EVERICK HERITAGE

EnergyConnect (NSW – Western Section)

Aboriginal Cultural Heritage Strategy

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

March 2022

Wentworth Local Government Area

EVERICK HERITAGE

Report Reference:

Edmonds V. 2021. *EnergyConnect (NSW – Western Section): Aboriginal Cultural Heritage Strategy.* Everick Heritage Pty Ltd unpublished report prepared for SecureEnergy.

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Ver.	Author(s)	Review Type	Sections Edited	Date	Authorised
1	V. Edmonds	Draft to SecureEnergy	All	30.10.2021	T. Robins
2	V. Edmonds	Final	All	1.11.2021	T. Robins
3	V. Edmonds	Final 2	Table 1-1; Sections 1.3 and 2.3; Table 2-1; Appendix A	20.12.2021	T. Robins
4	V. Edmonds	Final 3	Updating date; Adressing DPE comments	7.3.2022	T. robins

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.

This report primarily addresses:

- 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.

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.

Specifically, this version (stage) of the Aboriginal Cultural Heritage Strategy addresses the requirements of condition 29 a) (identify additional risk zones).

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 will be provided to the Project's Aboriginal stakeholders and Heritage NSW for review concurrently with this initial Aboriginal Cultural Heritage Strategy. These methodologies will be incorporated into the next version (stage) of this strategy, once finalised.

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.	This Aboriginal Cultural Heritage Strategy will be prepared in consultation with the Registered Aboriginal Parties (RAPs)and Heritage NSW. It will be submitted to the Planning Secretary prior to the commencement of construction. This strategy will be staged to allow the commencement of construction in areas that do not require additional survey or test excavation as required by condition D29 c) and D29 b), respectively.
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	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 must not commence until further survey and/or test excavation is undertaken as described in Everick Heritage (2021a; 2021b). These maps may be progressively updated as additional survey (condition D29 c) is undertaken to establish locations where no Aboriginal objects or PADs have been identified or where they have been identified, will not be impacted. This will enable the progressive commencement of construction in additional areas where survey or test excavation is no longer required.
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)	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 ground disturbance activities are required outside of the heritage survey area	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
d)	include details of ongoing consultation with the Aboriginal stakeholders, including any written responses and records of any meetings	Consultation activities will be documented throughout the consultation process for this strategy and for the survey and test excavation methodologies. Consultation activities and logs will be incorporated into the updated Aboriginal Cultural Heritage Assessment Report (ACHAR), which forms part of the final Aboriginal Cultural Heritage Strategy prior to submission to the Planning Secretary.
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 • 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 Aboriginal Cultural Heritage Assessment Report will be prepared when survey, test excavation is completed.
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;	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

Condition	Requirement	How addressed
	• submission of an audit report under condition E11; or • any modification to the conditions of this approval.	• 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 CHAR	Addendum Cultural Heritage Assessment Report
ASR	Aboriginal Archaeological Survey Report
Code of Practice	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	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:
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This report primarily addresses:

- 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.

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.

1.4. Project area

The Project area for this 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.

1.5. 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 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).

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APPENDIX 1 – DEVELOPMENT LAYOUT

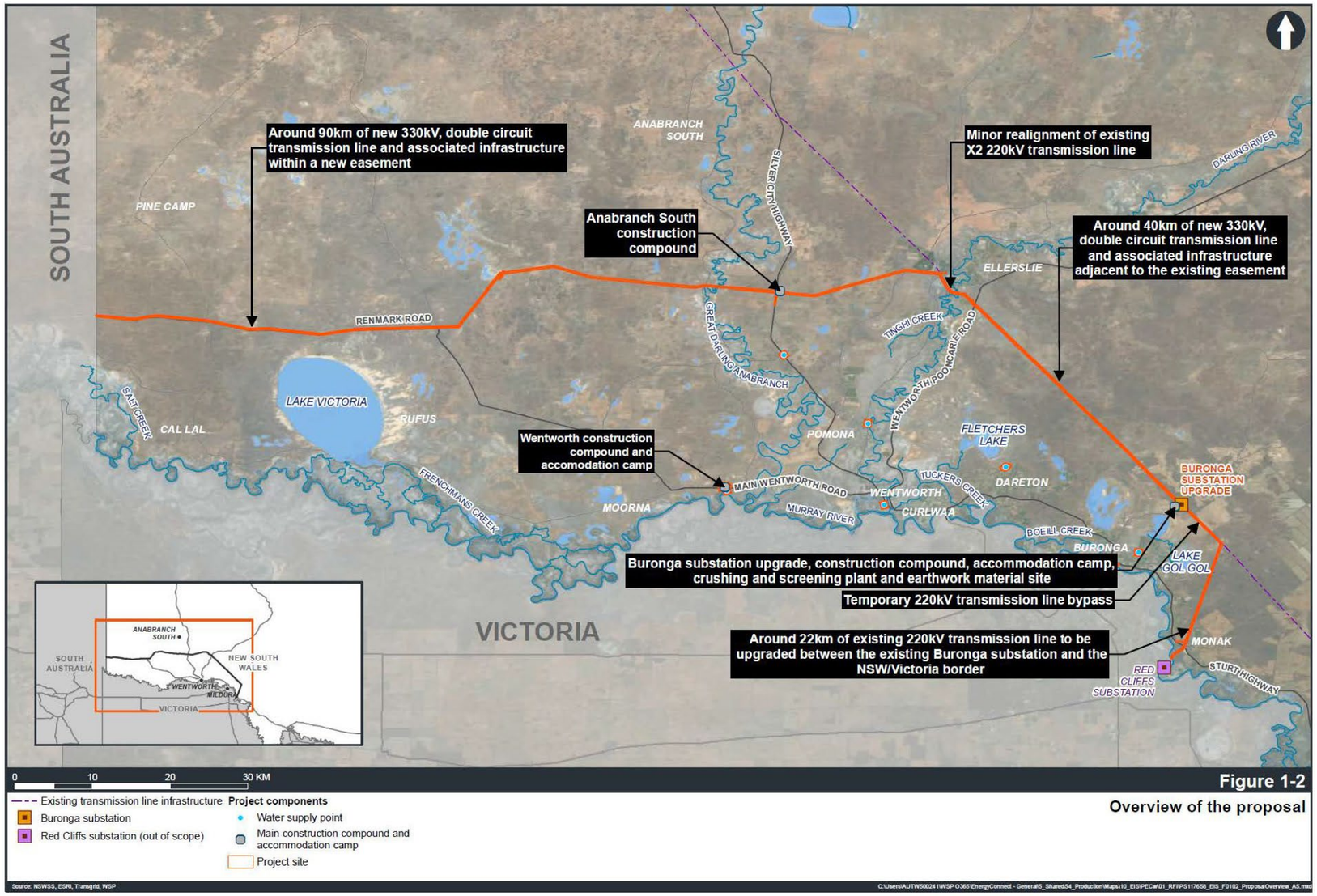

Figure 1-2

Overview of the proposal

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:

- 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 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.

Further refinements to the design and construction methodology are expected (and may result in part from the outcomes of the additional heritage survey and test excavation program, required in accordance with condition D29 c) and D29 b), respectively. 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 will be 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 would be 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.

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. An 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.

A draft Archaeological Survey Report will be prepared detailing the results of the survey and will be provided to the RAPs for review and discussion. Follow up phone calls and in person meetings may be undertaken to address any queries.

A final Archaeological Survey Report would be incorporated into the final 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.

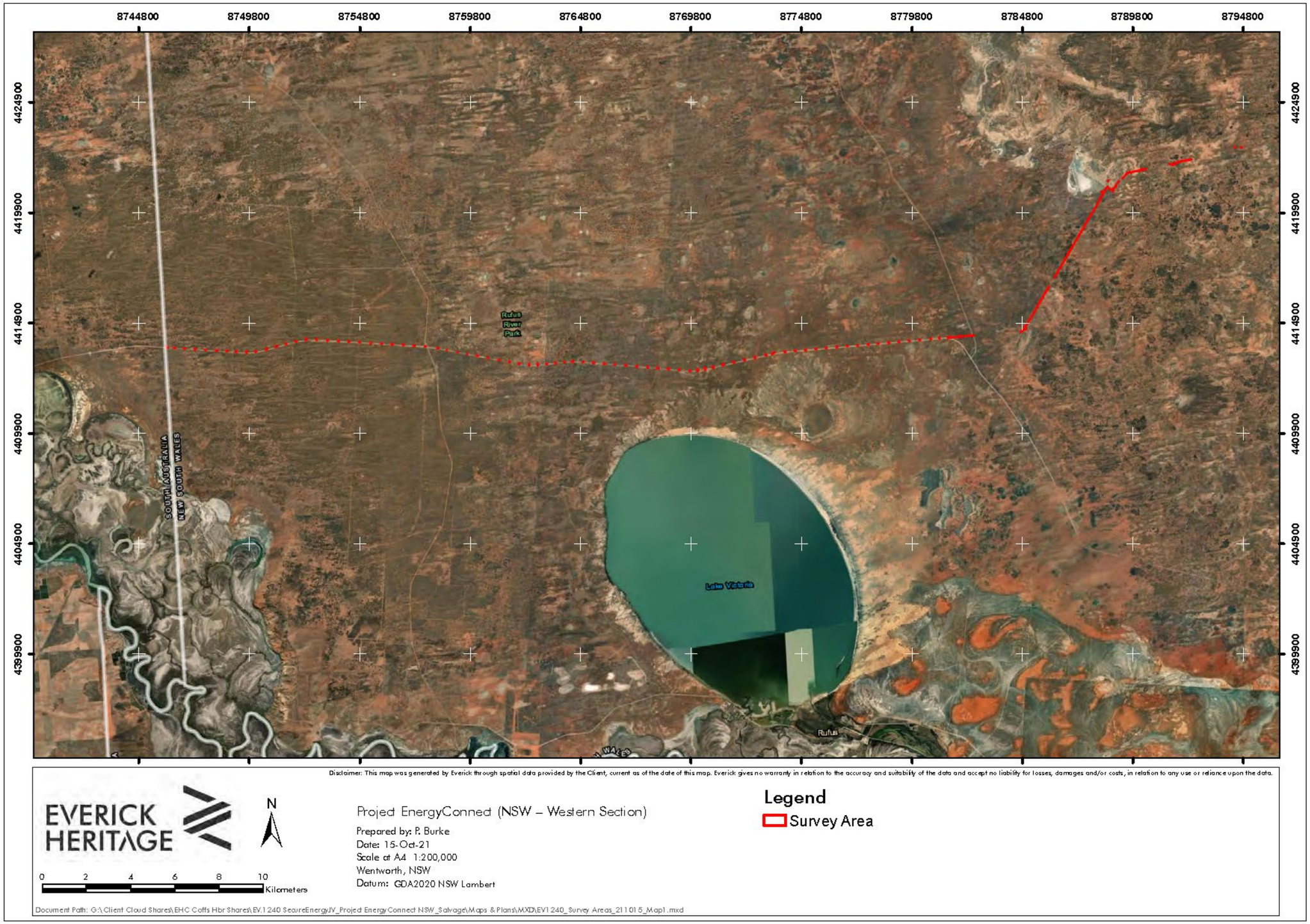

Figure 2-1: Areas requiring further survey along the Project area – Lake Victoria

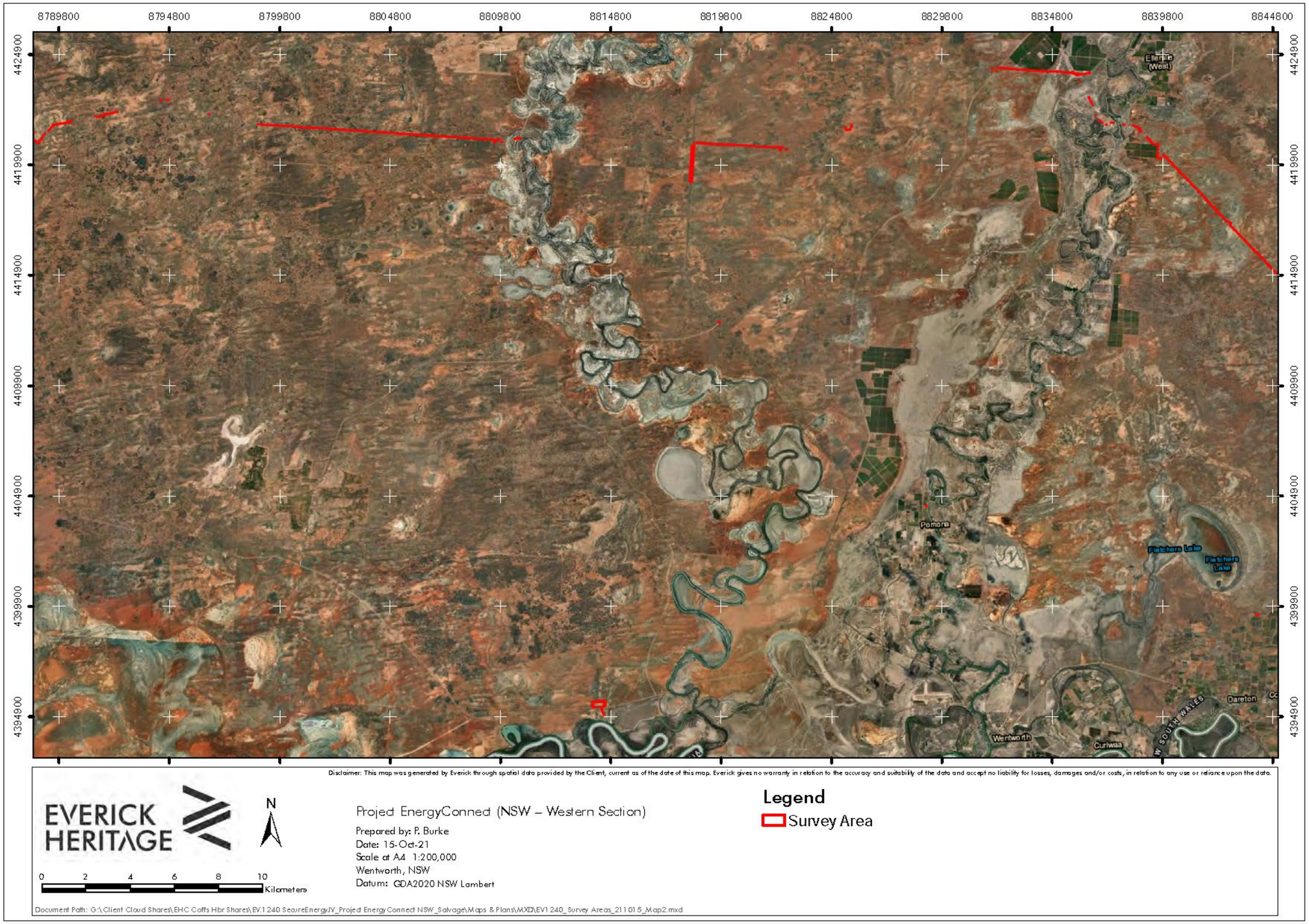

Figure 2-2: Areas requiring further survey along the Project area – Anabranch/Darling

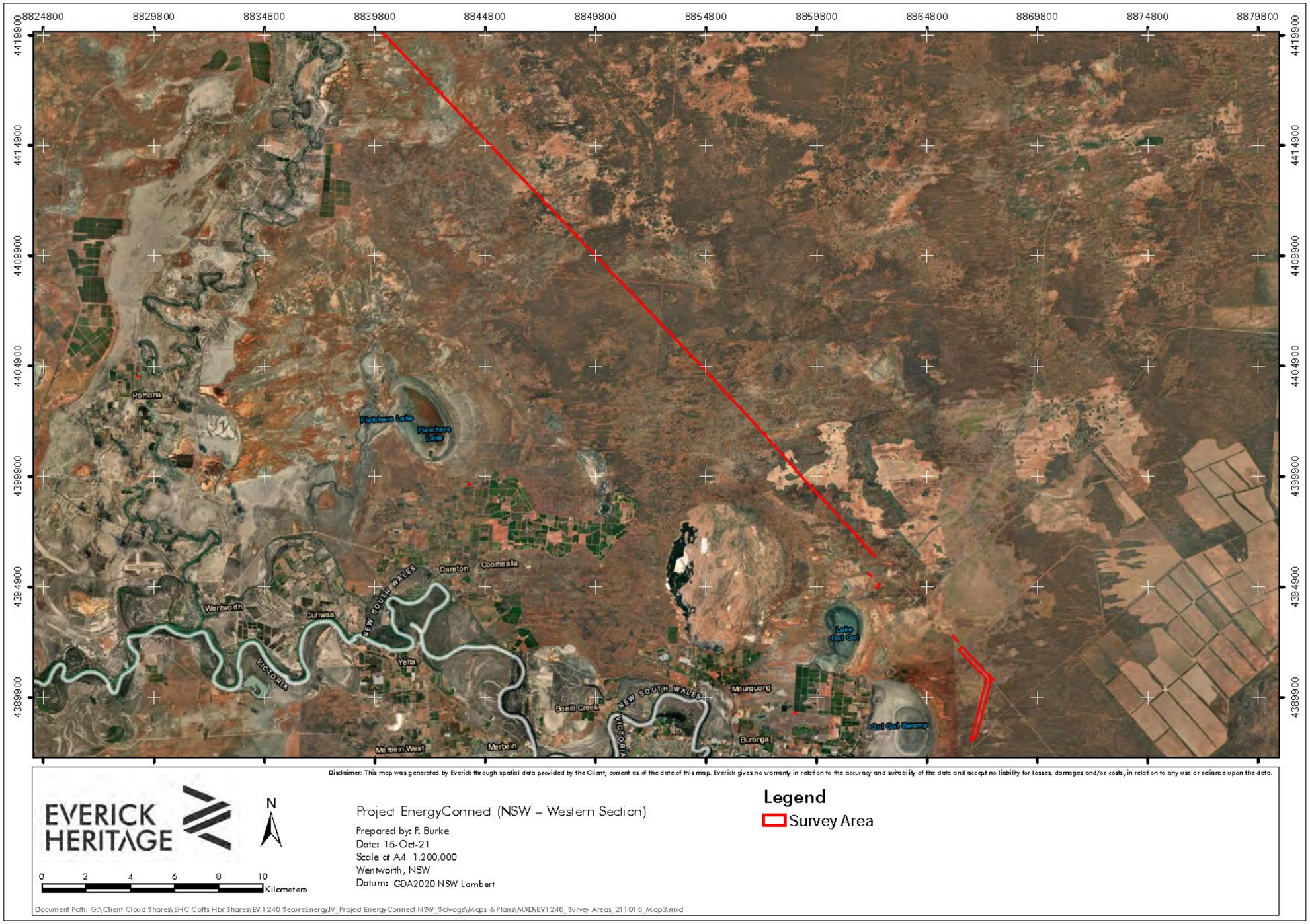

Figure 2-3: Areas requiring further survey along the Project area – Buronga substation

