin Officer Heritage Consulting [NOHC] 2021b: Table 11.1).

1.2. The Project area

EnergyConnect (NSW – Western Section) comprises a corridor of varying widths across a length of approximately 158 kilometres (km) between the South Australian border and the Murray River opposite Red Cliffs in Victoria. This Aboriginal Test Excavation Report (ATER) reports on the test excavation for Stage 2 (2b) of EnergyConnect (NSW – Western Section).

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1.3. Study objectives

Two previous Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project. The first ACHAR contains information regarding the survey methodology and assessment:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (Navin Officer Heritage Consulting 2021b [NOHC] 2021a).

An Addendum Cultural Heritage Assessment Report (Addendum CHAR) was prepared to outline the potential impact and revised mitigation measures provided since the exhibition of the EIS as follows:

 EnergyConnect (NSW – Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b).

In accordance with an approved request under condition E32 of the NSW Infrastructure Approval, two separate Aboriginal Cultural Heritage Assessment Reports will be prepared, each covering different geographic parts of the Project area (referred to as Stage 2a and Stage 2b).

The objectives of this Stage 2 (2b) – ATER are to fulfill condition 29 b) of the Infrastructure Approval and to comply with Aboriginal Heritage (AH) 4 of the RMMS (Table 1-1).

This ATER has been undertaken in accordance with the following approvals, reports and guidelines:

- Infrastructure Approval SSI 10040
- EnergyConnect (NSW Western Section) SA/NSW Border to Buronga to NSW/Vic Border, NSW Non-Aboriginal and Aboriginal Cultural Heritage Assessment Report (NOHC 2021b)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Department of Environment, Climate Change and Water [DECCW] 2010b).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010a).
- The Burra Charter 2013 (Australia ICOMOS 2013).

The test excavation applies to those identified areas of potential archaeological deposit (PAD) impacted by Disturbance areas A and B (see section 2) within the generally 100 metre (m) wide corridor previously surveyed by Navin Officer Heritage Consultants Pty Ltd (NOHC 2021a; 2021b) (Table 1-1). Additionally, nine sites were also identified as requiring test excavation due to their potential to possess moderate to high potential for subsurface archaeological deposit (Table 1-1).

Additional survey undertaken by Everick Heritage (2022a) for the Addendum Aboriginal Archaeological Survey Report (Addendum ASR) identified new PADs and extensions to existing PADs requiring test excavation as identified in Table 1-2.

SecureEnergy has made refinements to the design and construction methodology and succeeded in minimising impacts to several PADs as well as Aboriginal sites by:

- using existing access tracks and firebreaks where possible
- relocation of Project alignment in order to avoid PADs where possible.
- redesign of access tracks
- utilisation of low-impact hurdling construction methodology for the Essential Energy underground areas as opposed to underground changing.

Due to their size and extent however, avoidance to all PADs could not be achieved. The ACHAR and associated appendices have been prepared for the further investigation of these areas where impact could not be mitigated.

Table 1-1:	Revised	mitigation	measures	relative to	test exca	vation for	Stage 2	(2b) from	the Add	dendum
Aboriginal	Cultural	Heritage A	Assessment	Report (A	CHAR) (N	10HC 20	21b: Tab	le 11.1)		

Reference	Mitigation measure	Timing	Applicable locations (Stage 2 [2b])
AH4	In developing the detailed design and construction methodology, the construction contractor will review the location of all identified PADs and will aim to avoid and/or minimise direct impacts to the identified PADs.	Detailed design and construction impacts to sites/features/ PADs	Sites
	Where direct impacts cannot be avoided, test excavation programs will be carried out in the parts of any PADs where direct impact is likely (including where the root- ball of trees are being removed). The purpose of the test excavations will be to determine the presence or absence and		PADs

Reference	Mitigation measure	Timing	Applicable locations (Stage 2 [2b])
	significance of subsurface archaeological deposits.		
	Test excavations works will be carried out in accordance with a methodology that is presented to and consulted on with the RAPs.		
	Test excavation addendum report/s to the ACHAR will be prepared for each test excavation program(s) which will: detail findings of the test excavation activities.		

Table 1-2: PAD gazetteer based on additional survey – Stage 2 (2b) only (Everick Heritage 2022). Those PADs not requiring test excavation are highlighted

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Figure 1-1: Stage 2 (2b) – Project area

1.4. Compliance

The test excavations were undertaken with representatives of the RAPs. Any cultural knowledge and/or management recommendations regarding Aboriginal cultural heritage offered by the RAPs during the excavation have been recorded and incorporated where appropriate into the ATER.

Test excavation described in this ATER has been undertaken with regard to the following guidelines:

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice) (DECCW 2010a).
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (the Guide) (OEH 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (Consultation Requirements) (Department of Environment Climate Change & Water [DECCW] 2010b).
- The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (ICOMOS 2013).

Test excavation described in this ATER has been conducted in accordance with the following legislation:

- National Parks and Wildlife Act 1974 (NSW) (NPW Act)
- National Parks and Wildlife Regulation 2009 (NSW) (NPW Regulation).

1.5. Consultation

Registered Aboriginal Parties (RAPs) for the Project were identified during the EIS process in accordance with the Consultation Requirements. Registrations of interest were received from 18 Aboriginal stakeholders and was ongoing throughout the EIS process and by Transgrid through to the handover to SecureEnergy. The documentation of consultation can be found in the ACHAR for Stage 2 (2b) and has been completed in accordance with Clause 80 C of the *National Parks and Wildlife Regulation 2009 (NSW)*.

1.6. Authors and contributors

Vanessa Edmonds (Principal, Everick Heritage) directed the test excavation program and contributed to the production of this ATER. Vanessa has over 35 years' experience in cultural heritage management and has previously excavated a number of sites in the Sunraysia region in both NSW and Victoria.

Jason Giang (Archaeologist, Everick Heritage) supervised the data management and preparation of sections 2, 6, 6. and 8.

Liam Neill (Senior Archaeologist, Everick Heritage) undertook the stone artefact analysis and wrote section 6.1.

Georgie Wye, Joshua Giesken and Gloria Aranda-Spinazze (Archaeologists, Everick Heritage) undertook the majority of the sorting and analysis of the faunal remains

Madison White (Archaeologist, Everick Heritage) researched and prepared the paleoenvironmental section 3.2 and undertook and wrote the faunal analysis.

Brendan Wong (Archaeologist, Everick Heritage) and Grace Eldon (Archaeologist Everick Heritage) assisted with the compilation and rationalisation of test excavation data as well as the preparation of section 6.

Pav Klien (Senior GIS, Everick Heritage) and Brad Moreland (GIS, Everick Heritage) managed the spatial data for the project and prepared the mapping.

2. Description of works

2.1. Disturbance area A

The design of Disturbance area A works for the Project was provided by SecureEnergy in GIS format. Disturbance area A includes areas that are subject to ground disturbance due to construction and/or operation (eg construction compounds and accommodation camps, upgraded and/or new access tracks, areas around transmissions towers). These works comprise all or part of the following development components:

- Transmission towers
- Brake and winch sites
- Temporary construction/tower laydown areas
- Parking areas
- Bellmouths (turning circles)
- Access tracks
- Water supply points
- Wentworth construction compound and accommodation camp
- Transmission line corridor
- Vegetation clearance
- Essential Energy areas where existing services cross the EnergyConnect corridor

Further descriptions of the proposed works associated with the construction of the development

2.1.1. Transmission towers

A total of 155 transmission towers on L1, are proposed to be constructed as a part of the Stage 2 (2b) Project area. The construction of these towers will require the clearance of land across an area of approximately 60 metre (m) x 60 m depending on the type of transmission tower (guyed or self supporting). The tower footprint area is required to be that size to ensure that there is a safe working space for the teams constructing the towers. Clearance will involve removal of all vegetation and the

removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

Tower footings will be located approximately 20 m from the corners of the tower construction areas for self-supporting towers and 5 m for guyed towers. The associated piles would be constructed to a depth of between 7.5 m and 16 m. The tower footings and piles would be constructed with the use of a Soilmec drill rig. Holes will be drilled to the site-specific depth according to the engineered design calculations. Once they have met the required depth, specialised jigs are then installed which hold the foundation steel work. They are then set in place and the holes are filled with concrete.

Each tower construction area will require additional areas up to 70 m x 40 m in size. These areas would be utilised for temporary laydown and storage of tower steel, bolts and accessories and would be cleared where permitted (areas without an exclusion zone). Clearing will involve vegetation removal to ground level utilising a forest mulcher or similar type of plant. Where the proposed alignment changes direction, brake and winch sites will be required. These sites would extend up to 200 m from the centre of the tower and require a clearance of a 50 m x 30 m area in addition to a 5 m wide track which will lead to the brake and winch location. The brake and winch points will be constructed by clearing all trees in the marked-out area, root balls will be retained. This will provide a location to set out specialized machinery that enables installation of the overhead transmission line cables.

2.1.2. Ancillary tower works

There are several works which will be required in addition to the construction of the transmission towers, including the construction of access tracks, bellmouths (turning circles) and parking areas. The creation of new and upgrade of existing access tracks is proposed along the transmission corridor alignment. These access tracks run parallel to the alignment both within and outside the transmission line corridor as well as into each new transmission tower. The new access tracks will be 4 m wide with passing lanes installed in select locations and formed by grading the ground surface with a grader and / or excavator. Any spoil that is created during access track works will be utilised to form earthen bunds in the vicinity of the tracks as a manner of erosion and sediment control. Where required new fill will be laid down for stability. Any imported fill will be sourced from a registered quarry or location approved to provide the required material. Access tracks which provide access directly to the tower location will also be constructed with a bellmouth connecting the two tracks. These bellmouths can be up to a maximum width of 15 m and be utilised as a turning circle.

Parking areas have been proposed at each tower location and will be constructed adjacent to the proposed access tracks. The parking areas are typically 35 m x 10 m in size and will be cleared of vegetation except where exclusion zones exist. As with the tower footprints, clearance will involve removal of all vegetation and the removal of root balls. Depth of disturbance is dependent on the depth of the root ball. Where vegetation consists of trees, these will be felled and the resulting stumps will be pushed to enable root ball removal. The ground will be levelled post clearing and that will form the tower pad for construction.

2.2. Centreline, Disturbance area B

Two clearance areas have been proposed which will be subject to vegetation management requirements between the tower locations requiring varying levels of ground disturbance. The Centreline clearance area (CCA) (Disturbance area A – centreline) refers to the centreline of the Project corridor where the draw wires will be pulled from tower to tower with the use of Challenger tractors. This disturbance area comprises a 10 m wide linear area in the centre of the alignment in which vegetation will be cleared and will be used as the main access track for moving the drill rig from to site to site during tower foundation construction and the installation of the draw wire during stringing operations. Vegetation clearance will be completed using mobile plant and equipment that is able to remove vegetation to ground level. Root balls of any removed vegetation will remain in situ to minimise soil erosion. The CCA may also be utilized as access across the transmission alignment during construction.

Areas where selective clearing and/or management of trees will occur (Disturbance area B) to maintain the minimum vegetation clearance requirements as required by Transgrid when the conductor is at maximum operating conditions. Tree management associated with Disturbance area B will be completed through the use of mobile plant and equipment with the centreline or access tracks being utilised for accessing the vegetation that requires management. Plant and equipment movements through Disturbance area B will be limited to what is required to tidy felled trees and potentially for herbicide application.

2.3. Additional works relevant to Stage 2 (2b) only

Several additional works are required which do not directly relate to the construction of the transmission line however are ancillary activities required to support the Project. These include:

- Construction of water fill points for provision of both potable water and construction water A series
 of water supply points have been identified as suitable connection points to existing water supply
 pipelines. Establishment for water supply points will comprise installation of an access point /
 driveway, some ground leveling and installation of pipework required for the fill point. The proposed
 water supply points to be established and/or used for Stage 2 (2b) include:
 - Beverley Street, Wentworth

A further two water supply points (Alcheringa Drive and Modica Crescent, both in Buronga) were established as part of Stage 1 (2a) and will continue to be used through this stage.