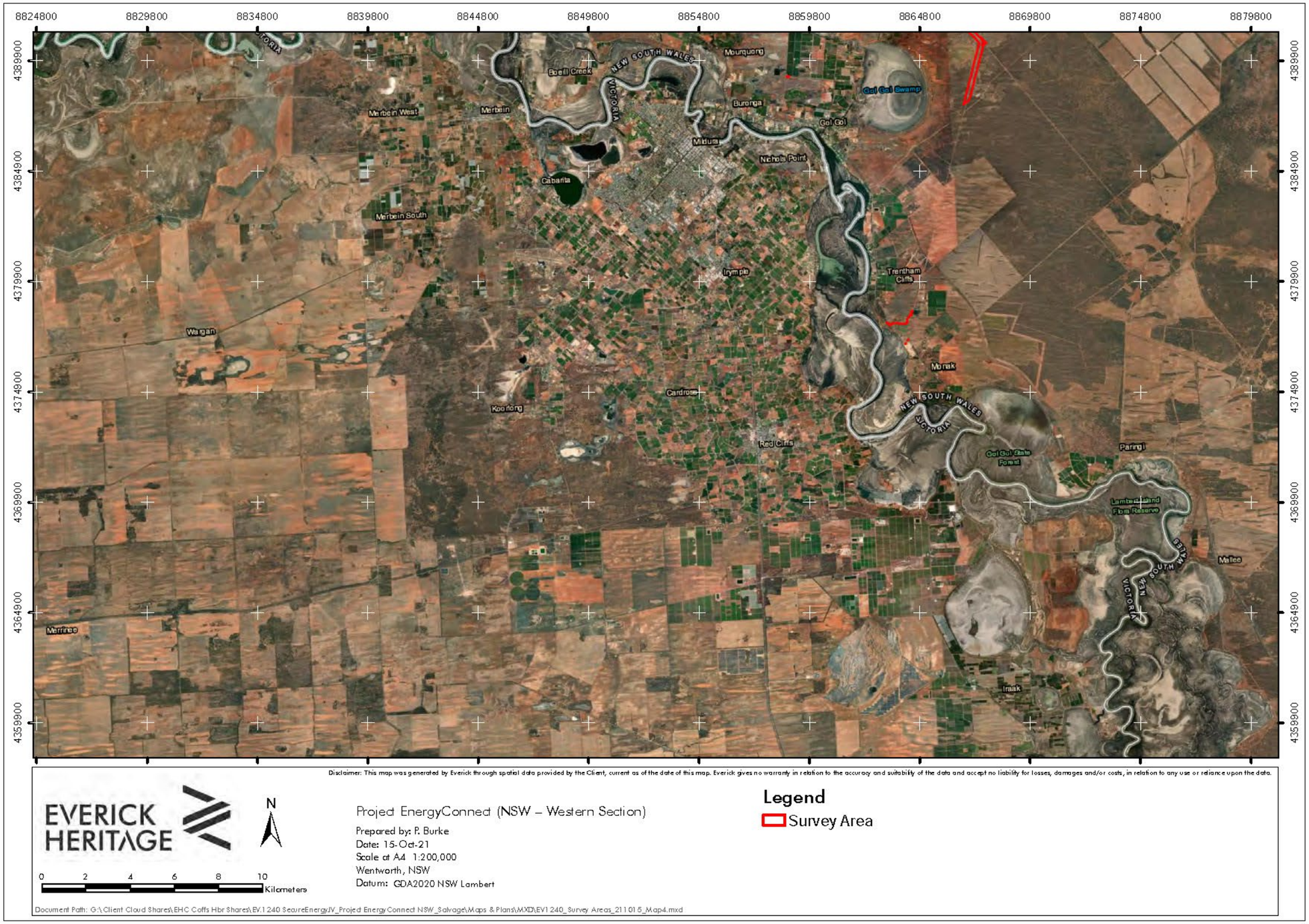

Figure 2-4: Areas requiring further survey along the Project area – Murray River

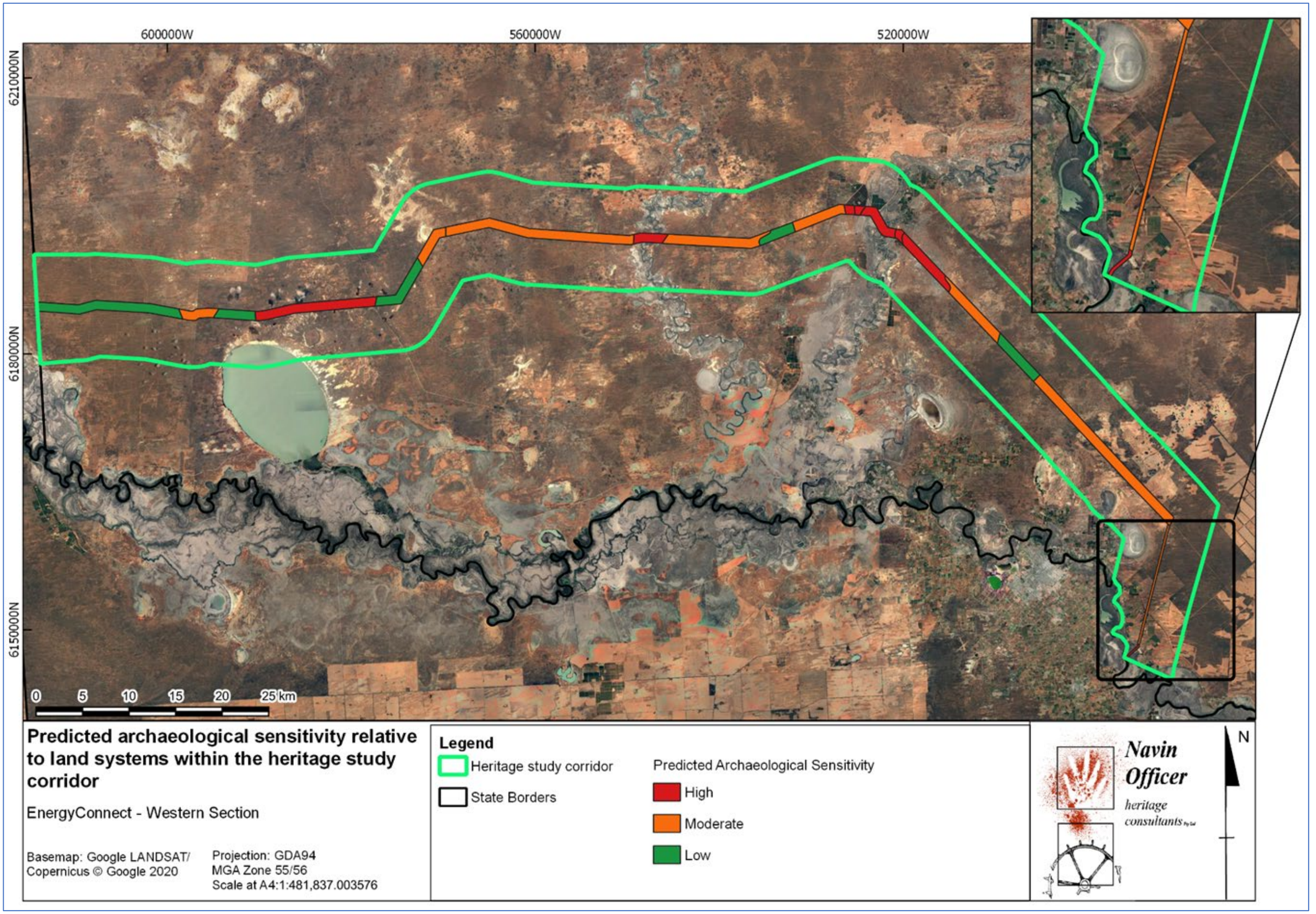

Figure 2-5: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

Table 2-1: Details of required additional survey by land system (after Witter et al in prep)

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	Ap	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	Cy	High	Scalds on sandplains, margin of Anabranch land system, margins of drainage channels	196,699
Darling	Dl	High	River & creek margins, scalded plains & levees, floodplain	93,282
Hatfield	Hf	Low	Margins of land systems containing depressions, scalds	65,304
Huntingfield	Hu	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

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	Rl	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	Te	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.

Table 3-1: Programme of activities

Activity	Concurrent actions
Presentation of ACHS to RAPs	• Provide Survey and Test Excavation Methodologies for review • Provide risk mapping for review as required in condition D29 a)
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
Undertake archaeological survey	• Prepare summary advice forms
Present summary survey advice forms to RAPs for discussion and comment	• Document all comment and advice from RAPs • Update mapping required in condition D29 a) • 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
Prepare draft archaeological survey report and present to RAPs for final discussion and comment	• Prepare final archaeological survey report
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 • Update mapping required in condition D29 a) • Undertake periodic consultation to determine significance of sites identified and mitigation measures for identified sites which would be impacted

Activity	Concurrent actions
	• Undertake consultation to understand and document the cultural values associated with the landscape and sites
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
Prepare revised ACHAR	• Update mapping required in condition D29 a) which does not identify any further risk zones • Summarise survey and test excavation undertaken • Document all consultation • Document assessed archaeological significance and recorded cultural values • Prepare impact and cumulative impact assessment • Provide mitigation measures in consultation with RAPs
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

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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	• PEC-W-	
	• PEC-W-PAD	
Proposed works and recommendation		

Appendix B – Additional risk zone mapping

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Datum: GDA 1994 MGA Zone 54

Map 1 of 59

Legend

- Artefact
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- Access Tracks
- High Risk
- Moderate Risk
- Low Risk
- TBD

N

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Map 2 of 59

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Map 3 of 59

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Map 4 of 59

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Map 6 of 59

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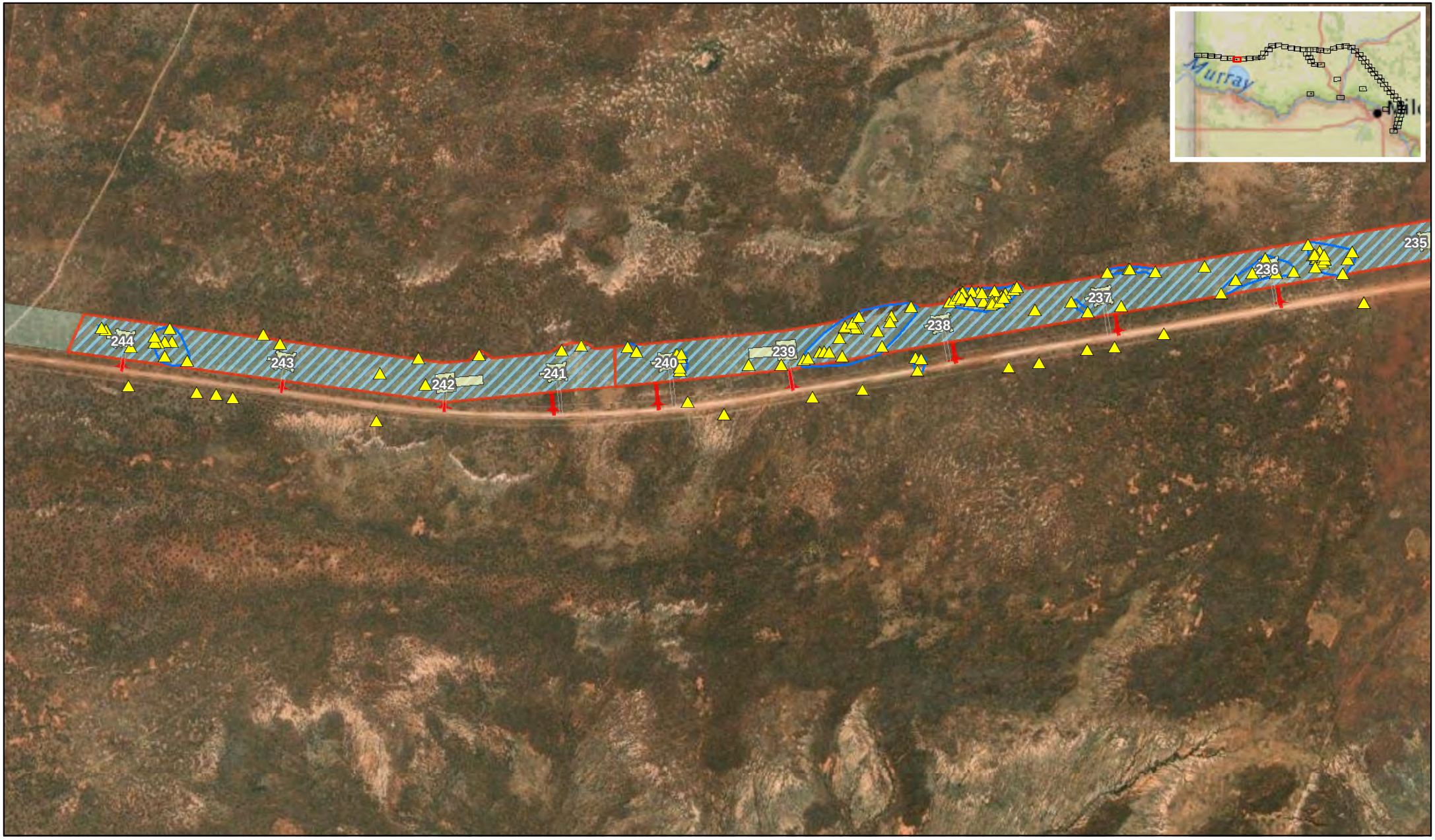

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Map 7 of 59

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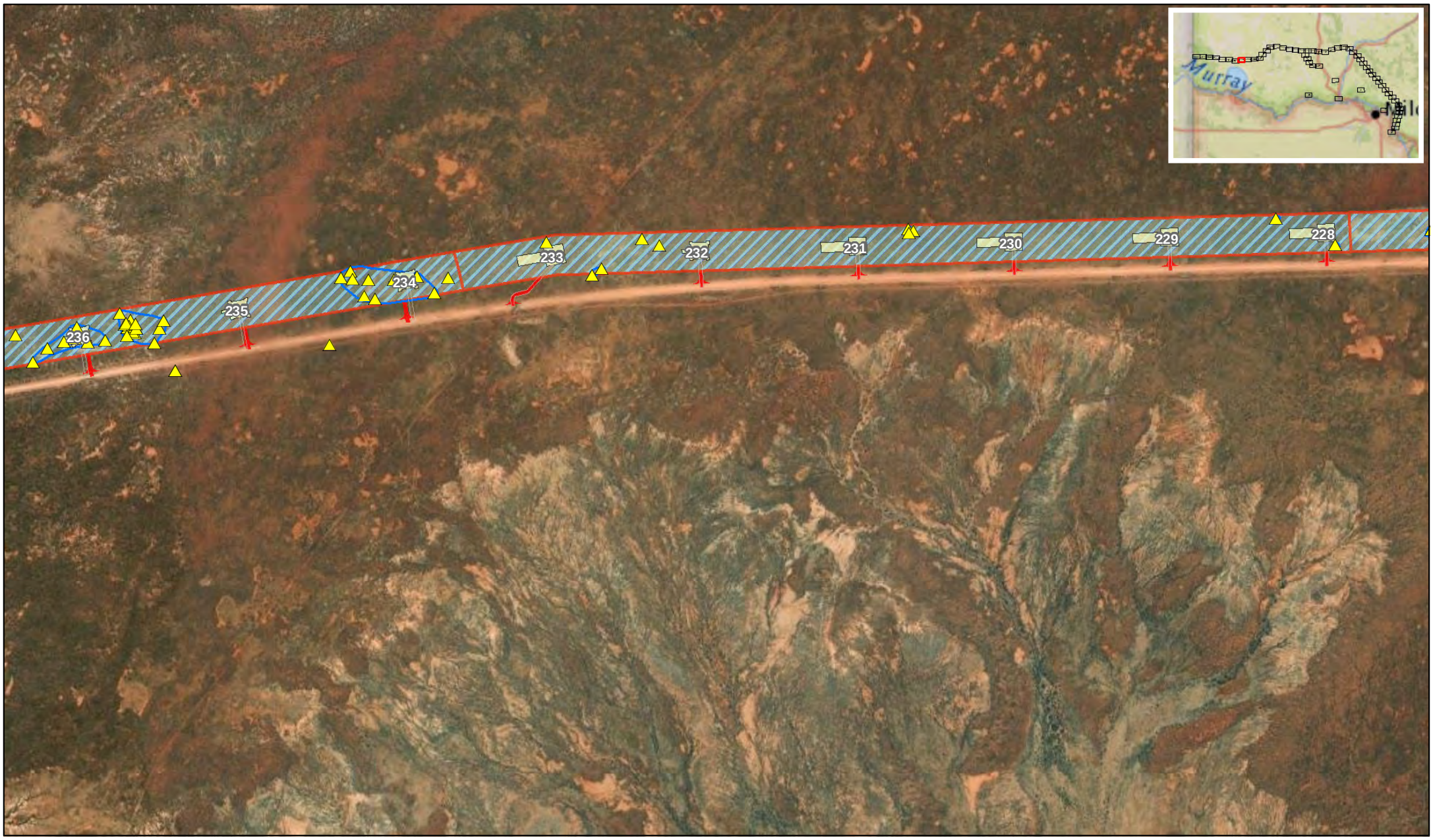

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Map 8 of 59

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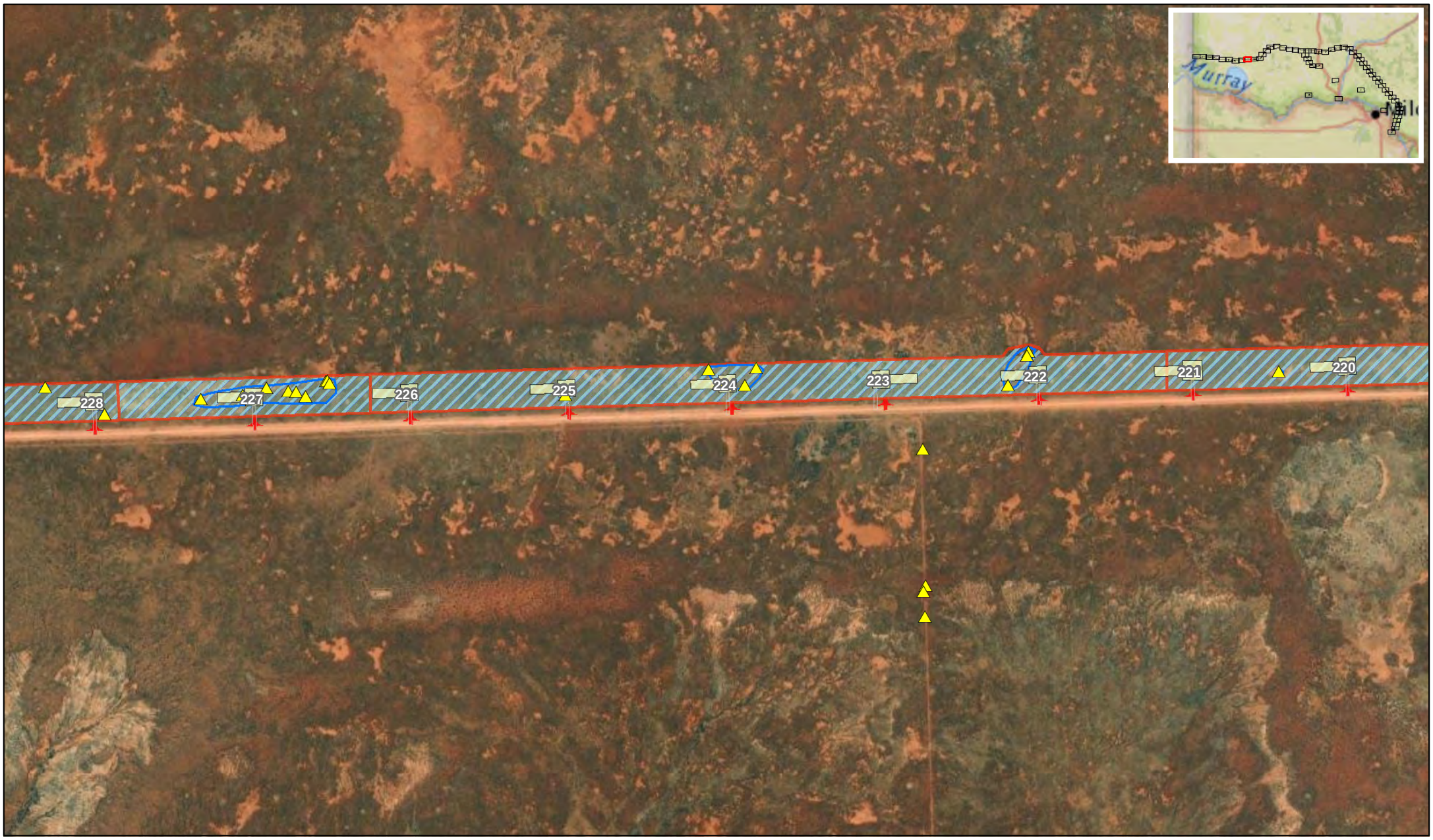