- Construction of the Wentworth construction compound (laydown) and accommodation camp. Establishment of the construction compound and accommodation camp requires clearing of vegetation within the disturbance area and clearing and removal of topsoils.
- Potential undergrounding of existing low voltage overhead powerline crossings was identified prior to test excavation. Following the test excavations, SecureEnergy has indicated that all works involving powerline crossings will be constructed utilising a low impact hurdling construction method. Potential works may include installation of new poles on either side of the EnergyConnect corridor and hurdling the line across the EnergyConnect alignment. Two powerline crossings are proposed:
 - near T 216 north and south of the corridor. The northern undergrounding area measures 65,
 341 square metres and the southern undergrounding area measures 26,042 square metres although it is not expected that the entirety of these areas will be required
 - west of the Anabranch Mail Road PAD 10 ext. The northern undergrounding area measures
 6,471 square metres and the southern undergrounding area measures
 6,370 square metres although it is not expected that the entirety of these areas will be required.

3. Environmental context

This section provides an overview of the environmental conditions that characterise Stage 2 (2b) of the Project area. The information provided relates specifically to those factors which affect archaeological site distribution and preservation.

3.1. Physiography and climate

Physiographically, the Project area lies within the southeastern Murray Basin, which is characterised by a gently undulating plain covered by extensive aeolian sand deposits. The Project region experiences a semi-arid climate with mean annual evaporation rates greatly exceeding rainfall. The average annual rainfall is quite low at approximately 325 millimetres (mm) with nearly 60 per cent occurring between the winter months of May and October (Land Conservation Council 1987). Droughts are common.

3.2. Paleoenvironment

What is now the Lower Murray-Darling Basin, 26-3 million years ago was intermittently submerged beneath the sea. At this time, an event occurred which led to the uplifting of a geological formation called the Pinnaroo Block. Located at the mouth of the now Lower Murray River, the uplifted Pinnaroo Block created an ancient inland Lake known as Lake Bungunnia (Murray-Darling Basin Authority 2020; Page et al. 2009). Lake Bungunnia was a shallow lake and existed for roughly two million years during a period when the climate was expected to have either been much wetter than it is now, or underwent considerably less evaporation, with humid conditions and potentially, vastly more vegetated. Six hundred thousand years ago, the Pinnaroo Uplift was breached, resulting in the draining of Lake Bungunnia. It has been suggested that semi-regular marine incursions and retreats followed by the draining of Lake Bungunnia lead to the creation of the Paleo Murray (Butler et al. 1973: 4; Page et al. 2009: 20). It is assumed that most of the sand now covering this area of southeast Australia was deposited during the periods of intermittent marine incursion (Murray-Darling Basin Authority 2020).

Alluvial Plains of the Lower Murray-Darling Basin are the seasonal flood plains contiguous with the extensive waterways that make up this area (Butler et al. 1973: 7). These alluvial plains can be characterised generally by grey clays and silty clays which host larger Eucalyptus species such as River Red Gum, Grey Box and Black Box species which require larger amounts of water to survive (Butler et al. 1973: 7). These soils are generally less saline due to denudation and accumulation processes related to

semi-regular flood events. Alluvial plains and fluvial channels were subject to periods of heavy water flow balanced with periods of no water flow whereby sediment was deposited and then denuded (Page et al. 2009: 21) creating complex lenses and layer stratigraphy. To lead to this, ancestral rivers were thought to have been deep and sinuous channels without levees, able to maintain their course across broader alluvial plains, suspected to be immediate precursors to modern channels whose alluvial plains exist within the larger ancestral channel traces (Page et al. 2009: 21). The Lower Murray-Darling Basin alluvial network can be described as an expression of single channel, anabranching and distributary patterns with a downstream decline in channel size representative of a lack of perennial floodwater retention in lakes, wetlands and lagoons with attributable losses from evaporation and infiltration (Page et al. 2009: 21).

During the late Pleistocene the Darling River followed that of the Darling Anabranch and its upper reaches north of Lake Tandou (Balme 1995). Loss of efficiency of this sinuous channel caused a transition to the present river channel in the early Holocene, probably around 9-7, 000 years ago (Balme 1995). In the upper reaches of the Anabranch system, Pleistocene sites are mainly associated with the Anabranch and its overflow lakes, and Holocene sites are associated with the present course of the Darling River and its overflow lakes (Balme 1995; Anderson et al 2017).

Drier areas away from waterways and alluvial plains tend to resemble undulating sandplains and dunefields (widespread and distinctive patterns of dunes), vegetated predominately by Mallee (Eucalypt scrub), and is comprised of aeolian sands overlying aeolian solonised loams. Both soil types are prone to deflation, especially during periods of drought and grazing (Butler et al. 1973: 4-5). Aeolian landforms tend to occur in lowland areas and are commonly separate from riverine landforms. The most common representation of these landforms involves the accumulation of sandy material creating dunes and sand ridges:

...deflationary forms are represented by the occurrences of sheet erosion known as scalds, and may also be represented by the occurrence of dry lake basin (Butler et al. 1973: 12).

Scalds are a deflationary feature whereby surface and subsurface soils are removed by wind exposing subsoil often impervious to water; this landform also known as a claypan. It is believed (Butler et al. 1973) that these dunes are fixed by mallee vegetation and that deflationary features are generally more modern, within the last 200 years. Sand ridges associated with the mallee region typically contain more clay as well as soft lime and/or calcrete. Dunefields, however, are generally more undulating and frequently contain less clay and calcrete (Butler et al. 1973: 13).

Lunettes are a unique feature to Australia; they tend to have a crescentic shape and can be comprised from both clay and sand, sometimes containing gypsum or salts (Butler et al. 1973: 13). Generally,

lunettes are formed over a process of flooding and drying events whereby a lake will retain water during floods seasonally or perennially, and intermittently dry out. Lunettes form during these dry lake phases, as deflationary processes move lakebed sediments from those beds and blow them unto the lakes bank. As prevailing wind direction in these areas is predominantly consistent, it creates a crescent shape as these deposits build up over time. Lakes that stay full longer tend to create more sandy lunettes as sand blows in from the surrounding dunefields. Whereas lakes that regularly dry out/are drier for longer tend to create more clayey lunettes, as the lakebed clays are exposed to deflationary processes for longer periods of time (Bowler et al. 2012: 275). From around 50,000 to 25,000 years Before Present, increased surface runoff and reduced evaporation resulted in high groundwater levels and full lake levels in the region. Approximately 25,000 years ago the lakes shrank and become shallow and saline. Lakebed deposits were reworked forming lunettes associated with the lakes and longitudinal sand dunes were reactivated. The last major phase of dune building occurred around 15,000 years ago. Since then only minor climatic have occurred and the effect on landscape development has been minimal (Fox 1991: 446).

3.3. Land systems

Land systems are mutually exclusive complexes that contain similar environmental components such as climate, geology, landform, soil and indigenous vegetation (Rowan 1990). Land systems form useful discrete units for describing and analysing the landscape.

Eleven land systems, as described by the Soil Conservation Service of NSW (Soil Conservation Service of NSW 1991) are identified along the Stage 2 (2b) Project area (Figure 3-1). These 11 land systems can be placed into four major geomorphic categories as follows:

- Sandplains Hatfield (Hf), Overnewton (Ov), Roo Roo (Rr), Belvedere (Be)
- Dunefields Arumpo (Ap), Leaghur (Lh), Haythorpe (Hy)
- Alluvial Plains Anabranch (An), Wentworth (We)
- Playas and Basins Huntingfield (Hu), Morona (Mo).

A summary description of the land systems, landforms and related archaeological sensitivity is provided in Table 1-2. Further detail can be found in the Stage 2 (2b) ACHAR (Everick Heritage 2022d: Table 6-3).



Figure 3-1: Land systems of the Stage 2 (2b) - Project area

3.4. Land use history

The Project Area has a long history of sheep grazing for wool and meat and from the 1920s irrigated agriculture closer to the Murray River. As a result of grazing and subsequent devegetation of the landscape erosion is high and the landscape can be considered as primarily a degrading landscape although aeolian processes also assist in some aggradation with windblow sands. There is also some cattle grazing and limited areas of irrigation along the Murray and Darling Rivers. Recreational use of the riverbanks is common. Until recently however, there has been no large-scale clearance of the land in western NSW. Consequently, Aboriginal site preservation is high in non-irrigated areas.

4. Archaeological context

Both the Addendum ASR (Appendix C), and Addendum CHAR (NOHC 2021a; 2021b) provide further details on previous studies in the region. The following summarises the most pertinent to Stage 2 (2b).

Some of the earliest known archaeological sites in the Murray/Darling river system are found in western NSW around old lake beds at the Willandra Lakes, 120 km to the north of the Project Area. Sites here date back to the end of the last glaciation around 35,000-40,000 years ago and consist of middens and campsites containing freshwater mussels, fish, crustaceans, a variety of terrestrial fauna, stone artefacts and hearths (Allen 1972; Balme and Hope 1990).

Investigations of shell middens in the Darling River region have established a long history of shellfish exploitation spanning 27,000 years (Balme and Hope 1990; Hope et al. 1981). However, the great antiquity of shellfish gathering is not confined to the Darling. Investigations and excavations of shell middens along the high cliffs (ancestral riverbank) overlooking the Murray River in the Sunraysia region (NSW and Victoria), that is Murray River Mallee Zone, indicates Aboriginal shellfish gathering and associated occupation commenced around 23,000 years ago and continued through to the recent past (Edmonds and Marsh 2020: Table 11-1).

These sites share a number of common elements consisting invariably of shell midden with small components of each site being made up of stone artefacts, hearths, hearthstones, and other faunal material. Ancestral Human Remains (burials) are rare in these sites or locations and the only dated burial in the area comes from Mallee Cliffs, 5 km to the east of the Project area (Pardoe 1988). The cultural Horizon of each site is generally shallow, although the Horizon itself may be buried by as much as one metre of sterile sediment. The exceptions to this generalisation are Red Cliffs, on the south side of the

Murray in Victoria, where the shell was stratified through 1.4 m of deposit, and at Gol Gol car park, just west of the Project area where Lance (1990) found approximately one metre of stratified cultural deposit.

In 1990, Lance prepared a Plan of Management for Lake Victoria. As part of this Plan, Lance (1990) undertook a site survey of specific areas around Lake Victoria, including a 3 m wide transect north of the lake along the cleared boundary fence between Nulla and Noola properties. The local environment along this transect comprised sand dunes. Eight shell middens (LVN 1-8) were located. The northernmost middens (LVN 3-8) comprised small or large scatters of freshwater mussel shell and some contained in situ shell deposits. Burnt calcrete heat retainers and occasional silcrete and chert stone artefacts were also found in association with these sites. The two southernmost sites (LVN 1-2) were larger shell midden complexes containing a wide range of raw stone materials and artefact types. One of these sites also contained Ancestral Human Remains.

Lance (1990: 93) surmised there was a strong preference shown by Aborigines for camping on sandy soils. These would have been drier than the interdunal clays, elevated above the general landscape for better views and cool breezes and would have provided shade trees. Furthermore, Lance (1990: 93) states that the size and number of sites located along the Nulla-Noola transect was limited by the amount of exposure present. He proposed that site density can be expected to be extremely high on the crests of dunes found within several kilometres of Lake Victoria. Beyond this distance, sites would still be common but would occur at a much lower density. According to Lance (1990: 93) numerous small scatters of shell were noted but not recorded along farm tracks on Nulla Station particularly where these cross dunes. It would also appear from Lance's (1990) results that site complexity may decrease with distance travelled north from Lake Victoria, particularly with regard to stone raw materials, artefact type and numbers.