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Map 10 of 59

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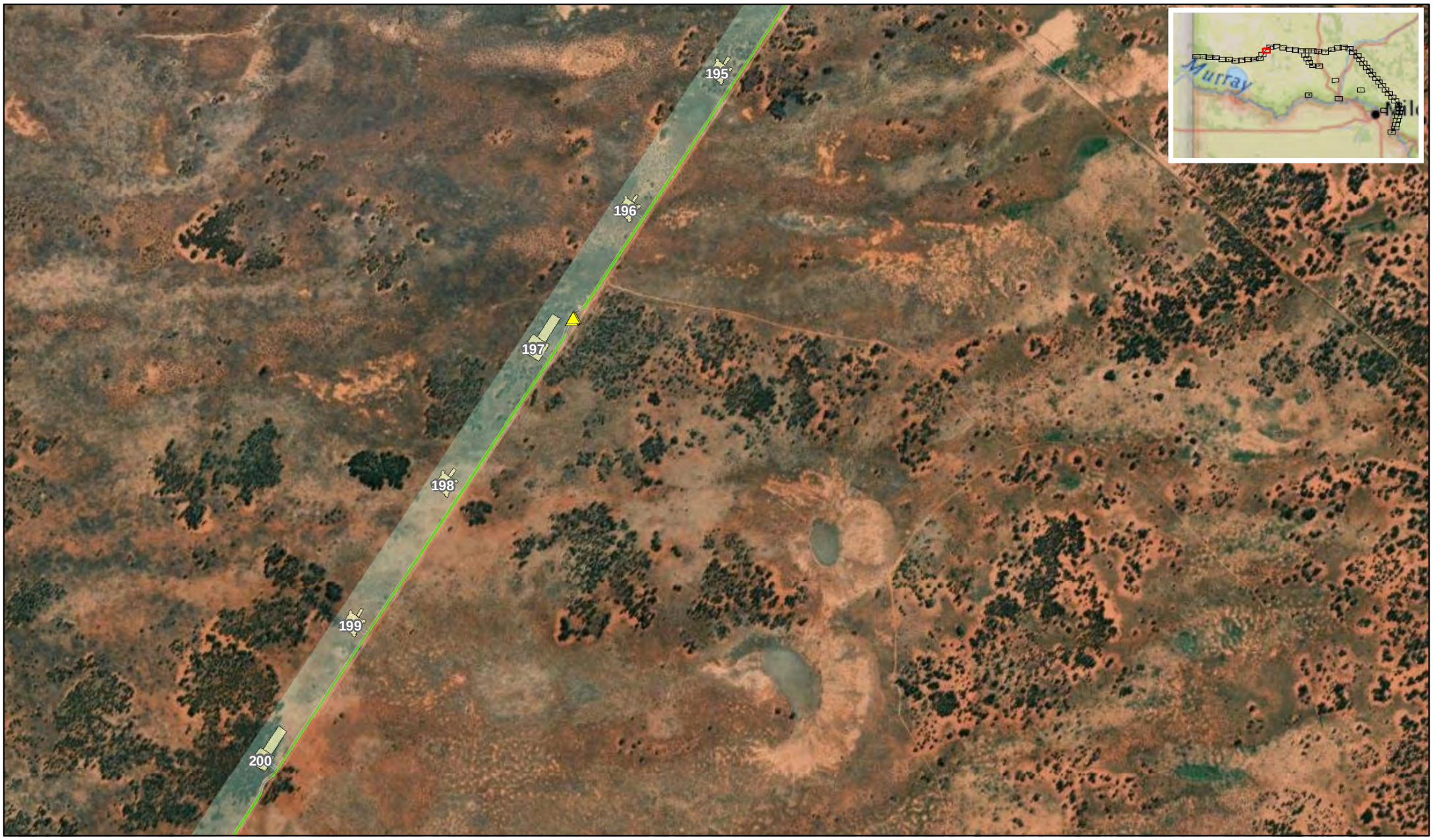

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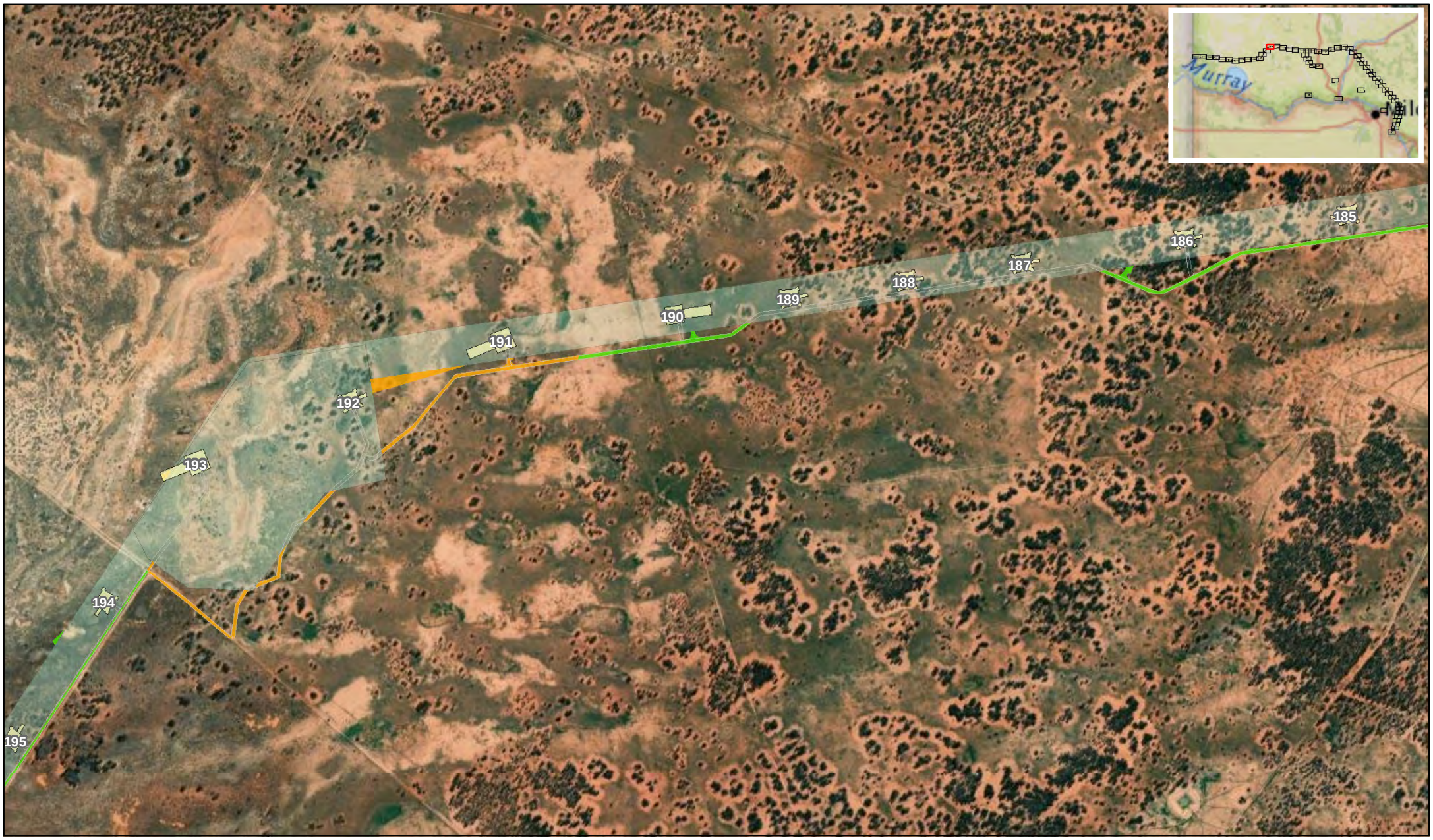

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Map 15 of 59

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Map 16 of 59

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Map 17 of 59

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Map 18 of 59

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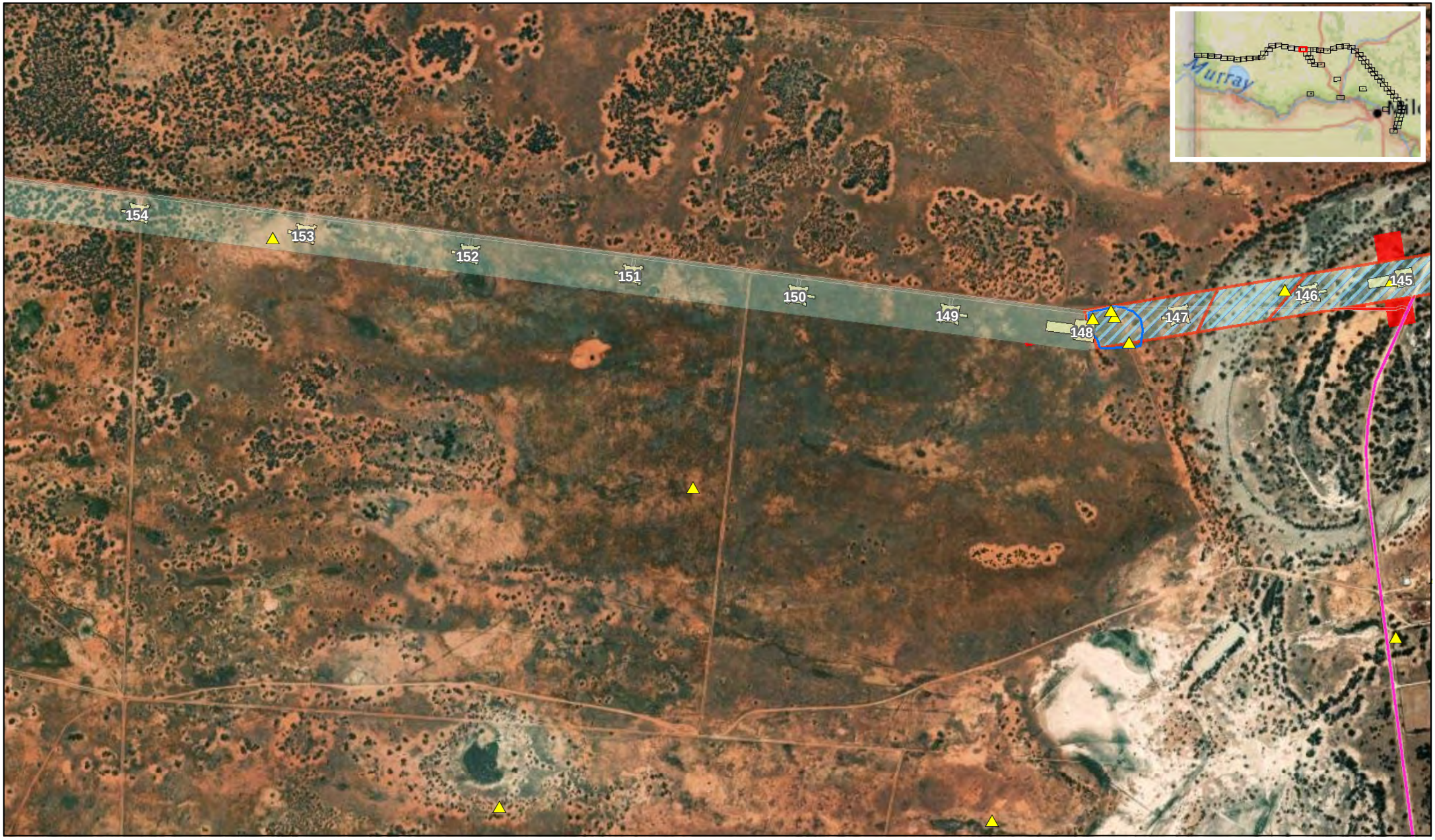

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Map 19 of 59

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Map 20 of 59

Legend

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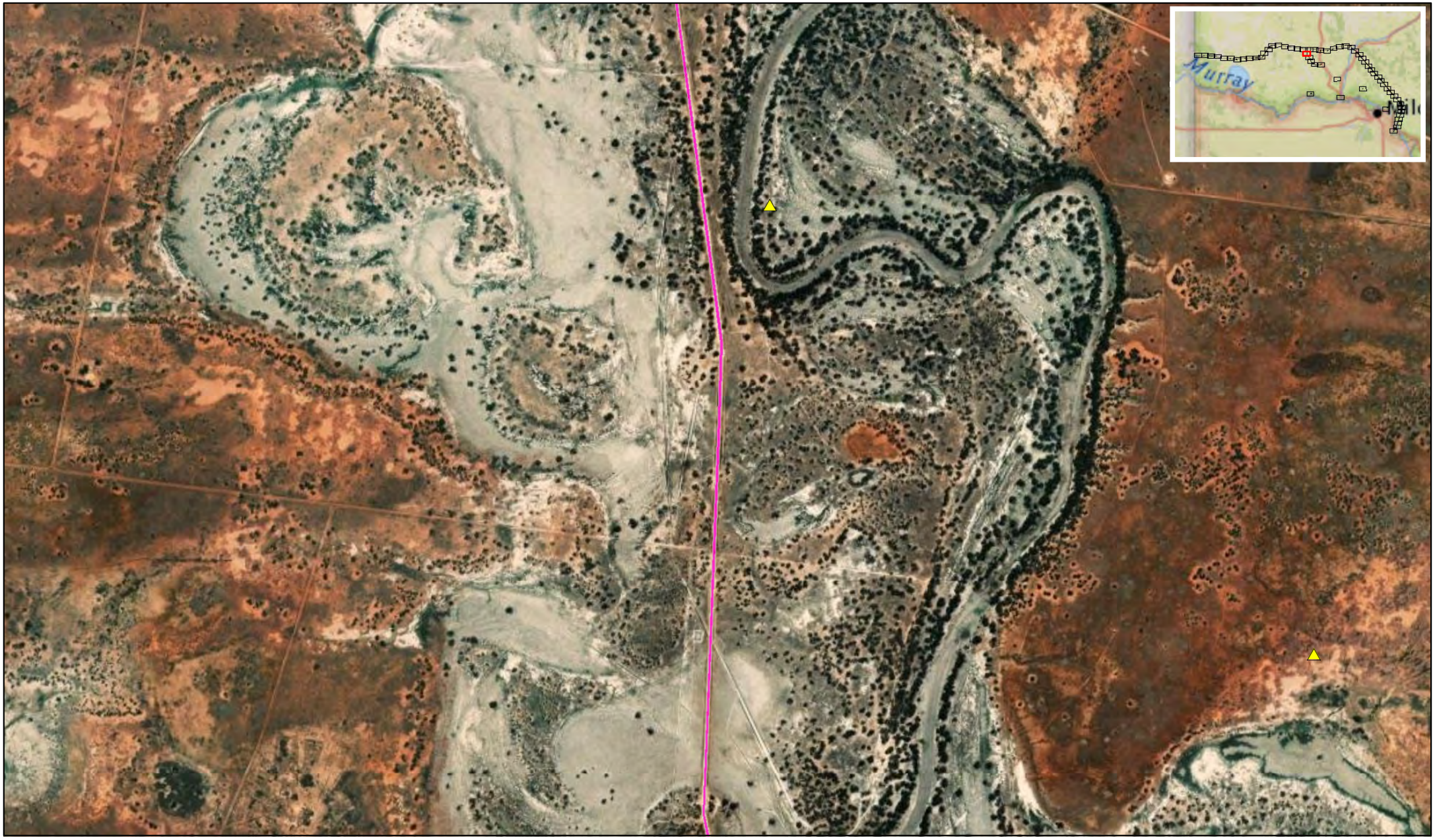

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Map 21 of 59

Legend

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Legend

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Areas Requiring Additional Survey by Risk (PAS)

Prepared by: P. Klein
Date: 07 December 21
Scale at A4 1:15,000
Datum: GDA 1994 MGA Zone 54

Map 23 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
- Tower Footprint
- Buronga Camp / Laydown
- NOHC Pads - No disturbance until test excavation/salvage has occurred
- NOHC Survey Extent
- Access Tracks
- High Risk
- Moderate Risk
- Low Risk
- TBD

N

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EVERICK HERITAGE

0 100 200 300 400 500 Metres

Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

Prepared by: P. Klein
Date: 07 December 21
Scale at A4 1:15,000
Datum: GDA 1994 MGA Zone 54

Map 24 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
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EVERICK HERITAGE

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

Prepared by: P. Klein
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Scale at A4 1:15,000
Datum: GDA 1994 MGA Zone 54

Map 25 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
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EVERICK HERITAGE

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

Prepared by: P. Klein
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Scale at A4 1:15,000
Datum: GDA 1994 MGA Zone 54

Map 26 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Legend

- Artefact
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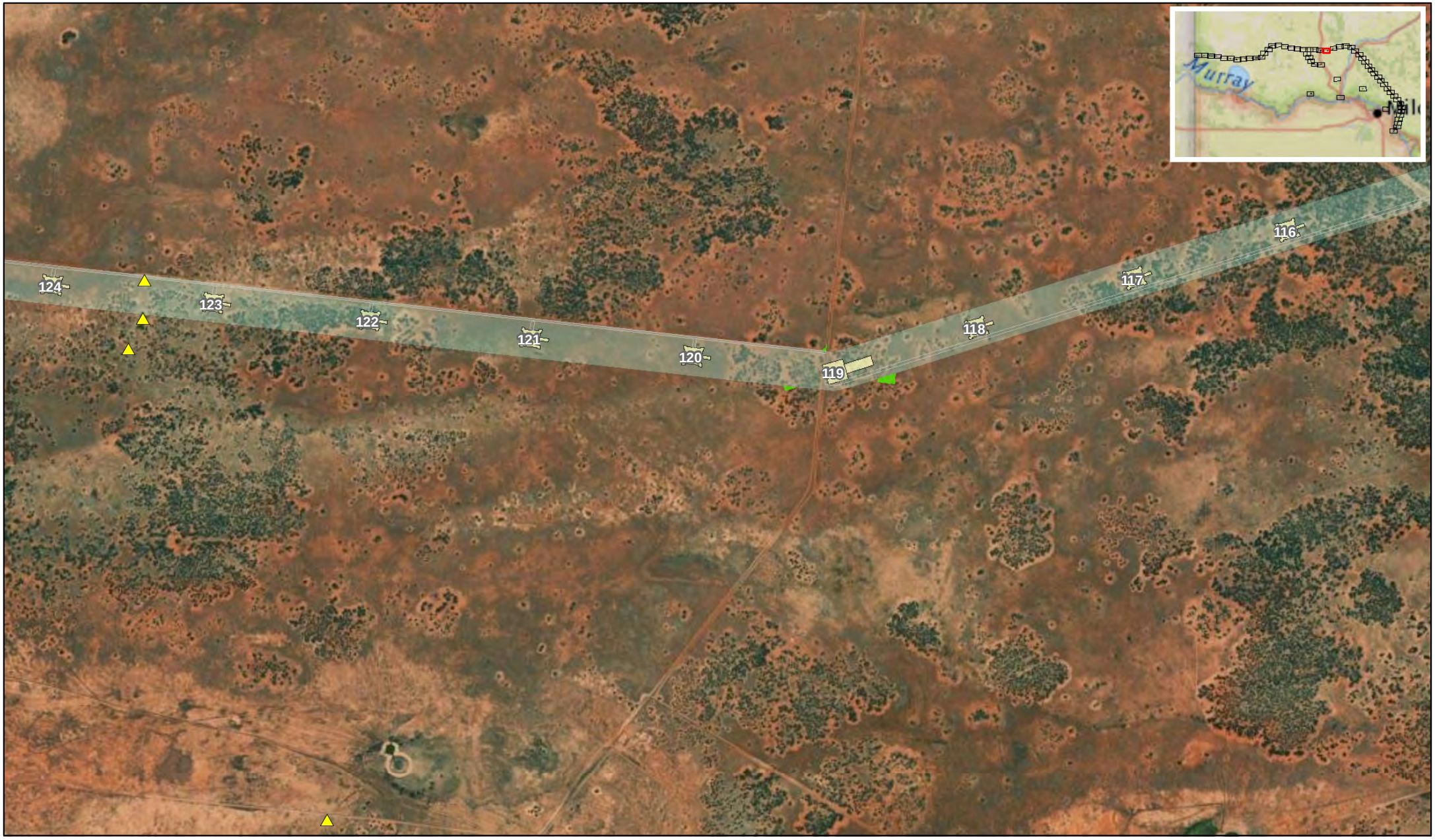

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Legend

- Artefact
- PEC Aboriginal Feature Extents
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Legend

- Artefact
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Legend

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Legend

- Artefact
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Legend

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Map 33 of 59

Legend

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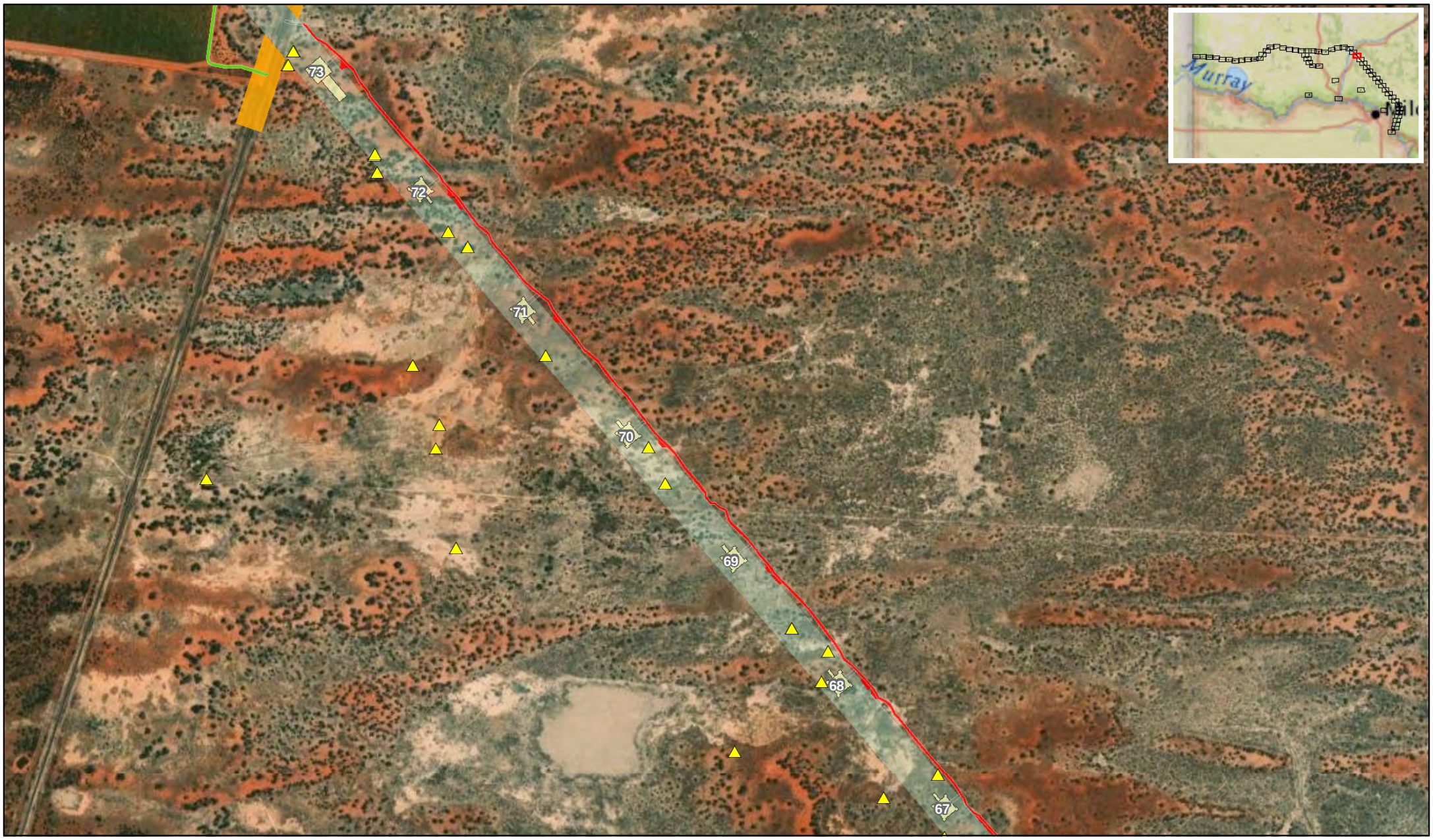

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Map 34 of 59

Legend

- Artefact
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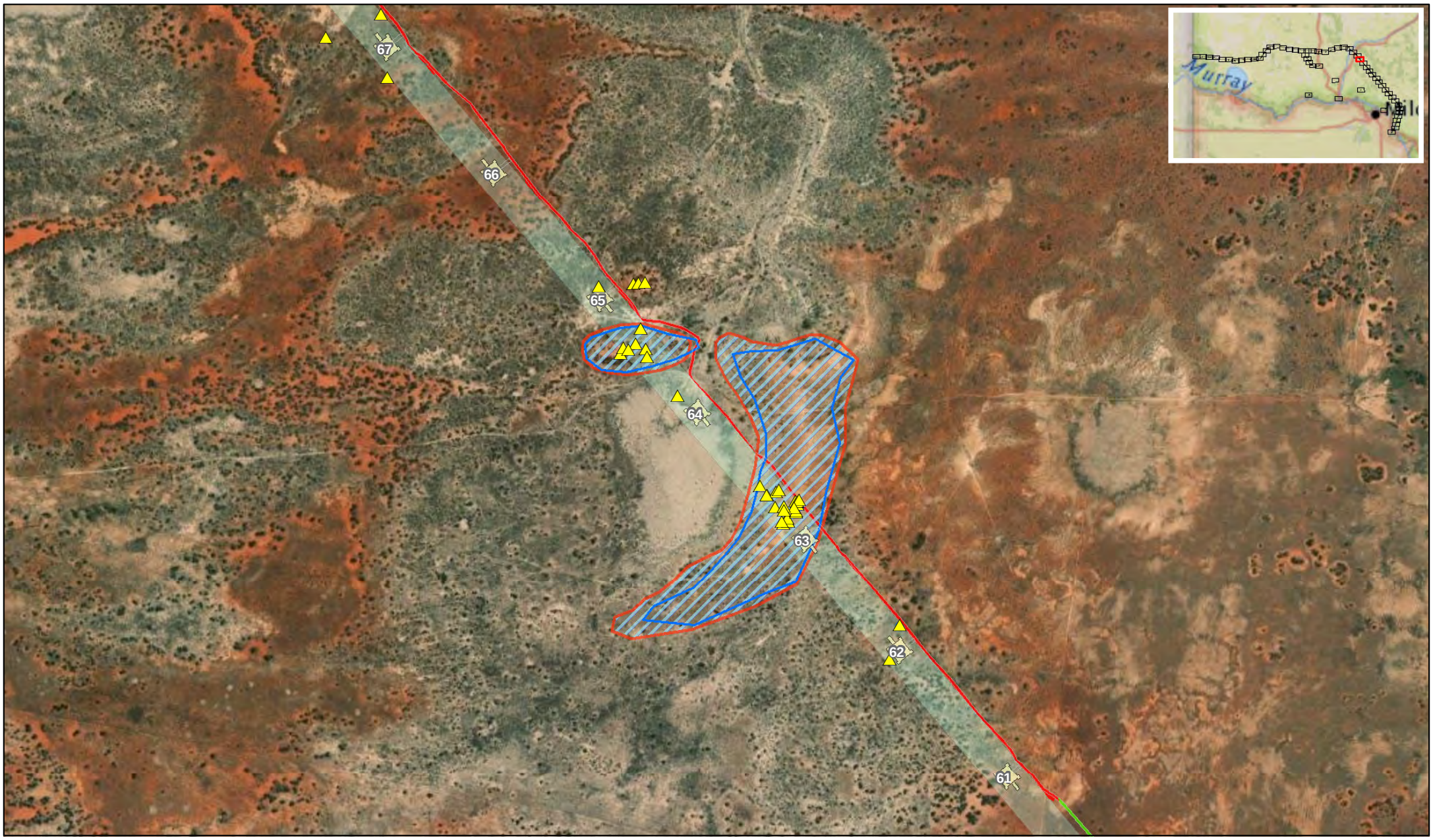

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Energy Connect
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Map 35 of 59

Legend

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Legend

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Map 37 of 59

Legend

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Map 38 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Map 39 of 59

Legend

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Legend

- Artefact
- PEC Aboriginal Feature Extents
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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Legend

- Artefact
- PEC Aboriginal Feature Extents
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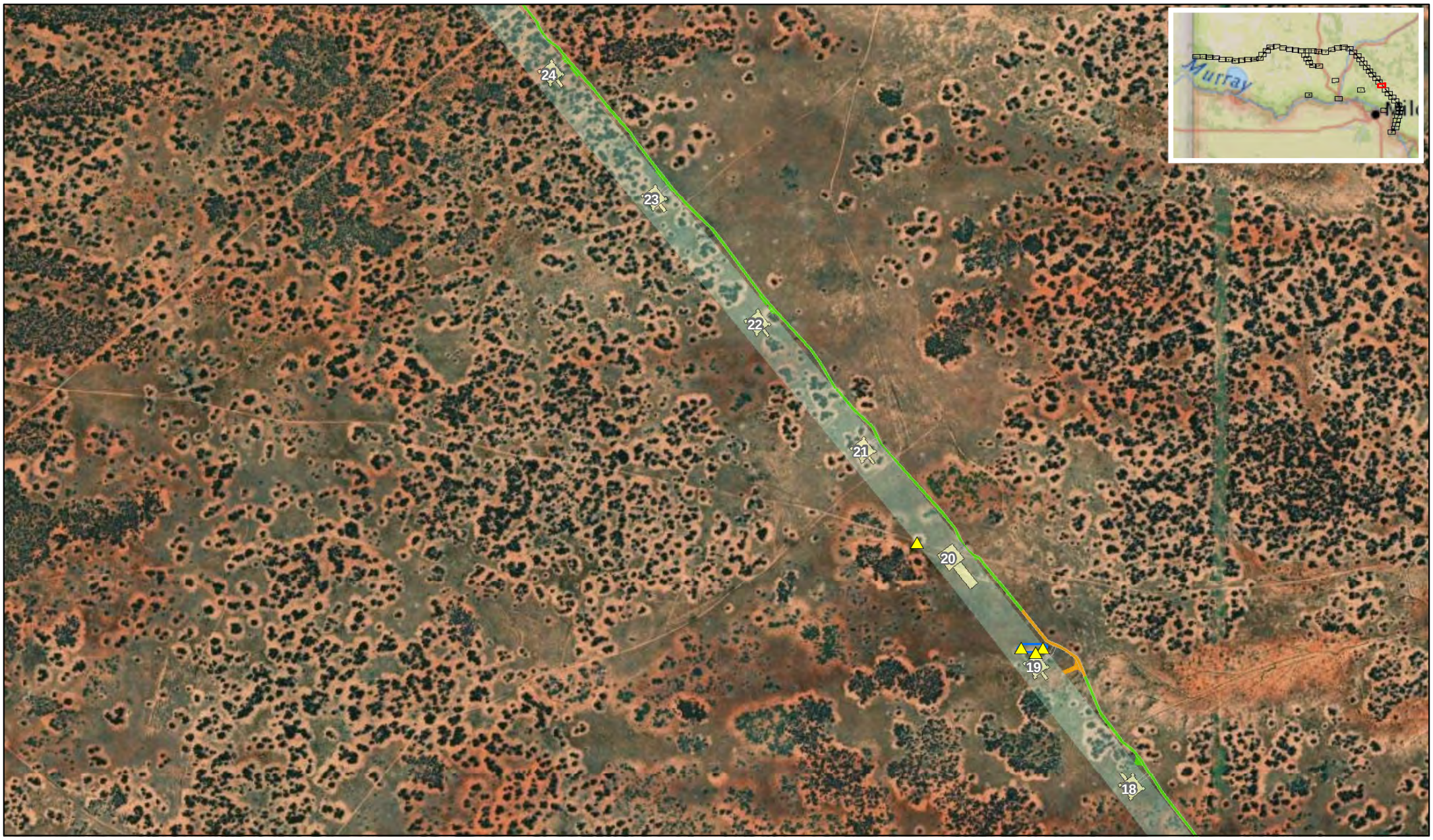

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Energy Connect
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Legend

- Artefact
- PEC Aboriginal Feature Extents
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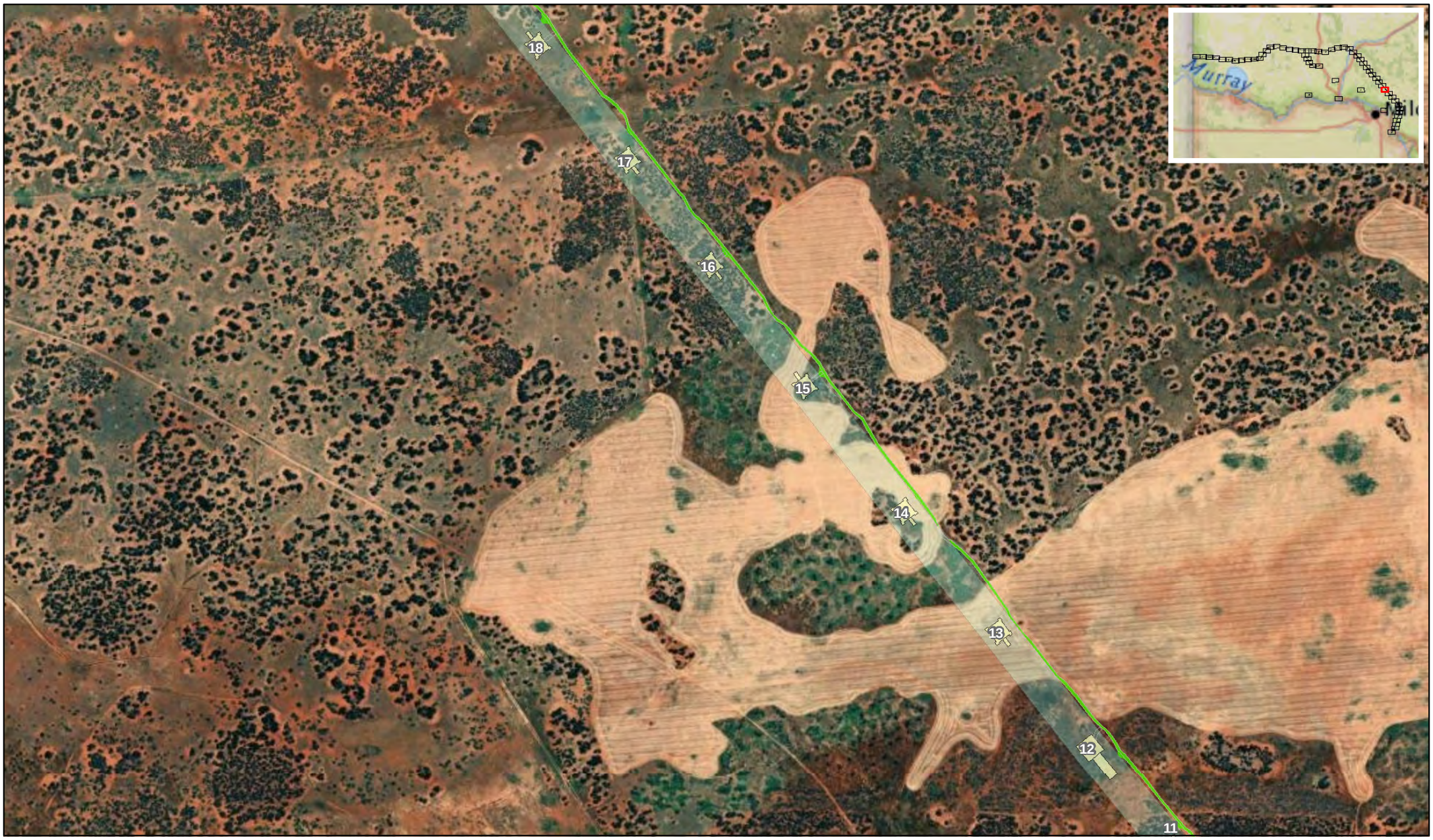

EVERICK HERITAGE

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Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

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Legend

- Artefact
- PEC Aboriginal Feature Extents
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Legend

- Artefact
- PEC Aboriginal Feature Extents
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Legend

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Legend

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Legend

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Legend

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0 100 200 300 400 500 Metres

Energy Connect
Areas Requiring Additional Survey by Risk (PAS)

Prepared by: P. Klein
Date: 07 December 21
Scale at A4 1:15,000
Datum: GDA 1994 MGA Zone 54

Map 51 of 59

Legend

- Artefact
- PEC Aboriginal Feature Extents
- Tower Footprint
- Buronga Camp / Laydown
- NOHC Pads - No disturbance until test excavation/salvage has occurred
- NOHC Survey Extent
- Access Tracks
- High Risk
- Moderate Risk
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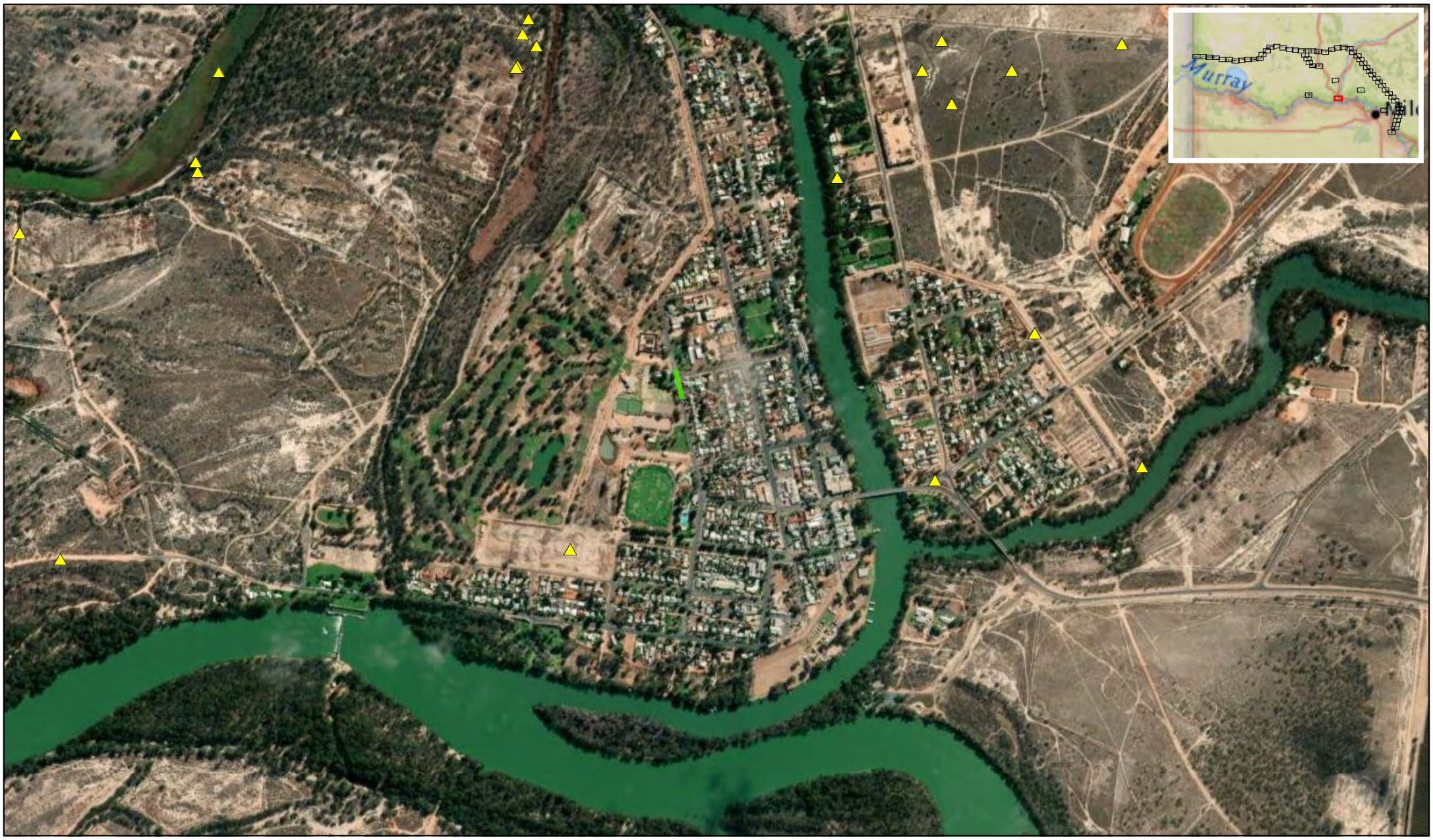

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Map 56 of 59

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Appendix C – Test excavation methodology

EVERICK HERITAGE

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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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

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 Aboriginal consultation strategy (section 3) will be to:

- 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, and 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.