Evidence for widespread occupation of the Lake Victoria landscape, that is, the southern beaches, islands and barrier, the higher shores and lunette, along the river channels linking the lake to the Murray River and along the River Murray banks, only appears in the last 2,500 years. There may be some bias in this evidence due to younger sediments around the lake shoreline covering older sediments although it would appear that most of the major Aboriginal cemeteries date to within the last 2,500 years and that this may reflect changes in both population size and social complexity (see also Pardoe 1988).

Edmonds (2002a; 2002b; 2003) undertook a number of assessments for the South Australia-NSW Interconnector (SNI) which examined a 100 m wide corridor which in some instances mirrored the current Project area particularly east of the Darling though to Buronga substation. Generally, east of the South Australian border to the Darling Edmonds (2002a; 2002b) assessed a corridor slightly to the north of the current Project area.

Across a number of surveys, between 1998 and 2003, Edmonds recorded 66 Aboriginal sites. Along with scarred trees, open campsites and isolated stone artefacts dominated the SNI corridor landscape. Generally, these sites were predominantly composed of hearths with a sparse distribution of stone artefacts. Stone artefacts were mainly manufactured from silcrete with smaller components of chert, quartz, quartzite and sandstone present. Both silcrete and chert occur locally from pedogenic rocks which outcrop in the cliffs along the Murray (chert at Paringa in South Australia and silcrete at Berribee on the Lindsay River in Victoria). Silcrete seams are also widespread throughout the region between Wentworth and Broken Hill (eg at Mungo) but the sources are generally small and widespread. One such seam occurs on Talgarry Station (just south of the Project area) in the vicinity of Lake Victoria (Hope 1998: 342). The quartz, quartzite and sandstones would have come from older metamorphic and volcanic rock outcrops, such as those in the Barrier Ranges to the north and are likely to have been traded into the area through a complex of exchange networks. The artefact assemblage on campsites primarily consisted of unmodified flakes and occasional cores. A small number of retouched and/or utilised flakes and grindstones were noted. There did not appear to be any distinctive patterning of artefact distribution either within or between sites.

Middens mostly occurred as shallow accumulations of individual shell heaps comprising freshwater mussel shell. The fragmentary nature of much of the shell exposed on the surface of these sites made it difficult to distinguish between lake mussel shell (*Velesunio ambiguus*) and river mussel shell (*Alathyria jacksoni*) although it is most likely that the distribution of river mussel was confined to the river margins whilst the lake mussel was confined to middens found north and west of Lake Victoria (2002b: 43). River snail (*Notopala sublineata*) was only noted at one site, an extensive midden on the riverbank along the western side of the Darling and occurred as single shell lenses or one-off meals within a larger midden complex.

The shell middens recorded in the SNI corridor landscape appeared fall into three main categories:

- extensive but shallow linear accumulations of both scattered and in situ individual shell lenses in a dark grey ashy clay matrix in association with burnt clay hearths and stone artefacts (Anabranch, Darling)
- extensive areas of discrete scattered and in situ shell lenses in a sandy matrix in association with calcrete hearths and, rarely, stone artefacts predominantly located on dunes (Roo Roo)
- small isolated lenses of shell in association with larger open campsites on duplex soils (Roo Roo).

Stone artefacts were occasionally noted in association with the middens but were rare. Ubiquitous in situ and scattered hearths formed a major component of most middens (2002b. There were no vertebrate faunal remains noted in the shell middens recorded along the corridor. Lance (1990) has also

commented on the rarity of faunal remains in middens in the Lake Victoria landscape. Hope (1998: 347), however, discovered a wide range of faunal remains during excavations of shell middens at Lake Victoria but these were very fragmented. Therefore, the lack of faunal remains in association with shell middens in the SNI corridor landscape may be a perception related to the highly fragmented nature of the bone. This fragmentation is most likely related to food processing (Hope 1998: 347).

Hearths were a ubiquitous archaeological feature noted on sites along the SNI corridor and were found in association with stone artefact scatters (campsites) and middens, in complexes or as isolated archaeological features and were mostly found near permanent or temporary water sources. Along channel banks in the Anabranch and Darling land systems hearths often formed a linear complex. The hearths located during the SNI survey were composed of heat retainers made from clay, termite nest, ironstone or calcrete (carbonate) depending on the local availability of these materials.

The majority of sites located along or close to the study area are situated adjacent to a water source, such as rivers and creeks, relict lakebeds, depressions, claypans, swamps and scalds. This pattern of site distribution is a reflection of the semi-arid nature of the landscape, that is, limited distribution of water sources with the focus of Aboriginal occupation on or near those sources.

In summary, Edmonds (2002b: 42-43) states the following:

- Sites were located in all land systems occurring along the SNI corridor except Arumpo, Hatfield, Mandleman and Trelega. Within the corridor these land systems comprise extensive sandplains and dunes with few reliable water sources in the semi-arid landscape.
- The Canally land system contained the highest numbers of sites along the SNI corridor followed by the Darling.
- All of the recorded sites in the Belvedere land system were located around the margins of depressions or where this land system is situated adjacent to the Canally land system.

The survey results indicate there is evidence for Aboriginal occupation across the majority of the SNI corridor and that landforms associated with permanent and ephemeral water sources were a primary focus for Aboriginal settlement. The evidence for occupation along the corridor appeared to represent two different settlement patterns based on seasonal availability of water.

 Large open campsites and/or extensive shell middens, which are located along permanent water sources (riverine corridors), such as the Darling and Anabranch Rivers. These larger sites represent base camps occupied for extended periods of time during the drier summer months when food and water resources were restricted. These sites could have been re-occupied on an annual basis

2. Seasonal or transient camps located around ephemeral water sources which probably supported small mobile groups of people for short periods of time when increased rainfall in winter months filled the back channels and billabongs, depressions, claypans, sinks and scalds which facilitated travel through the more marginal land systems. Animals and birds would also be attracted to the seasonal water sources providing food normally restricted to the Riverine corridors in drier seasons. Transient camps or seasonal camps are the second pattern of settlement along the corridor and are represented in the landscape by small open campsites/surface scatters, isolated hearths and hearth complexes, isolated artefacts and scarred trees.