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 CHAR	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	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Requirements	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
Draft Conditions	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 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 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

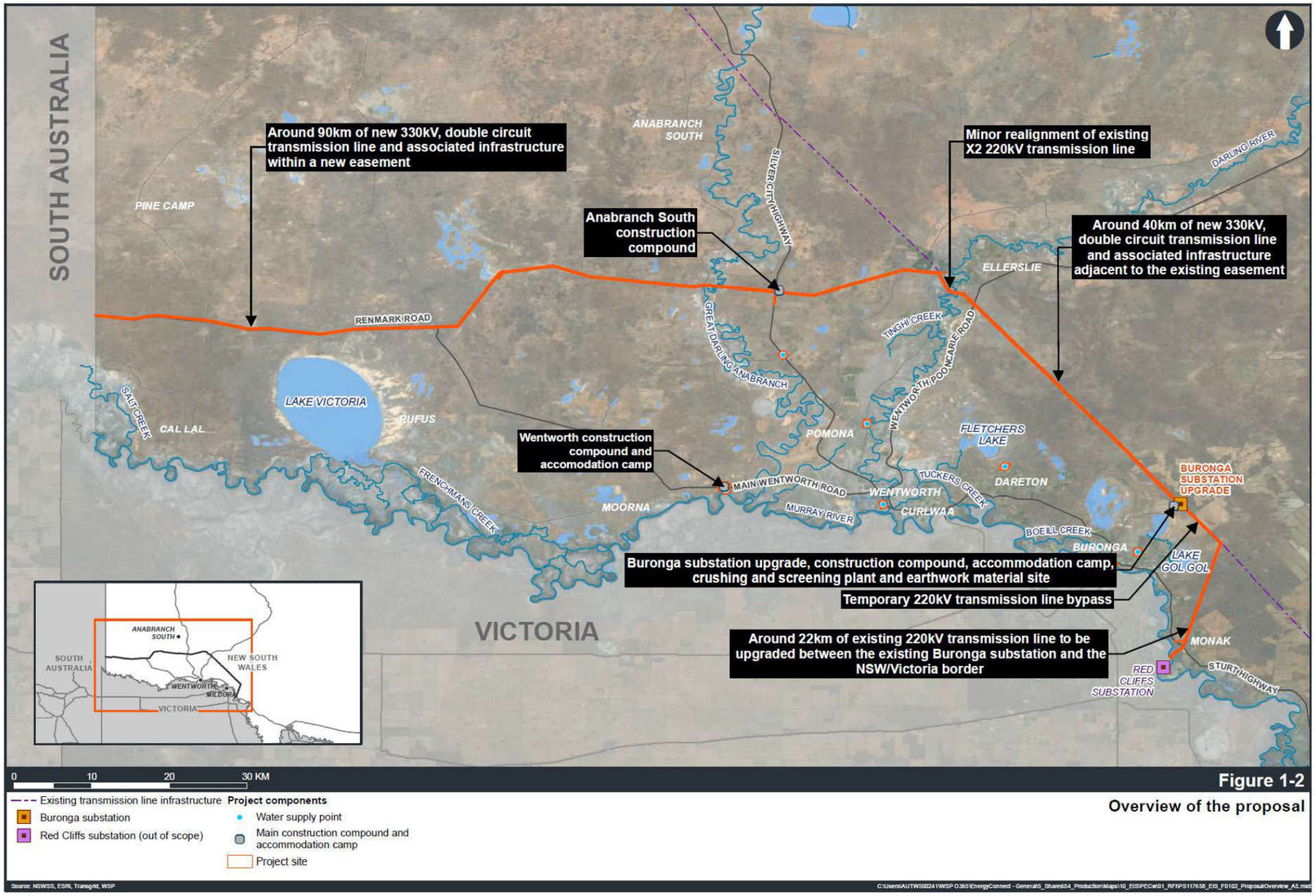

Figure 1-2

Overview of the proposal

Figure 1-1: The Project area

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:

- Ernest Mitchell, Russell Taylor, and James Toomey (Dareton Local Aboriginal Land Council)
- Warren Clark, Warwick Clark, Alynthia Kennedy and Malcolm Mathers (Barkandji Native Title Group Aboriginal Corporation)
- Roland J Smith and Nicholas Smith (Barkindji-Maraura Elders Council)
- Colin Mitchell
- Rodney Lawson
- Arthur Kirby
- Ricky Handy
- Damien Kennedy.

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)

Landform	Landform area (square metres)	Area effectively surveyed (square metres) (effective coverage)	Percentage of landform effectively surveyed (area effectively surveyed / landform area x 100)	Number of sites recorded
Alluvial Flats	450,934.69	163,185.80	36.19	7
Backflow/Paleo Flood Channel	58,301.62	36,349.82	62.35	1
Depression	2,551,868.55	1,463,276.31	57.34	15
Dry Lake/Basin	79,025.28	38,020.18	48.11	1
Dune	204,921.24	158,446.87	77.32	1
Dune/Lunette (lake adjacent)	40,612.29	21,417.25	52.74	2
Dune fields	1,200,280.56	360,084.17	30.00	0
Floodplain	889,589.26	431,843.88	48.54	27
Groundwater Discharge Basin	635,221.36	101,635.42	16.00	0
High Bank (floodplain adjacent)	55,049.36	29,279.48	53.19	2
Low Dune	34,883.90	21,179.53	60.71	2
Riverbank	191,615.12	89,203.41	46.55	8

Landform	Landform area (square metres)	Area effectively surveyed (square metres) (effective coverage)	Percentage of landform effectively surveyed (area effectively surveyed / landform area x 100)	Number of sites recorded
River Channel	21,568.55	10,175.77	47.18	0
Undulating Sandplain	11,612,603.75	6,361,092.57	54.78	22
Undulating Sandplain North of Lake Victoria	1,853,196.30	805,667.70	43.47	44
Total	**19879671.84**	**10090858.16**	**50.76**	**132**

4.2.5. Results

NOHC (2021a) recorded 131 new sites and 28 PADs as a result of the survey. A breakdown of site types by number and percentage is provided in Table 4-2. The locations specified for the previously recorded sites (AHIMS ID 39-6-0029, 39-6-0023, 39-6-0030, 39-6-0026, 46-3-0086, 39-6-0022) were inspected but none of the sites could be relocated.

Table 4-2: Site type by number and percentage recorded by NOHC (2021a)

Site type	Number	Percentage
Artefact scatter	34	25.95
Scarred tree	30	22.90
Isolated finds	29	22.14
Hearths	12	9.16
Artefact scatter; Hearth	8	6.11
Shell middens	6	4.58
Artefact scatter; Shell midden	6	4.58
Artefact scatter; Shell midden; Hearth	2	1.53
Isolated find; Shell midden	2	1.53
Isolated find; Hearth	1	0.76
Glass artefact scatter	1	0.76
Total	**131**	**100.00**

The following general observations were made by NOHC (2021a) regarding the results of their survey:

- 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.

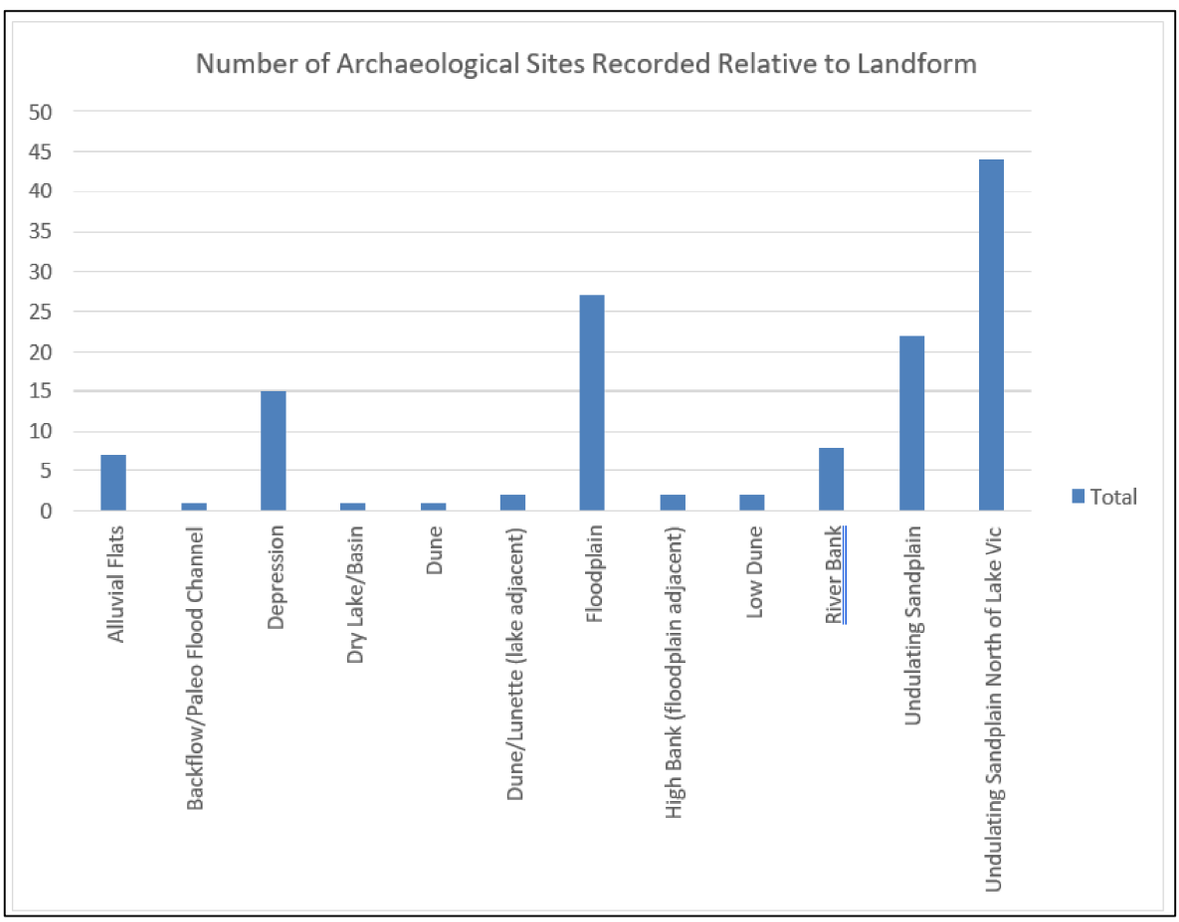

Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: figure 8.8)

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).

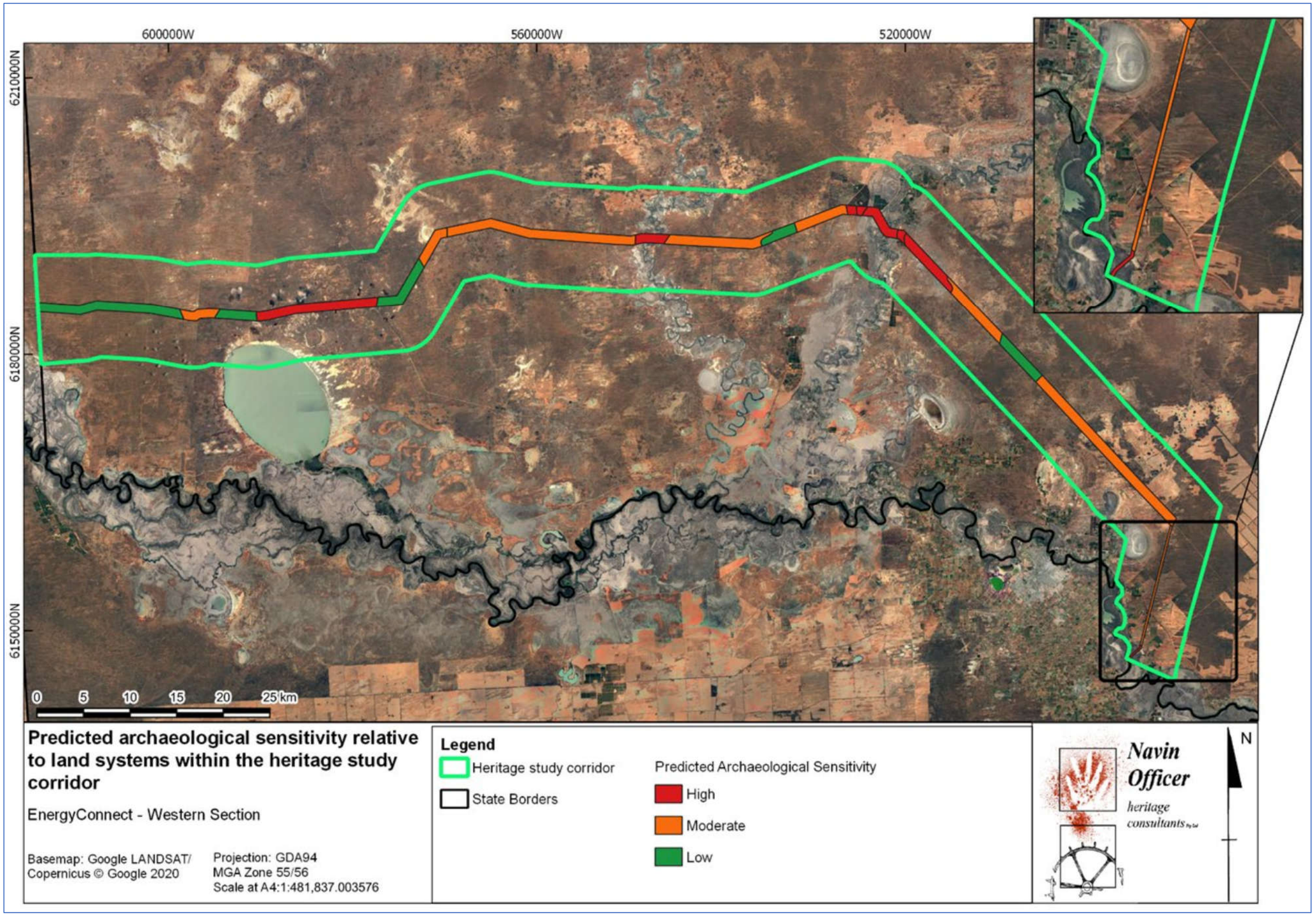

Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

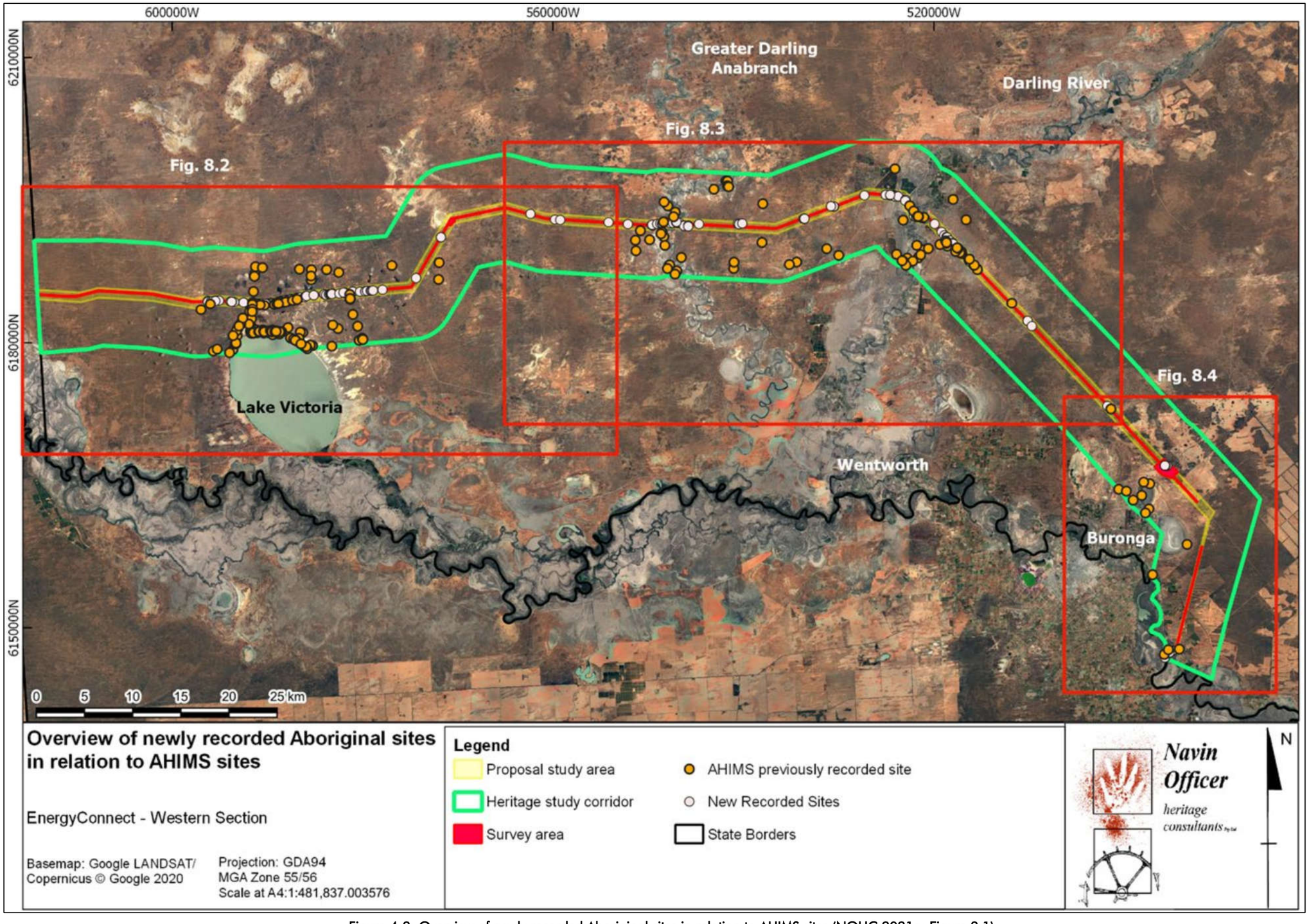

Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Sandplains						
Belvedere	Be	Undulating sandplain with broad, low, linear, east-west trending dunes and broad swales. Vegetation comprises clumped Belah, Rosewood and Sugarwood, Narrow-leaf Hopbush and shrubs	Open campsites, scarred trees, hearths, isolated hearths, isolated artefacts	Margins of Anabranch, margins of depressions	The sandplain and swales comprise deep red earthy sands and solonized brown soils. The dunes are deep siliceous sands and calcareous red earths.	Moderate
Bulgamurra	Bm	Extensive undulating sandplain with areas of east-west trending dunes and rises and open calcareous flats with scattered swamps and depressions. The sandplain comprises clumps of Belah, Rosewood, scattered Wilga and Nelia. Dunes have White Cypress Pine or Mallee and Porcupine Grass. Swamps and with fringing Black Box	Open campsites, isolated hearths, isolated artefacts	Margins of Canally and Riverland, margins of depressions & swamps, linear dunes	The sandplain comprises solonized brown soils. Dunes have deep brownish sands. Swamps and depressions comprise grey cracking clays	Low - Moderate
Hatfield	Hf	Extensive undulating sandplains with east-west trending dunes and depressions. Vegetation comprises clumped Rosewood and Belah, dense Bluebush and Bladder Saltbush on the plains, clumped White Cypress Pine,	Open campsites	Margins of land systems containing depressions; scalds	The plains comprise solonized brown soils, red and brown texture-contrast soils and	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
		Prickly Wattle and Bluebush on the dunes and Nitre Goosefoot, Dillon Bush and Canegrass in the depressions.			red earths with deep brownish sands on the dunes and grey clays in the depressions	
Menilta	Mt	Undulating partially scalded sandplain with unstable dunes adjacent to the Darling River floodplain. There are depressions and swamps in the transitional zone between floodplain and sandplain. Sandplain vegetated with scattered Belah, Rosewood and White Cypress Pine. There is Black Box around the depressions and scattered Black Bluebush, variable Speargrass, burrs and forbs	Open campsites, scarred trees, hearths, isolated artefacts, burials	Margins of depressions in Canally/ margins of Darling, particularly dunes	Sandplain is of loamy brown soils, siliceous sands and brown and red texture-contrast soils. Grey cracking clays in depressions and swales	Moderate
Overnewton	Ov	Extensive undulating open sandplains with clumps of Belah or Rosewood, scattered Bluebush and shrubs. The sandy rises have Mallee and White Cypress Pine or Nelia, grasses and forbs	Open campsites, scarred tree, hearths	Scalded sandplain at margin of Anabranch/sand y rises near Anabranch	Sandplains with loamy brown soils and dunes and rises of deep brownish sands	Moderate
Roo Roo	Rr	Undulating sandplain with isolated rises and circular depressions. The latter are mainly restricted to the sloping margins of the Ana Branch lakes system. There is	Open campsites, shell middens, burials	Sandy rises and dunes (burials) adjacent to Lacustrine and riparian	The sandplain comprises loamy red texture-contrast soils and brown solonized	High