4.1.1. The Project area

4.1.1.1. Navin Officer Heritage Consultants 2021a and b

Two Aboriginal Cultural Heritage Assessment Reports (ACHAR) have been prepared for the Project by NOHC (2021a; 2021b). The following provides a summary of the assessment, survey methodology and results although further detail can be found in the Addendum ASR (Everick Heritage 2022d: Appendix C).

Field survey of the entire Project area was undertaken by NOHC between 22 June and 3 July 2020 and on the 17 February 2021. The aims of the survey were to:

- Identify any archaeological sites and areas of PAD not previously recorded
- Assess all areas of identified archaeologically sensitivity
- Re-locate, inspect, and assess the condition of known Aboriginal sites recorded on the AHIMS database.

The total area covered by the survey was 19,879,671.84 square metres. Taking into account survey coverage, archaeologically 'useable' exposures, and visibility variables the effective survey coverage was 51.54 per cent of the total surveyed area. NOHC (2021a) state that:

A total of 74.69 per cent of the surveyed ground area was inspected during the survey, with 67.35 per cent providing useable archaeological exposures.

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- Sites were generally located north of Lake Victoria, on the banks and floodplains of the Greater Darling Anabranch River and Darling River and to a lesser degree the Murray River
- Dry lake beds were also a focus of Aboriginal occupation
- North of Lake Victoria sites were generally located on elevated flat to low gradient undulating sandplain ridge with a high number of grindstones present
- Locally elevated flood channel margins are highly sensitive along the Greater Darling Anabranch
- The most common site along the Darling River was hearths and low density artefact scatters
- Generally, across the survey area, very high ground coverage obscured potential hearths and artefact scatters.

4.1.1.2. Everick Heritage 2021 and 2022

Everick Heritage was engaged to conduct additional survey of the Project area in accordance with RMM AH3. The aims and objectives of the additional archaeological survey were to:

- Identify and record any Aboriginal objects present within those areas requiring further survey
- Identify and record any areas of PAD identified as being directly impacted by Disturbance area A Project works (transmission towers, brake and winch sites, parking areas etc.)
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of sites/PADs where identified
- Determine the scientific significance of any sites or objects identified during the survey
- Provide management and mitigation measures (including the requirement for test excavation within areas of disturbance) for any sites or PADs identified during the survey in conjunction with the RAPs.

The primary survey for the additional areas of proposed disturbance was undertaken over six days between the 14-19 December 2021. Additional small survey areas for traffic signage, traffic entry points and the Wentworth camp and laydown area were identified during the test excavation program and undertaken as required. The addendum and additional survey areas for Stage 2 (2b) to date total 423,337 square metres (42.33 hectares). Generally, vegetation cover was very low and ground surface exposure moderate to high affording excellent visibility for the detection of surface Aboriginal sites and objects. Effective coverage has not been assessed for each small area however, it can be confidently stated that given the small size of many of the survey areas and the high exposure and ground surface visibility effective coverage would be around 80 per cent. Following the rains in April and June vegetation

cover became a constraint to ground surface visibility for the small areas of additional survey required, and it could be stated that effective coverage was reduced to around 50 per cent.

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5. Test excavation

5.1. Aims and objectives

In accordance with archaeological best practice as outlined by the Code of Practice, and to fulfil RMM AH4, the aims and objectives of archaeological test excavation were to:

- Establish if subsurface archaeological deposit is present within those PADs and sites identified as being directly impacted by Disturbance area A and Disturbance area B Project works (transmission towers, brake and winch sites, parking areas, access tracks etc)
- Determine the nature (content) and extent (vertical and horizontal) of any archaeological deposit
- Provide an opportunity for RAPs to comment on the Aboriginal cultural heritage values/significance of PADs where they are deemed to be Aboriginal archaeological sites
- Determine the scientific significance of any archaeological deposits identified during the excavation and following the assessment of test excavation results
- Provide recommendation for the management of archaeological deposit where present
- Address the research questions raised in the methodology.

Test excavation was limited to those areas of PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B (required tree clearance).

NOHC (2021b) identified the following sites as having high potential for subsurface archaeological deposit and recommended test excavation:

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Where the above sites or parts thereof, would be impacted these were subject to test excavation generally through the Disturbance area A and Disturbance area B sampling strategy (section 5.3).

5.2. Timing and personnel

Test excavation for both Stage 1 (2a) and Stage 2 (2b) was conducted between the 10 February to the 28 June 2022. During this time test excavation was supervised by the following Everick Heritage personnel across the test excavation program:

- Vanessa Edmonds (Principal-Project manager)
- Aaron Fogel (Principal)
- Roark Muhlen-Schulte (Principal-Field supervisor)
- Cailtin Marsh (Senior Archaeologist)
- Mitch Cleghorn (Senior Archaeologist)
- Andrew Wilkinson (Senior Archaeologist)
- Liam Neill (Senior Archaeologist)

Test excavation teams generally comprised two archaeologists and four RAP representatives, although that number fluctuated across the life of the test excavation program. RAP representatives participated in test excavation through a rostering system and a list of RAP participants and other Everick Heritage personnel are provided in Appendix B.

5.3. Sampling strategy

A sampling strategy was developed for test excavation of the Project area as part of the test excavation methodology prepared by Everick Heritage (2021b). Disturbance area A and Disturbance area B works are varied in size and shape, as are the PADs, therefore it was proposed that an overall standardized sampling strategy for each Disturbance area A be adopted to ensure adequate sampling is attained. This sampling strategy was informed through the proposed disturbance footprint within previously identified PADS. For the purposes of explanation, the sampling strategy had been calculated for:

- Disturbance area A tower footprints and associated infrastructure (bell mouths, parking areas, tower footprints, brake and winch sites and access tracks between tower sites (centreline) and from existing roads (Table 5-1)
- Disturbance area B, the latter based on an arborists's assessment for the requirement for tree removal (Table 5-1).

In all instances the aim of the sampling strategy was to excavate approximately 0.15 per cent of the proposed disturbance footprint so as to ascertain the nature (content and significance) and extent of any subsurface deposits. This sampling strategy is considered to be sufficiently comprehensive to allow characterisation of the Aboriginal objects present without having a significant impact on the archaeological value of the Project area.

Test excavation for Disturbance area B was calculated by Catherine Curlewis (Senior Environmental Advisor, SecureEnergy) based on the following application:

- Extent of disturbance factor 50 per cent impact in B4
- Extent of disturbance factor 25 per cent impact in B10
- Extent of disturbance factor 10 per cent impact in hazard tree area for centreline

Table 5-1 provides detail on PAD land system, landform, total area, impact area and excavation totals. The total disturbance area of all PADs in Stage 2 (2b) was 1,017,784 or around 40 per cent of the PADs. Total square metres of excavation of PADs were 493 square metres or around 0.04 per cent. Although this is short of the proposed 0.15 per cent a number of factors influenced the final square meterage. During the course of test excavation, impact for some PAD areas was refined requiring less test excavation as follows:

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Test excavation was increased for some areas of PAD during test excavation based on the following:

• Increased excavation required to determine extent of site

- Increased excavation due to the requirement for one or more repatriation test pits (RTP) (see section 5.6.2)
- Increased excavation required to follow the extent of an archaeological feature.

5.4. Notification

In accordance with Requirement 15c of the Code of Practice notice in writing was provided to Heritage NSW prior to undertaking any test excavations with the following details:

- Location of the proposed test excavation and the subject area
- Name and contact details of the legal entity with overall responsibility for the Project
- Name and contact details of the person who will be carrying out the test excavations where this is different to the legal entity with overall responsibility for the Project
- Proposed date of commencement and estimated date of completion of the test excavations
- Location of the temporary storage location for any Aboriginal objects uncovered during the test excavations
- Test excavation methodology (Appendix C).

5.5. Constraints

Weather was a major constraint to the test excavation program. From February through to the end of March, temperatures were extreme and often in the region of 40 degrees Celsius which slowed progress and the ability to work long days in the field. From mid April on unseasonable wet weather delayed fieldwork with roads being closed to vehicle traffic and access into some area such as adjacent to the Darling River not being possible.

Access was constrained by the need to provide adequate notice to landholders for access which in conjunction with rain delays exacerbated timeframes. Covid struck the teams, both archaeologists and RAPs, in the first few months of fieldwork and led to a decrease in team numbers.

Table 5-1: PAD land system, landform, total area, impact area and excavation totals

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5.6. Test excavation methodology

Test excavation followed the methodology that was prepared by Everick Heritage (2021b) and approved by the RAPs (Appendix C). The methodology employed is summarised below.

5.6.1. Test excavation units

Test excavation comprised a combination of 1 m x 1 m Test Pits (TP) and 0.5 m x 0.5 m Shovel Test Pits (STP) that proceeded to an archaeologically sterile layer. Test excavation units were combined where required. Each landform was first investigated first by one 1 m x 1 m TP to establish whether archaeological deposit is present and to understand the stratigraphy present in order to inform further test excavation units.

The exact location of test excavation units within the disturbance zones were determined in the field in consultation with the RAPs and in accordance with the sampling strategy. The location of these needed to be flexible to allow for minor adjustment in the field to avoid any obstacles or constraints, target areas of seemingly less disturbance, target landforms of archaeological sensitivity and to determine the nature and extent of archaeological deposit and or/ features.

In accordance with the Code of Practice, the initial excavation unit at each landform unit within each PAD was excavated in 50 millimetre (mm) spits (vertical depth). Dependent on the results of the initial excavation unit sediments were then excavated in 100 mm spits.

Test excavation was undertaken manually by trowel, shovel or mattock. Excavation proceeded to an archaeologically sterile layer. This may be characterised by increased clay content in the matrix or sterile sand deposits differing in colour and texture and was agreed on in consultation with the RAPs.

Test excavation of PADs ceased where enough information has been retrieved to adequately characterise the objects present with regard to their nature and significance.

5.6.2. Repatriation Test Pits

Based on early consultation with the RAPs it was determined that all archaeological material excavated or salvaged would be placed back on Country as close as possible to the area from which they originated.

In the selection of a location for repatriation of excavated and collected cultural material, Transgrid needed to consider the following future disturbances:

- Construction (if relocated prior to completion of construction),
- Operational vegetation maintenance of the easement and/or operational access routes,
- Operational maintenance of transmission line infrastructure (towers, footings, guys, earthing, conductor, earth wire),
- Maintenance of operational access tracks, and
- Landowner activities, such as access tracks, fences, cultivation (noting that management of landowners activities are not under Transgrid's control unless they specifically have a potential to impact on Transgrid's assets or require consultation/approval from Transgrid under the provisions of the *Electricity Supply Act 1995* or Transgrid easement guidelines, Living and working with electricity transmission lines).

It was therefore determined the optimal location for relocation/repatriation of cultural material, without factoring in specific in field infrastructure locations and any landform/topographic constraints, is considered to be on the edge of the transmission line easement in the 1st or 4th quarter and sufficiently distant from transmission line and other infrastructure to avoid potential harm from operational activities (Figure 5-1). The optimal location for repatriation identified by Transgrid is represented by the green rectangles (Figure 5-1).

A Repatriation Test Pit (RTP) measuring 1 m x 1 m was excavated within the exclusion zone in PADs where test excavation recovered cultural materials, or where it was determined that surface collection would require reburial. All material from the RTPs was sieved and any cultural material recorded and bagged as above.