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
		scattered belah and rosewood, dense bluebush, grasses, burrs and forbs.		landsystems. Erosional surfaces in inter-lake areas and margins of depressions and pans/sandy rises and dunes (open campsites. Middens are likely to occur on the crests of dunes and within 400 m of depressions or pans	soils with grey cracking clays in the depressions and deep brownish and siliceous sands on the dunes and rises	
Trelega	Te	Sandplains with east-west trending dunes and associated flats and swales. Plains and swales have stands of dense Belah scattered Rosewood, Wilga, dense Bluebush and dense Mallee and Spinifex on dunes	Open campsites	Associated with localised claypans and depressions	Plains and swales with highly calcareous solonized brown soils and deep earthy sands	Low
Dunefields						
Arumpo	Ap	Long, linear, east-west trending parallel dunes and sandplain with narrow swales and flats merging to level sandplains. The dunes are vegetated with dense mallee and porcupine grass, swales with	Isolated artefacts, isolated hearths	Interdunal swales	Dunes comprise deep brownish and calcareous sands; swales have highly	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
		Belah, Rosewood and shrubs; the sandplains with grasses and forbs.			calcareous brown soils and texture-contrast soils; sandplains have brown solonized soils and calcareous red earths	
Haythorpe	Hy	Undulating sandplains with well developed linear, east-west trending dunes with narrow swales. Large lakes are often associated with the sandplains. Scattered Belah, dense clumps of Narrow-leaf Hopbush and Turpentine, Black Bluebush, Speargrass, burrs and forbs.	Open campsite, scarred tree, shell midden	Margins of sinks or depressions	Red sandy earths, calcareous red earths, sands and solonized brown soils	Low
Leaghur	Lh	Plains with unstable dunes and lunettes associated with major lakes (eg Lake Victoria). Sandplains and dunefields with Belah and Rosewood with scattered Bluebush	Open campsites, shell middens, waterholes/wells, burials. Faunal remains often occur within midden/burial. Likely to contain stratified sediments with numerous exposures of	Most erosional exposures associated with lunettes, dunes, plains and swamps. One of the most archaeologically sensitive and culturally significant areas	Plains of red texture contrast soils, deep brownish sands and red sandy earths. Dunes and sand drifts of deep siliceous and calcareous sands. Swamps of grey cracking clays and fringing red	High

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
			archaeological deposit dating to the late Pleistocene.	in southwest NSW	texture contrast soils.	
Mandelman	Mm	Parabolic and unaligned dunes merging into sandplains. Vegetation comprises dense mallee and porcupine grass, dense shrubs, grasses and burrs	Open campsites	None known	Dunes have deep siliceous and brownish sands while the plains and dune swales comprise solonized brown soils and red texture-contrast soils.	Low
Alluvial Plains						
Anabranch	An	Ancestral channel of the Darling River comprising a floodplain of grey fine-textured alluvium, sinuous perennial river channels, riverside swamps and billabongs, elevated plains and backplains and riverside lunettes. There is scattered and clumped Black Box and River Red Gum along the channels. Lignum and Nitre Goosefoot occupy depressions. Prickly Wattle, Narrow-leaf Hopbush and occasional Bluebush occur on lunettes. There are	Open campsites, scarred tree, shell middens, isolated hearths	Riverside lunettes, channels & banks (terraces), floodplain	Grey cracking and silty compact clays on floodplain, channels and banks; brown duplex soils on levees, cemented sands on riverside lunettes	Moderate

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
		abundant forbs and grasses over the system following flooding.				
Canally	Cy	Alluvial flats and dunes adjacent to the Darling River. There is Black Box, Lignum and Canegrass on the flats and Black Box, Belah, Mallee or Prickly Wattle on the dunes	Open campsites, scarred trees, isolated artefact, hearths, isolated hearths	Scalds on sandplains, margin of Anabranch land system, margins of drainage channels	Dunes comprise deep brownish sands. Flats and pans of the floodplains comprise grey cracking clays. Extensive aeolian backplains comprise red texture-contrast soils and solonized brown soils	High
Darling	Dl	Lower Darling River and its floodplain. Landforms comprise the floodplain; levees and lunettes. There is sparse to moderate Black Box, River Red Gum and River Cooba; stands of Lignum, Nitre Goosefoot, Canegrass and Narrow-leaf Hopbush as well as Saltbush, burrs and forbs across the system	Open campsites, scarred trees, shell middens, isolated artefacts, hearths	River & creek margins, scalded plains & levees, floodplain	Grey cracking and non-cracking clays on the floodplain. Broen and red texture contrast soils on levees. Lunettes of deep, cemented siliceous and calcareous sands	High
Riverland	Rl	This is the active floodplain of the Murray River with associated billabongs,	Open campsites, scarred trees, shell	River & creek margins,	Self mulching and cracking grey	Moderate

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
		swamps, channels, levees and lunettes. There are Red Gums fringing the channels and Black Box, Lignum, Cooba and Nitre Goosefoot elsewhere	middens, isolated artefacts, hearths	scalded plains & levees, floodplain	clays in the depressions and on plains with deep brownish sands and brown soils on the lunettes and levees	
Wentworth	We	Floodplain if fine-grained Quaternary alluvium adjacent to the confluence of the Murray and Darling Rivers. Minor drainage lines with isolated source bordering dunes, depressions, scalded levees.	Open campsites; burials in dunes	Margins of swamps and along the margins of adjacent floodplain landsystems; isolated source bordering dunes	Plains with brown and grey cracking clays, some red sands and texture contrast soils and non-cracking clays	Low-moderate
Playas and Basins						
Huntingfield	Hu	Small relict groundwater discharge basins and lunettes with associated sandplains, copi islands and calcareous rises. These are essentially treeless basins although the rises and islands have scattered Belah and Mallee. The sandplains and lunettes have scattered Belah, Sugarwood and Rosewood	Open campsites, hearths, isolated hearths, isolated artefacts	Margins of basins, lunettes. Possibility of Pleistocene deposit in lunettes	Plains are of grey calcareous earths and lunettes are deeply cemented silicious sands	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Marona	Mo	Sandplains and dunefields with Mallee. Small relict lakes and pans with lunettes; extensive sandplain merging into dunefields. Mallee, Porcupine Grass; dense Bluebush on sandplains	Open campsites, hearths, isolated hearths, isolated artefacts	On eroded exposures along margins of basins and pans. Lunettes on around margins of lakes	Deep sands on lunettes and dunes; shallow on sandplain and eroded exposures; grey clays on lakes and pans	Unknown

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

Burials will generally be found in lunettes and sand bodies, such as, source bordering dunes, point bar deposits and sandy riverbanks/escarpments. A variety of burial practices occur throughout time and include flexed, extended and cremated inhumations with the most common comprising extended inhumations with an east-west attitude. Bundle burials appear to be restricted to the late Holocene (Pardoe 1995: 704). Isolated burials are likely to date anywhere from around 25,000 years Before Present[1] (BP) through to the time of early European settlement. Those dating between 25,000-14,000 will most likely be preserved in the lower lunette sediments around the lake systems. Burials in identified 'cemeteries' will predominantly comprise male skeletal remains but there will be proportionately more children than comprise single burials. Burials in 'cemeteries may be as old as 14,000 years BP but will more likely post-date 7,000 years BP. Dates for burials in the study region are summarised in Pardoe (1995: Table 2), and range from around 6,500 years through to 350 years.

[1] That is 1950

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 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. 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	Detailed design and pre-construction impacts to sites/features/ PADs	PEC-W-6, PEC-W-11, PEC-W-12, PEC-W-15, PEC-W-17, PEC-W-18, PEC-W-27, PEC-W-31, PEC-W-36, PEC-W-37, PEC-W-45, PEC-W-47, PEC-W-50, PEC-W-51, PEC-W-55, PEC-W-63, PEC-W-100, PEC-W-102, PEC-G-7

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.		PEC-PAD1 through PEC-PAD14, PEC-PAD-16 through PEC-PAD26, and PEC-PAD- 28

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

PAD ID	PAD significance	Archaeological potential	Justification	Associated site	Site type	Site significance	Potential impact/loss
PEC-W-PAD1	H	H	Likely dateable stratified deposits with research value, possibility of residue analysis on grinding artefacts. Surface archaeology may show multiple activities occurring onsite	PEC-W-6	Midden & artefact scatter	M	Direct & potential direct; partial loss
PEC-W-PAD2	M	M		PEC-W-10 - PEC-W-21	Midden, hearths & artefact scatter	M	Direct & potential direct; partial loss
PEC-W-PAD3	H	H	Likely dateable stratified deposits with research value, possibility of residue analysis on grinding artefacts. Large boulder core present. Surface archaeology may show multiple activities occurring onsite	PEC-W-21 – PEC-W-38	Midden, hearths & artefact scatter	M	Direct & potential direct; partial loss
PEC-W-PAD4	H	M	Possible dateable stratified deposits with research value, possibility of residue analysis on grinding artefacts. Large in situ (site furniture) grinding mortar present (PEC-W- 42). Surface archaeology may show multiple activities occurring onsite.	PEC-W-39 & PEC-W-43	Artefact scatter & hearths	M	Direct & potential direct; partial loss

PAD ID	PAD significance	Archaeological potential	Justification	Associated site	Site type	Site significance	Potential impact/loss
PEC-W-PAD5	M-H	H	Possibility of residue analysis on grinding artefacts	PEC-W-45	Artefact scatter	H	Direct & potential direct; partial loss
PEC-W-PAD6	M	M		PEC-W-46 - PEC-W-48	Artefact scatters	M	Direct & potential direct; partial loss
PEC-W-PAD7	M	M		PEC-W-49- PEC-W-52 & PEC-W-54- PEC-W-55	Artefact scatters	H	Direct & potential direct; partial loss
PEC-W-PAD8	H	H	Many in situ clay hearths on eroded surfaces. Likely dateable stratified deposits with research value. Banks on Darling Anabranch	PEC-W-61	Hearths & artefact scatters	M	Direct & potential direct; partial loss
PEC-W-PAD9	M	M		PEC-W-62	Isolated find	Moderate	Direct & potential direct; partial loss
PEC-W-PAD10	H	H	Possibility of residue analysis on grinding artefacts. Ground edge axe at base of low sand dune, heightened potential for burials. Adjacent to Darling Anabranch	PEC-W-63 – PEC-W-64	Isolated find & artefact scatter		Direct & potential direct; partial loss
PEC-W-PAD11	M	M		N/A			Direct & potential direct; partial loss
PEC-W-PAD12	H	M		N/A	N/A	N/A	Direct & potential direct; partial loss

PAD ID	PAD significance	Archaeological potential	Justification	Associated site	Site type	Site significance	Potential impact/loss
PEC-W-PAD13	M	M		PEC-W-66	Hearths	M	Direct & potential direct; partial loss
PEC-W-PAD14	M-H	H	High sensitivity landform at confluence of current banks of Darling Anabranch, as well as two broader flood/paleo channels. High potential for multiple site features subsurface.	N/A	N/A		Direct & potential direct; partial loss
PEC-W-PAD16	M-H	H	High sensitivity landform on current banks of Darling Anabranch. High potential for multiple site features subsurface. Possible dateable stratified deposits with research value	PEC-W-69	Artefact scatter & hearth	M-H	Direct & potential direct; partial loss
PEC-W-PAD17	M	M		PEC-W-70	Artefact scatter		Direct & potential direct; partial loss
PEC-W-PAD18	M	M		PEC-W-71 - PEC-W-72	Hearths	M	Direct & potential direct; partial loss
PEC-W-PAD19	M	H		PEC-W-77	Hearth	M	N/A
PEC-W-PAD20	M	M		N/A	N/A		Direct & potential direct; partial loss

PAD ID	PAD significance	Archaeological potential	Justification	Associated site	Site type	Site significance	Potential impact/loss
PEC-W-PAD21	H	H	High sensitivity landform on locally elevated banks of Darling River and adjacent to flood channel/billabong. High potential for multiple site features subsurface including dateable stratified deposits with research value.	PEC-W-92 & PEC-W-93	Hearths & midden	M	Direct & potential direct; partial loss
PEC-W-PAD22	H	H	High sensitivity landform on locally elevated banks of Darling River. High potential for multiple site features. Approximately 50 hearths (PEC-W-94) of varying condition on eroded/disturbed surfaces. This site has dateable stratified deposits with high research value.	PEC-W-94 & PEC-W-95	Hearth complex	M	Direct & potential direct; partial loss
PEC-W-PAD23	M-H	H	High sensitivity landform on banks of Darling River. High potential for multiple site features subsurface including dateable stratified deposits with research value	PEC-W-96	Artefact scatter & hearths	M	Direct & potential direct; partial loss
PEC-W-PAD24	M	M	N/A	PEC-G-7	Artefact scatter & hearths	M	Direct & potential direct; partial loss

PAD ID	PAD significance	Archaeological potential	Justification	Associated site	Site type	Site significance	Potential impact/loss
PEC-W-PAD25	H	H	High sensitivity landform on tall dune to the north of a dry lake. Heightened potential for burials. High potential for multiple site features subsurface including dateable stratified deposits with research value.	PEC-W-100	Artefact scatter	M	Direct & potential direct; partial loss
PEC-W-PAD26	H	H	High sensitivity landform on tall leeward dune/lunette to the east of a dry lake. Heightened potential for burials. High potential for multiple site features subsurface including dateable stratified deposits with research value.	PEC-W-102	Artefact scatter & hearths	H	Direct & potential direct; partial loss
PEC-W-PAD28	H	M	Banks of Murray River	PEC-W-106 & PEC-W-107	Scarred trees	N/A	Direct & potential direct; partial loss

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.

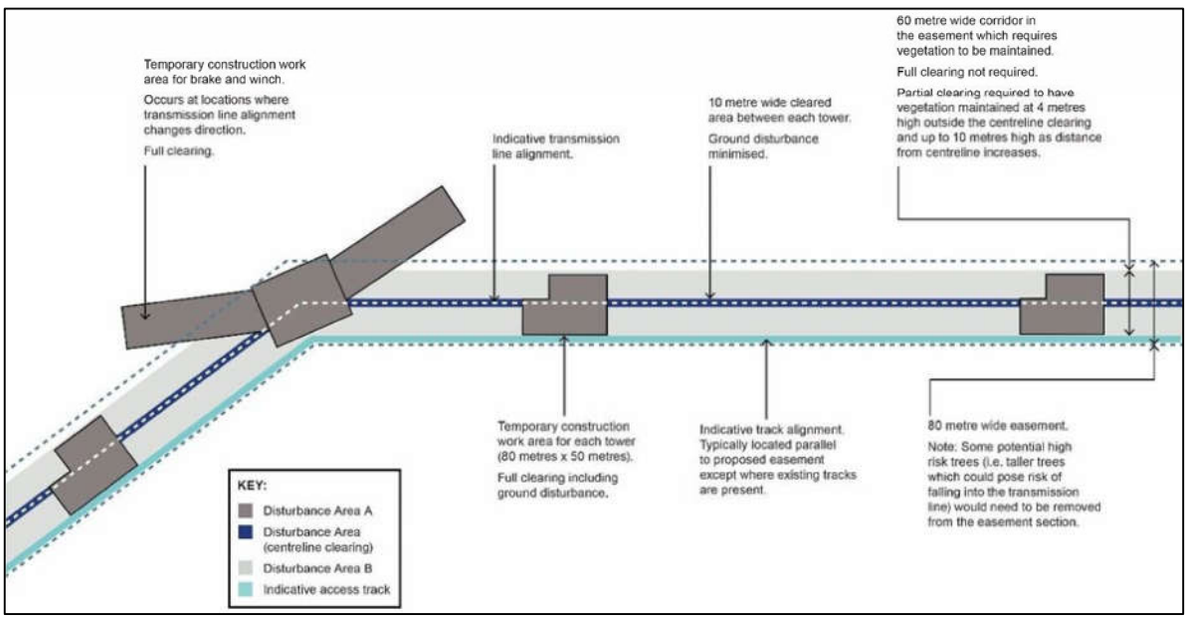

Figure 5-1: Schematic of Disturbance areas A and B

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.