Figure 5-1: Not to scale. Showing the recommended exclusion zones and offsets for transmission lines (220 kV and above) from Living and working with electricity transmission lines (Transgrid 2021), which details restrictions for land owners in relation to transmission line easements and infrastructure

5.6.3. Sieving

Excavated deposit was placed in buckets and transported to a sieve area adjacent to the excavation but at a distance so as not to contaminate sieved sediment with yet to be excavated sediment. Manually excavated sediments were dry sieved through 5 mm mesh onto tarps and the spoil was used to backfill test pits manually following recording. All excavation units were closed on completion.

5.6.4. Recording

5.6.4.1. Test excavation units

The location of each excavation unit was recorded using a hand-held Differential Global Positioning System (DGPS) and each test pit was given a unique identification number. A context sheet for each excavation unit was completed in the field. Details recorded included date of excavation, name of excavators, depth, number of buckets and soil description.

Scale section drawings were prepared for a representative sample of excavation unit. A photograph was taken of one representative section wall and the base of each excavation unit. Suitable samples for radiocarbon dating were collected and curated appropriately where encountered during excavation.

All cultural material retrieved from test excavation was given a unique number relating to location and depth and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont Ł Tyvek ® paper.

5.6.4.2. Aboriginal Site Recording Form

An Aboriginal Site Recording Form (ASRF) has been submitted to the Aboriginal Heritage Information Management System (AHIMS) database to document the test excavation results where archaeological deposit was found and a site identified or existing site updated.

5.6.5. Management of recovered archaeological material and objects after excavation

All recovered cultural material is currently stored in locked cabinets in a locked room in office premises at [information redacted for public display]. All analyses have been undertaken on the premises and only samples retrieved for dating purposes have been removed.

Consultation with the RAPs has established that following construction the cultural material will be reburied in the excavated RPT as close as possible to the location from which it came.

6. Results

6.1. Summary

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Table 6-1: Summary of new AHIMS sites and existing AHIMS sites requiring updates as identified from the Stage 2 (2b) test excavation program

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6.2. Potential Archaeological Deposits

Test excavation was limited to those PADs impacted by Disturbance area A works and where impacts are identified for Disturbance area A (centreline clearance) and Disturbance area B (see Table 5-1). The following sections provide a summary description of each PAD, the test excavation and results. The mapped results of the test excavations provided in Figure 8-1 through to Figure 8-12.

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Figure 6-1:

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Figure 6-2:

Table 6-2:

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Appendix A – Glossary

Aboriginal cultural heritage: The material (objects) and intangible (mythological places, dreaming stories etc.) traditions and practices associated with past and present day Aboriginal communities.

Aboriginal object: Any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW.

Archaeological site: A location that has evidence of past Aboriginal activity (both material and mythological/ritual).

Artefact: An item of cultural material created by humans.

Artefact scatter: Where two or more stone artefacts are found within an area of potential archaeological deposit or a site.

Clay: A type of sediment with particles less than 4 microns in size and that is composed of clay minerals (Keary 2001: 49).

Flake: A stone piece removed from a core by percussion (striking it) or by pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Floodplain: The area covered by water during a major flood and/or the area of alluvium deposits laid down during past floods.

In situ: A description of any cultural material that lies undisturbed in its original point of deposition.

Land system: Description for an area of land based on an assessment of a series of environmental characteristics including geology, geomorphology, climate, soils and vegetation.

Midden: The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. These could contain estuarine and freshwater shellfish species in addition to faunal remains, stone artefacts and charcoal from cooking fires. In northern NSW in many areas, burials have been recorded in direct association with midden deposits.

Potential Archaeological Deposit (PAD): A PAD is a location that is considered to have a potential for subsurface cultural material. This is determined from a visual inspection of the site, background research of the area and the landform's cultural importance.

Pleistocene: The Pleistocene is an epoch within the early Quaternary period, extending from about 1.6 million years ago to about 11,700 years ago. The end of the Pleistocene is marked by the last of the great ice ages.

Quarry: In this report, 'quarry' can refer to a source of stone that was mined by Aboriginal people in the past. Rock from these sites could be used to make artefacts.

Sand: A material composed of small grains (0.625-2.0 mm) (Keary 2001: 233). Sand is formed from a variety of minerals and rocks, but commonly contains silica, such as quartz.

Sediment: Is a mineral that has undergone erosion or weathering and that is then deposited via aeolian, glacial or fluvial means.

Silcrete: Soil, clay or sand sediments that have silicified under basalt through groundwater percolation. It ranges in texture from very fine grained to coarse grained. At one extreme it is cryptocrystalline with very few clasts. It generally has characteristic yellow streaks of titanium oxide that occur within a grey and less commonly reddish background. Used for flaked stone artefacts.

Silt: A sediment with grains ranging from 4.0-62.5 microns in size (Keary 2001: 245). It can be found as a soil or in water.

Spit: Refers to an arbitrarily defined strata of soil removed during excavation (often 50 to 100 mm in depth).

Stone artefact: a piece or fragment of stone showing evidence of intentional human creation or modification

Stratification: The way in which soil forms in layers.

Stratigraphy: The study of soil stratification (layers) and deposition.

Test excavation: An archaeological method used to determine the cultural sensitivity of an area by excavating small (eg 1 m x 1 m) pits and recording the stratigraphy, material remains (such as stone tools) and disturbance.

STP: Acronym for 'shovel test pit'. Generally, this refers to a .5 m x .5 m pit dug by shovel, trowel or mattock. Shovel Test Pits were used to determine the presence and extent of archaeological deposit in a controlled excavation of 100 mm spits

Survey: In archaeological terms, this refers to walking over a surface while studying the location of artefacts and landmarks. These are then recorded and photographed.

TP: Acronym for 'test pit'. Generally, this refers to a $1 \text{ m x } 1 \text{ m or } 2 \text{ m x } 1 \text{ m pit dug by shovel, trowel or mattock. Test pits were used to determine the extent of possible features (such as shell middens) in a controlled excavation of 50 mm spits$

Appendix B – Field personnel

Appendix C – Test excavation methodology

Appendix E – Survey letter reports-additional survey

Appendix F- Scarred tree assessment

Appendix G- OSL Dating Report