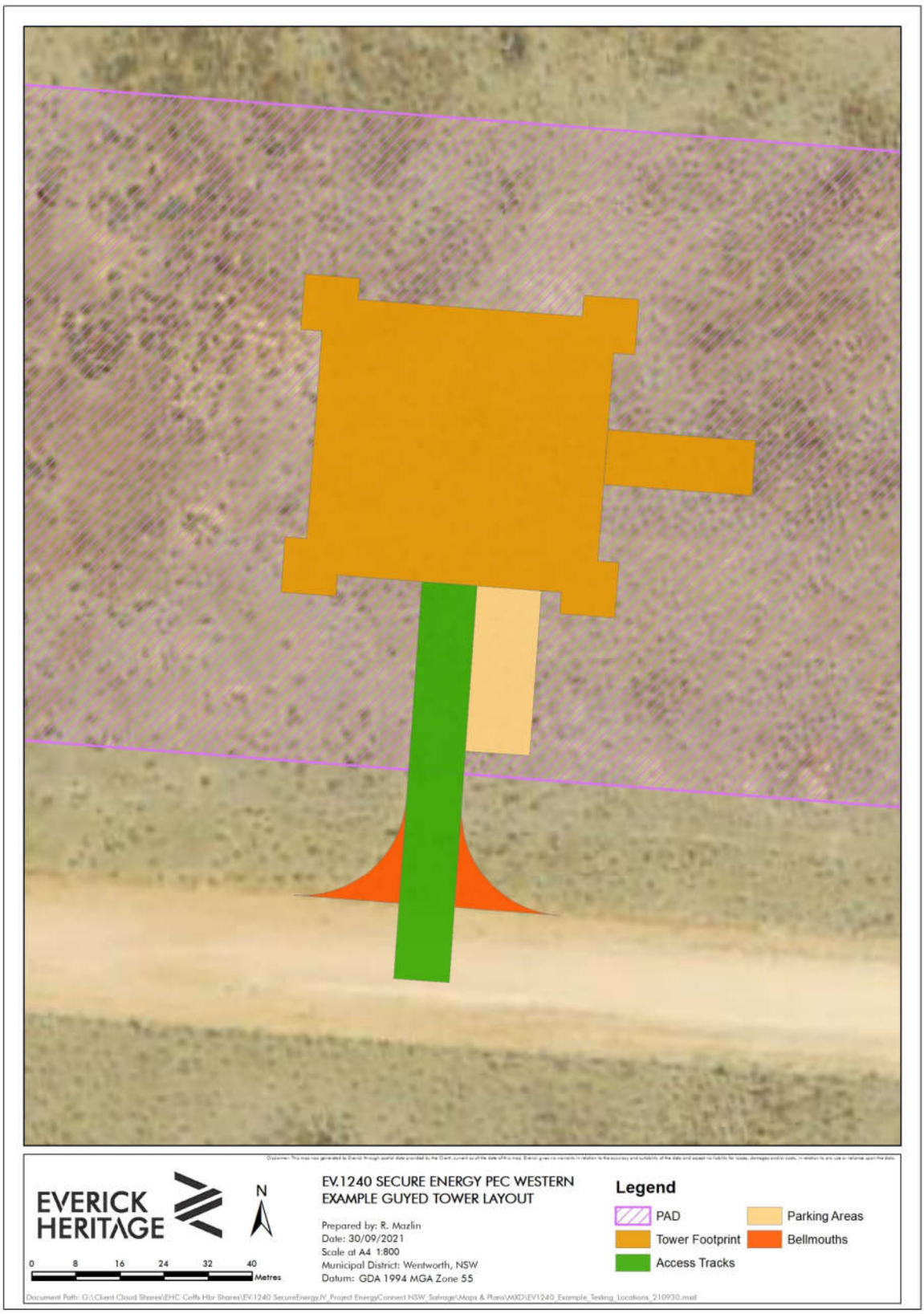

Figure 5-2: Example of guyed tower layout

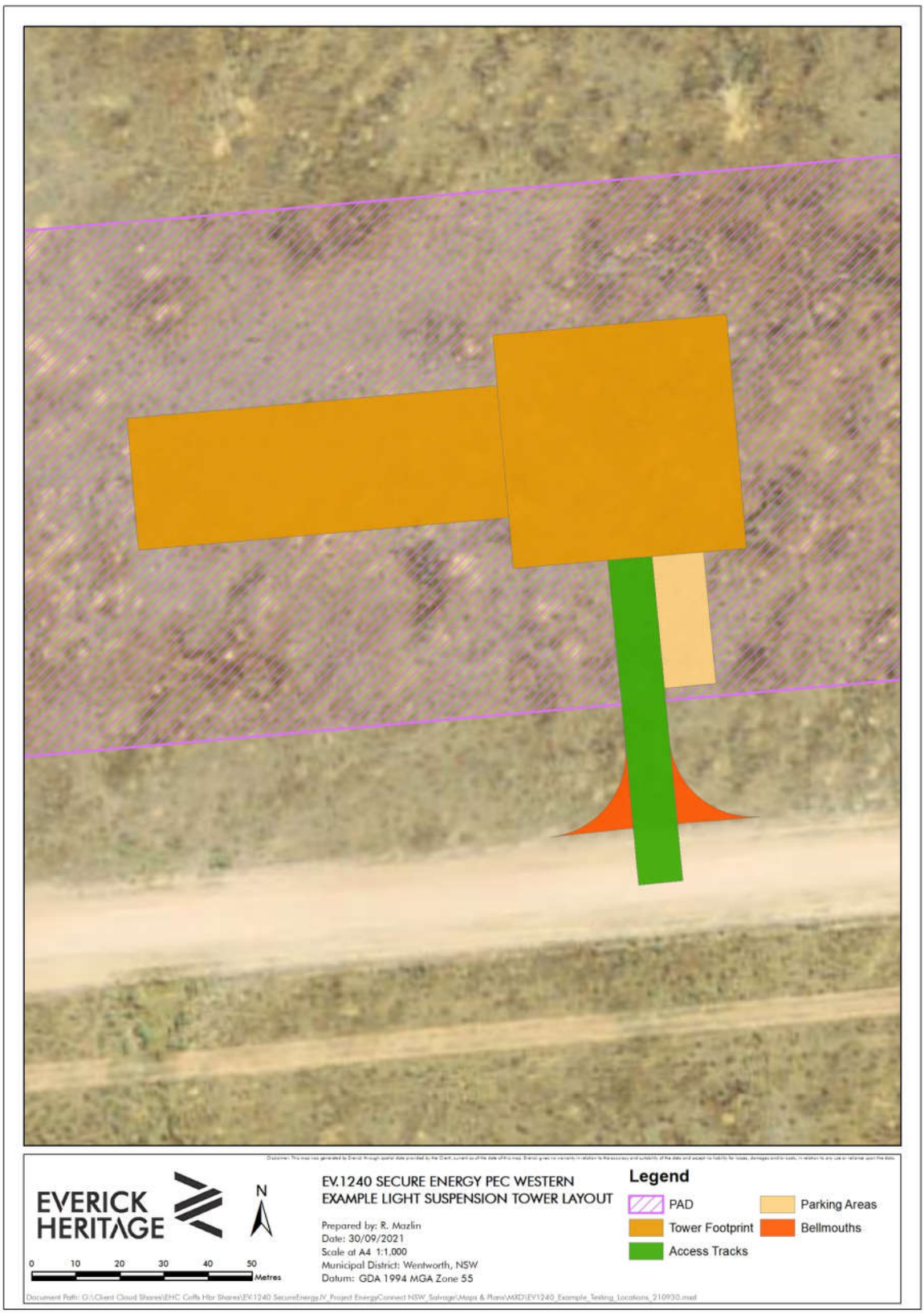

Figure 5-3: Example of light suspension tower layout

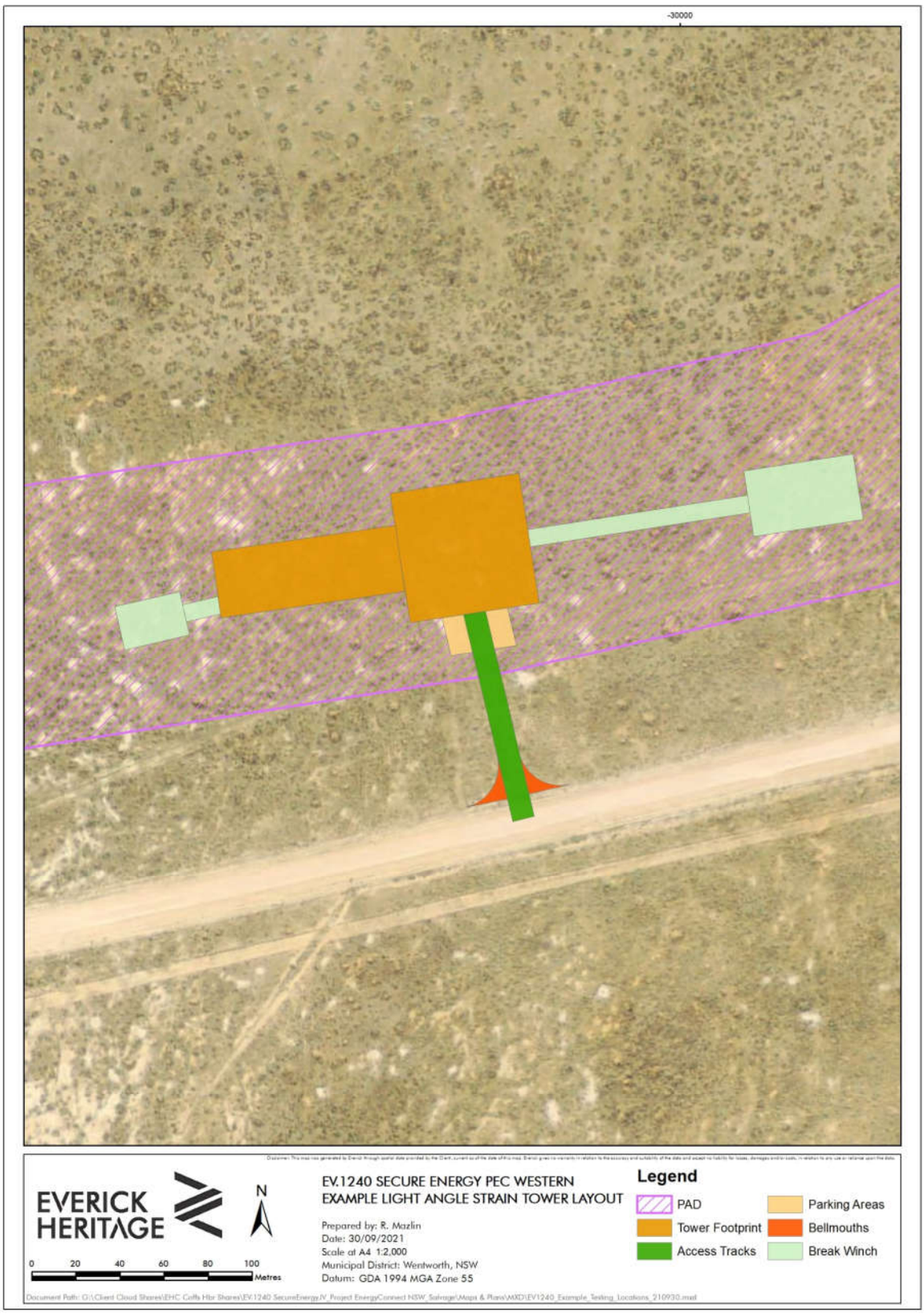

Figure 5-4: Example of light angle strain brake/winch tower layout

Table 5-3: Details of PADs and proposed disturbance

PAD ID	PAD potential	Total PAD area in square metres	Tower Id	PAD area impacted	Associated site	Site type
PEC-W-PAD1	H	66,781	Tower 249	3,853	PEC-W-6	Midden & artefact scatter
PEC-W-PAD2	M	196,158	Towers 244; 243; 242; 241	18,204	PEC-W-10 - PEC-W-21	Midden, hearths & artefact scatter
PEC-W-PAD3	H	384,105	Towers 240; 239; 238; 237; 236; 235; 234	32,791	PEC-W-21 – PEC-W-38	Midden, hearths & artefact scatter
PEC-W-PAD4	M	317,573	Towers 233; 232; 231; 230; 229; 228	34,727	PEC-W-39 & PEC-W-43	Artefact scatter & hearths
PEC-W-PAD5	H	89,900	Tower 227	6,010	PEC-W-45	Artefact scatter
PEC-W-PAD6	M	286,683	Towers 226; 225; 224; 223; 222; 221	31,900	PEC-W-46 - PEC-W-48	Artefact scatters
PEC-W-PAD7	M	206,165	Towers 221; 220; 219; 218	25,866	PEC-W-42, PEC-W-49, PEC-W45 – PEC-W-53, PEC-W-55	Artefact scatters
PEC-W-PAD8	H	42,092	Tower 147; 148	6,500	PEC-W-61	Hearths & artefact scatters
PEC-W-PAD9	M	28,619	Nil	N/A	PEC-W-62	Isolated find
PEC-W-PAD10	H	75,237	Tower 144; 145; 146	11,484	PEC-W-63 – PEC-W-64	Isolated find & artefact scatter

PAD ID	PAD potential	Total PAD area in square metres	Tower Id	PAD area impacted	Associated site	Site type
PEC-W-PAD11	M	58,006	Tower 143; 144	8,926	N/A although PEC-W-56 is close	Artefact scatter
PEC-W-PAD12	M	25,237	Tower 142	3,665	N/A	N/A
PEC-W-PAD13	M	33,464	Nil	N/A	PEC-W-66	Hearths
PEC-W-PAD14	H	23,752	Tower 141	6,373	N/A	N/A
PEC-W-PAD16	H	52,528	Tower 140	3,549	PEC-W-69	Artefact scatter & hearth
PEC-W-PAD17	M	85,335	Tower 139; 140	6,388	PEC-W-70	Artefact scatter
PEC-W-PAD18	M	14,063	Tower 138	1,483	PEC-W-71 - PEC-W-72	Hearths
PEC-W-PAD19	H	37,874	Nil	N/A	PEC-W-77	Hearth
PEC-W-PAD20	M	46,798	Tower 82; 83	7,924	N/A	N/A
PEC-W-PAD21	H	44,603	Tower 82; 83	9,943	PEC-W-92 & PEC-W-93	Hearths & midden

PAD ID	PAD potential	Total PAD area in square metres	Tower Id	PAD area impacted	Associated site	Site type
PEC-W-PAD22	H	61,028	Tower 81	6,810	PEC-W-94 & PEC-W-95	Hearth complex
PEC-W-PAD23	H	53,942	Tower 80	7,137	PEC-W-96	Artefact scatter & hearths
PEC-W-PAD24	M	45,764	Tower 79	3,898	PEC-G-7	Artefact scatter & hearths
PEC-W-PAD25	H	38,440	Nil	N/A	PEC-W-100	Artefact scatter
PEC-W-PAD26	H	274,721	Tower 63	3,493	PEC-W-102	Artefact scatter & hearths
PEC-W-PAD28	M	13,390	Tower 58	5,027	PEC-W-106 & PEC-W-107	Scarred trees

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 exists[2]), and:

[2] This has been established by NOHC 2021b: see Table 5-2 this report.

- 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

PAD ID	Land system	Landforms	Tower ID	Total disturbance area (square metres)	Total proposed excavation area (square metres) (~0.15 per cent of disturbance area)	Proposed methodology
PEC-W-PAD1	Hy	Crests & slopes adjacent to depressions Lake Vic	249	3,853	6	Manual
PEC-W-PAD2	Hy	Slopes & crests adjacent to sandplains Lake Vic	241, 242, 243, 244	18,204	27.5	Manual
PEC-W-PAD3	Rr	Slopes & crests adjacent to sandplains Lake Vic	234, 235, 236, 237, 238, 239, 240	32,791	49	Manual
PEC-W-PAD4	Rr/Lh	Slopes & crests adjacent to sandplains Lake Vic	228, 229, 230, 231, 232, 233	34,727	52	Manual
PEC-W-PAD5	Rr	Elevated flat adjacent to sandplains Lake Vic	227	6,010	9	Manual
PEC-W-PAD6	Rr	Elevated flat adjacent to sandplains Lake Vic	222, 223, 224, 225, 226	31,900	48	Manual
PEC-W-PAD7	Rr	Elevated flat adjacent to sandplains Lake Vic	218, 219, 220, 221	25,866	39	Manual

PAD ID	Land system	Landforms	Tower ID	Total disturbance area (square metres)	Total proposed excavation area (square metres) (~0.15 per cent of disturbance area)	Proposed methodology
PEC-W-PAD8	Be/An	Riverbank	148, 147	6,500	10	Manual & mechanical
PEC-W-PAD9	An	Slopes & river flats/banks	Nil	N/A	N/A	N/A
PEC-W-PAD10	An	Dunes adjacent to Anabranch	146, 145, 144	11,484	17	Manual
PEC-W-PAD11	An	Floodplain	144, 143	8,926	13.5	Manual & mechanical
PEC-W-PAD12	An	Riverbank	142	3,665	5.5	Manual & mechanical
PEC-W-PAD13	An	Banks of channels	Nil	N/A	N/A	N/A
PEC-W-PAD14	An	Elevated riverbank	141	6,373	9.5	Manual & mechanical
PEC-W-PAD16	An	Lower riverbank	140	3,549	5.5	Manual & mechanical
PEC-W-PAD17	An	Floodplain	140, 139	6,388	9.5	Manual & mechanical
PEC-W-PAD18	An/Ov	Riverbank	138	1,483	2	Manual & mechanical

PAD ID	Land system	Landforms	Tower ID	Total disturbance area (square metres)	Total proposed excavation area (square metres) (~0.15 per cent of disturbance area)	Proposed methodology
PEC-W-PAD19	Hf/Te	Sandplain/depression	Nil	N/A	N/A	N/A
PEC-W-PAD20	Dl	Floodplain	83, 82	7,924	12	Manual & mechanical
PEC-W-PAD21	Dl	Bank of billabong	83, 82	9,943	15	Manual & mechanical
PEC-W-PAD22	Dl	Lower terrace	81	6,810	10	Manual & mechanical
PEC-W-PAD23	Dl	Riverbank & floodplain	80	7,137	10.5	Manual & mechanical
PEC-W-PAD24	Mt/Dl	Floodplain	79	3,898	6	Manual
PEC-W-PAD25	Cy	Riverside lunette	Nil	N/A	N/A	N/A
PEC-W-PAD26	Cy	Lunette	63	3,493	5	Manual
PEC-W-PAD28	Rl	Riverbank & floodplain	58	5,027	7.5	Manual & mechanical
Total				**245,951**	**369**	

Table 6-2: Total proposed access track excavation area and methodology by PAD

PAD ID	Land system	Landforms	Total access track disturbance area	Total proposed excavation area (square metres (~0.15 per cent of disturbance area)	
PEC-W-PAD8	Be/An	Riverbank	3,177	5	Manual & mechanical
PEC-W-PAD9	An	Slopes and river flats & banks	1,656	2.5	Manual & mechanical
PEC-W-PAD10	An	Dunes adjacent to Anabranch	5,549	8.5	Manual
PEC-W-PAD11	An	Floodplain	4,985	7.5	Manual & mechanical
PEC-W-PAD12	An	Riverbank	1,944	3	Manual & mechanical
PEC-W-PAD13	An	Banks of channels	2,852	4.5	Manual & mechanical
PEC-W-PAD14	An	Elevated riverbank	957	1.5	Manual & mechanical
PEC-W-PAD16	An	Lower riverbank	281	0.5	Manual & mechanical
PEC-W-PAD17	An	Floodplain	7,087	10.5	Manual & mechanical
PEC-W-PAD18	An/Ov	Riverbank	1,805	2.5	Manual & mechanical
PEC-W-PAD20	Dl	Floodplain	4,051	6	Manual & mechanical
PEC-W-PAD21	Dl	Bank of billabong	3,258	5	Manual & mechanical

PAD ID	Land system	Landforms	Total access track disturbance area	Total proposed excavation area (square metres (~0.15 per cent of disturbance area)	
PEC-W-PAD22	Dl	Lower terrace	1,105	1.5	Manual & mechanical
PEC-W-PAD23	Dl	Riverbank & floodplain	1,207	2	Manual & mechanical
PEC-W-PAD24	Mt/Dl	Floodplain	3,341	5	Manual & mechanical
PEC-W-PAD26	Cy	Lunette	2,389	3.5	Manual & mechanical
Total			**45,650**	**69**	

6.7. Test excavation methodology

6.7.1. Manual test excavation units

Test excavation will comprise a combination of 1 m x 1 m Test Pits (TP) and 0.5 m x 0.5 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 x 1 m x 1 m TPs and a further 2 x 0.5 m x 0.5 m STPs may be completed, or 1 x 1 m x 1 m TP and 22 x 0.5 m x 0.5 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 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.

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 m x 1 m or 2 m x 1 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

Tower ID	PAD ID	Total disturbance area (square metres)	Total proposed excavation area (square metres) (~0.15 per cent of disturbance area)
249	1	3,853	6
244	2	3,853	6
243	2	3,850	6
242	2	6,650	10
241	2	3,851	6
240	3	3,849	6
239	3	9,680	14.5
238	3	3,852	6
237	3	3,853	6
236	3	3,852	6
235	3	3,853	6
234	3	3,852	6
233	4	6,833	10
232	4	3,857	6
231	4	6,010	9
230	4	6,009	9
229	4	6,009	9
228	4	6009	9
227	5	6,010	9
226	6	6,009	9
225	6	6,010	9
224	6	6,010	9

Tower ID	PAD ID	Total disturbance area (square metres)	Total proposed excavation area (square metres) (~0.15 per cent of disturbance area)
223	6	6,009	9
222	6	6,009	9
221	6 & 7	9,689	14.5
220	7	6,010	9
219	7	6,010	9
218	7	6,009	9
148	8	2,989	4.5
147	8	3,511	5.5
146	10	3,834	6
145	10	6,158	9
144	10 & 11	6,753	10
143	11	3,665	5.5
142	12	3,665	5.5
141	14	6,373	9.5
140	16	6,375	9.5
139	17	3,562	5.5
138	17	1,483	2
83	20 & 21	10,185	15.5
82	20 & 21	7,682	11.5
81	22	6,810	10
80	23	7,137	10.5
79	24	3,898	6
63	26	3,493	5
58	28	5,027	7.5

Appendix D – Survey methodology

EVERICK HERITAGE

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:

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

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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
4	V. Edmonds and R. Mazlin	Final amended	Section 6.5.2	20.12.21	T. robins

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 CHAR	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	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales
Consultation Requirements	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
Draft Conditions	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
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' referenced in the definition section of the Infrastructure 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).

APPENDIX 1 – DEVELOPMENT LAYOUT

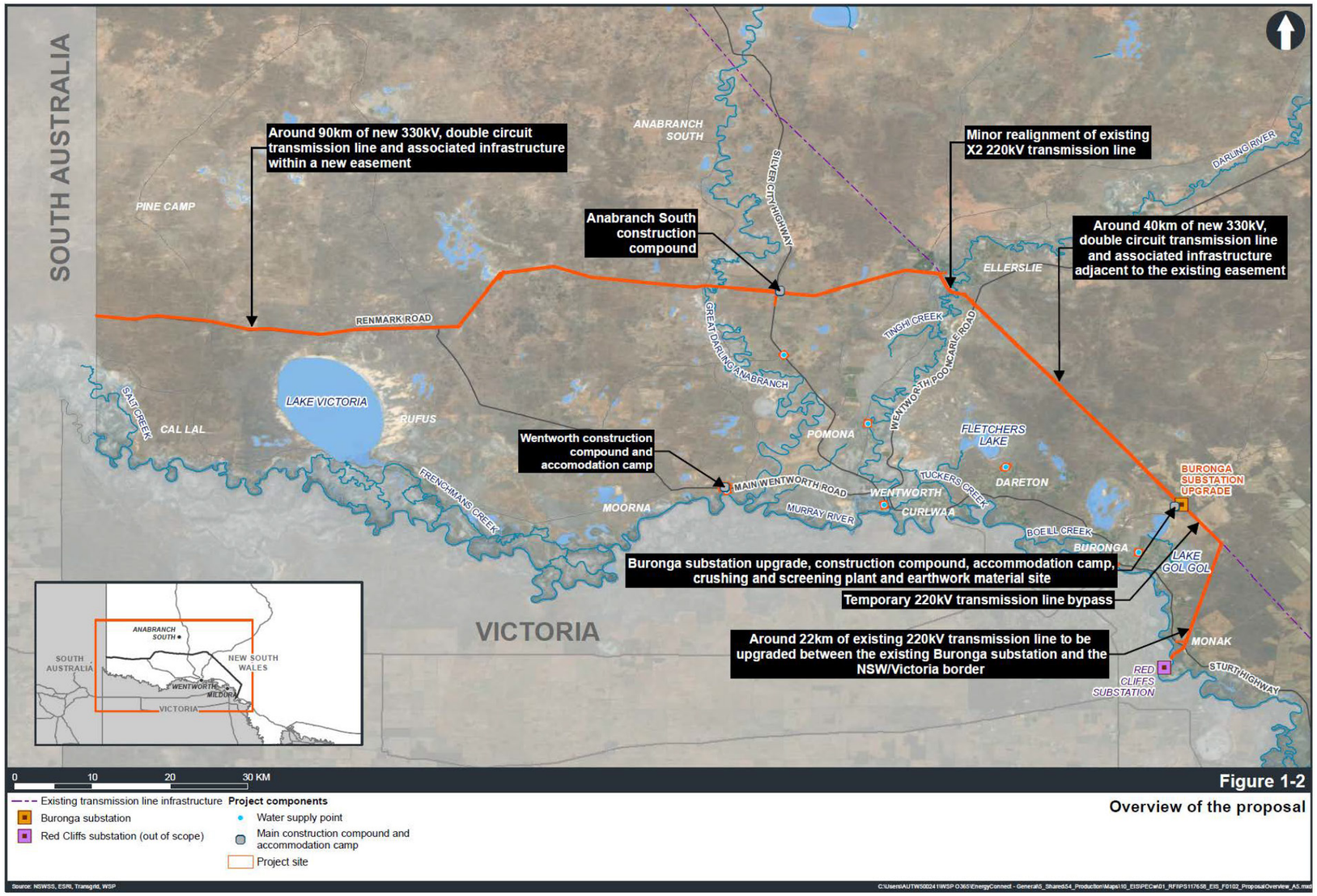


Figure 1-2

Overview of the proposal

Figure 1-1: The Project area

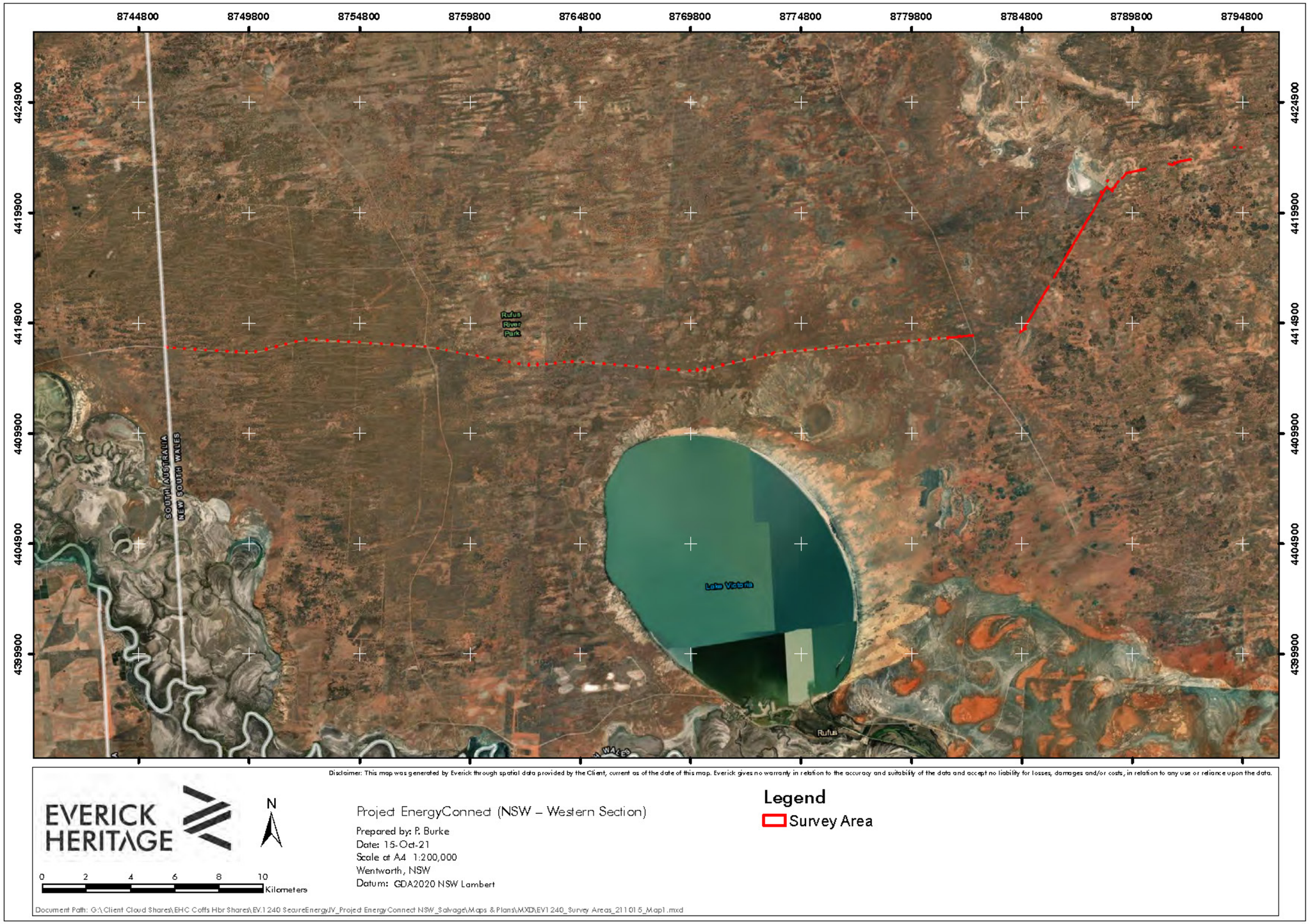


Figure 1-2: Areas requiring further survey along the Project area – Lake Victoria

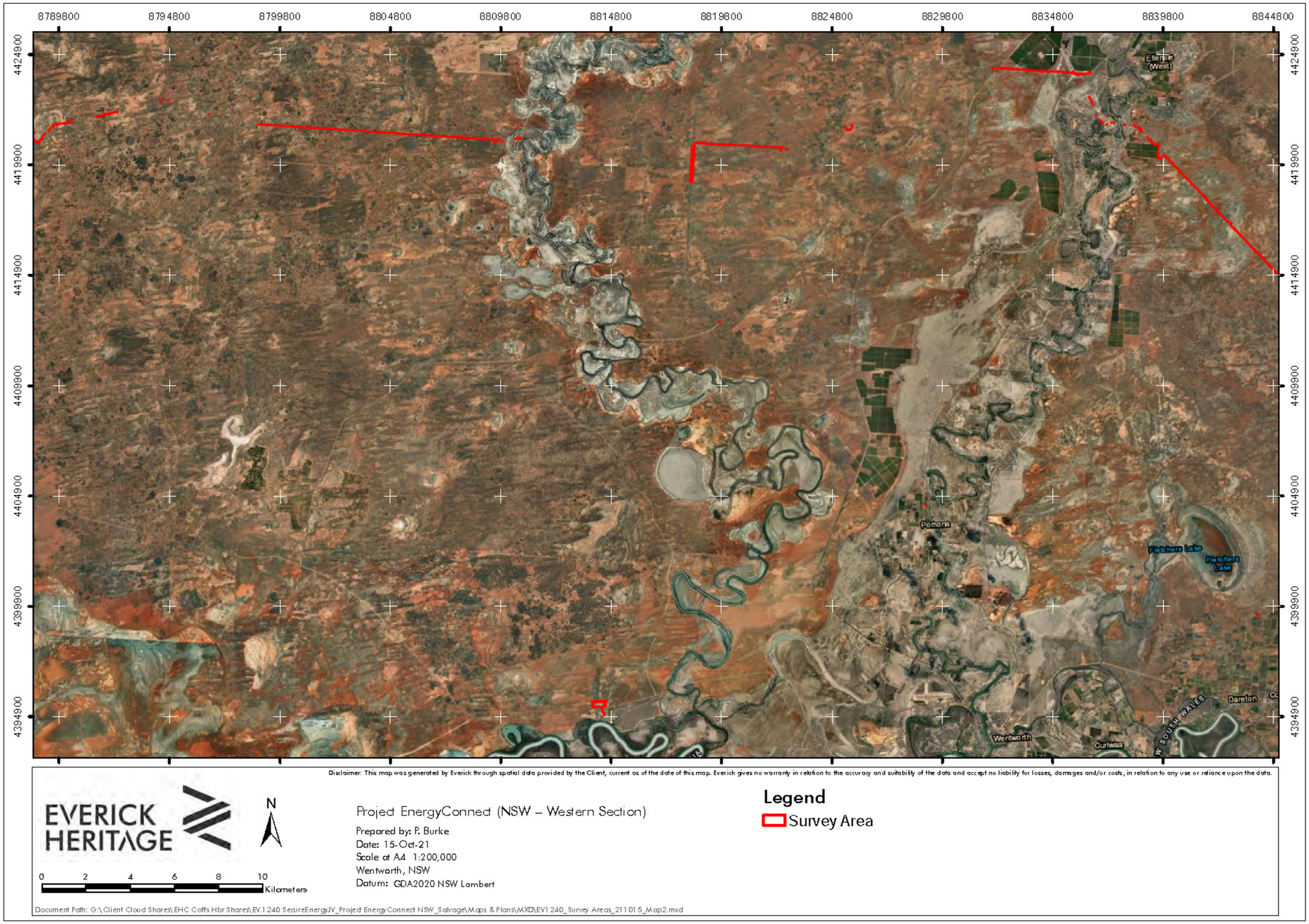
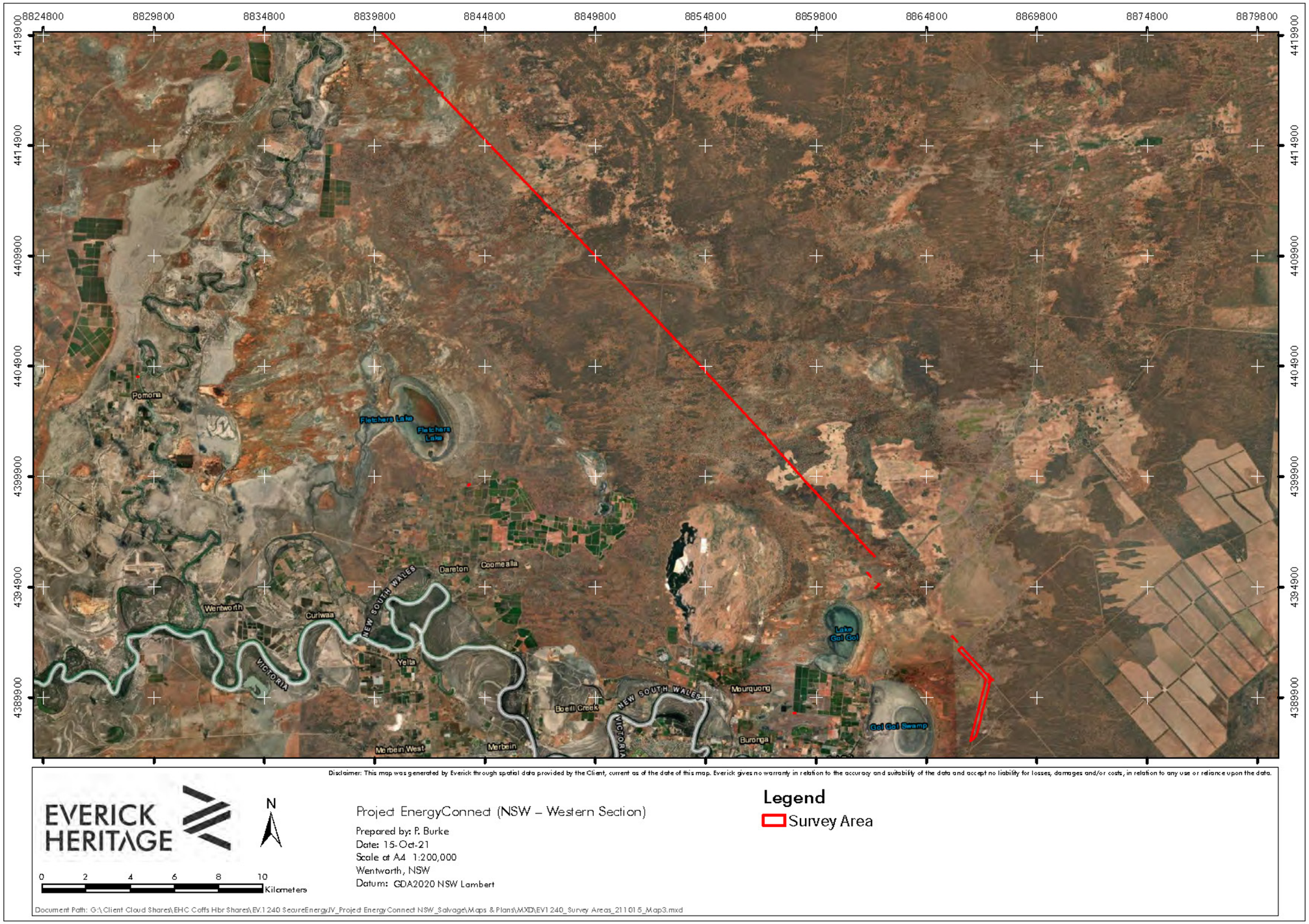


Figure 1-3: Areas requiring further survey along the Project area – Anabranch/Darling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Boeill Creek
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VICTORIA
Gol Gol Swamp
Buronga
Merbein West
Merbein
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Prepared by: P. Burke
Date: 15-Oct-21
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Figure 1-4: Areas requiring further survey along the Project area – Buronga substation

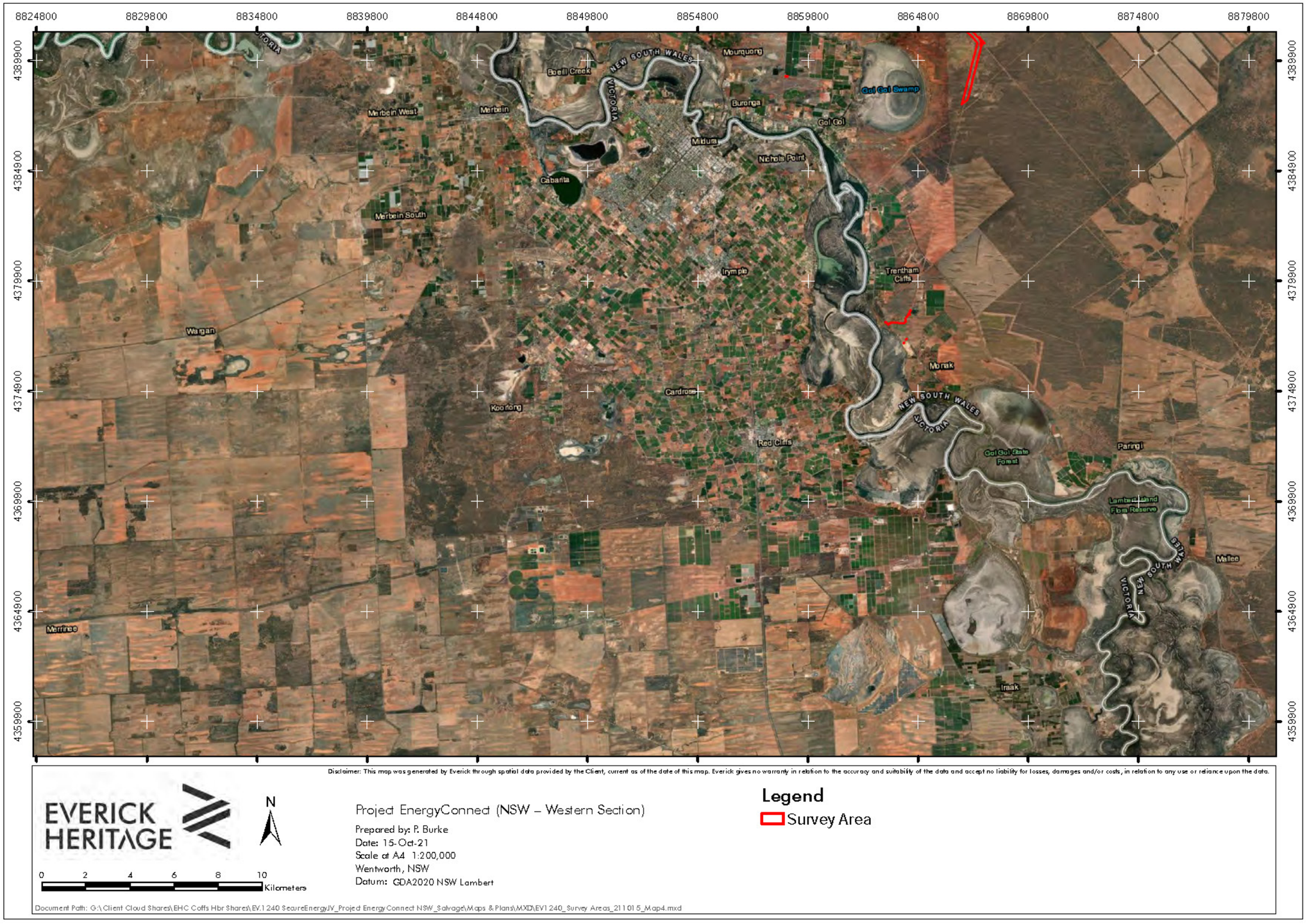

Figure 1-5: Areas requiring further survey along the Project area – Murray River

2. 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:

- Ernest Mitchell, Russell Taylor, and James Toomey (Dareton Local Aboriginal Land Council)
- Warren Clark, Warwick Clark, Alynthia Kennedy and Malcolm Mathers (Barkandji Native Title Group Aboriginal Corporation)
- Roland J Smith and Nicholas Smith (Barkindji-Maraura Elders Council)
- Colin Mitchell
- Rodney Lawson
- Arthur Kirby
- Ricky Handy
- Damien Kennedy.

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)

Landform	Landform area (square metres)	Area effectively surveyed (square metres) (effective coverage)	Percentage of landform effectively surveyed (area effectively surveyed / landform area x 100)	Number of sites recorded
Alluvial Flats	450,934.69	163,185.80	36.19	7
Backflow/Paleo Flood Channel	58,301.62	36,349.82	62.35	1
Depression	2,551,868.55	1,463,276.31	57.34	15
Dry Lake/Basin	79,025.28	38,020.18	48.11	1
Dune	204,921.24	158,446.87	77.32	1
Dune/Lunette (lake adjacent)	40,612.29	21,417.25	52.74	2
Dune fields	1,200,280.56	360,084.17	30.00	0
Floodplain	889,589.26	431,843.88	48.54	27
Groundwater Discharge Basin	635,221.36	101,635.42	16.00	0
High Bank (floodplain adjacent)	55,049.36	29,279.48	53.19	2
Low Dune	34,883.90	21,179.53	60.71	2
Riverbank	191,615.12	89,203.41	46.55	8

Landform	Landform area (square metres)	Area effectively surveyed (square metres) (effective coverage)	Percentage of landform effectively surveyed (area effectively surveyed / landform area x 100)	Number of sites recorded
River Channel	21,568.55	10,175.77	47.18	0
Undulating Sandplain	11,612,603.75	6,361,092.57	54.78	22
Undulating Sandplain North of Lake Victoria	1,853,196.30	805,667.70	43.47	44
Total	**19879671.84**	**10090858.16**	**50.76**	**132**

4.2.5. Results

NOHC (2021a) recorded 131 new sites and 28 PADs as a result of the survey. A breakdown of site types by number and percentage is provided in Table 4-2. The locations specified for six previously recorded AHIMS sites comprising four artefact scatters, one scarred tree and one scarred tree/artefact site (AHIMS ID 39-6-0029, 39-6-0023, 39-6-0030, 39-6-0026, 46-3-0086, 39-6-0022) were inspected but none of the sites could be relocated.

Table 4-2: Site type by number and percentage recorded by NOHC (2021a)

Site type	Number	Percentage
Artefact scatter	34	25.95
Scarred tree	30	22.90
Isolated finds	29	22.14
Hearths	12	9.16
Artefact scatter; Hearth	8	6.11
Shell middens	6	4.58
Artefact scatter; Shell midden	6	4.58
Artefact scatter; Shell midden; Hearth	2	1.53
Isolated find; Shell midden	2	1.53
Isolated find; Hearth	1	0.76
Glass artefact scatter	1	0.76
Total	**131**	**100.00**

The following general observations were made by NOHC (2021a) regarding the results of their survey:

- 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.

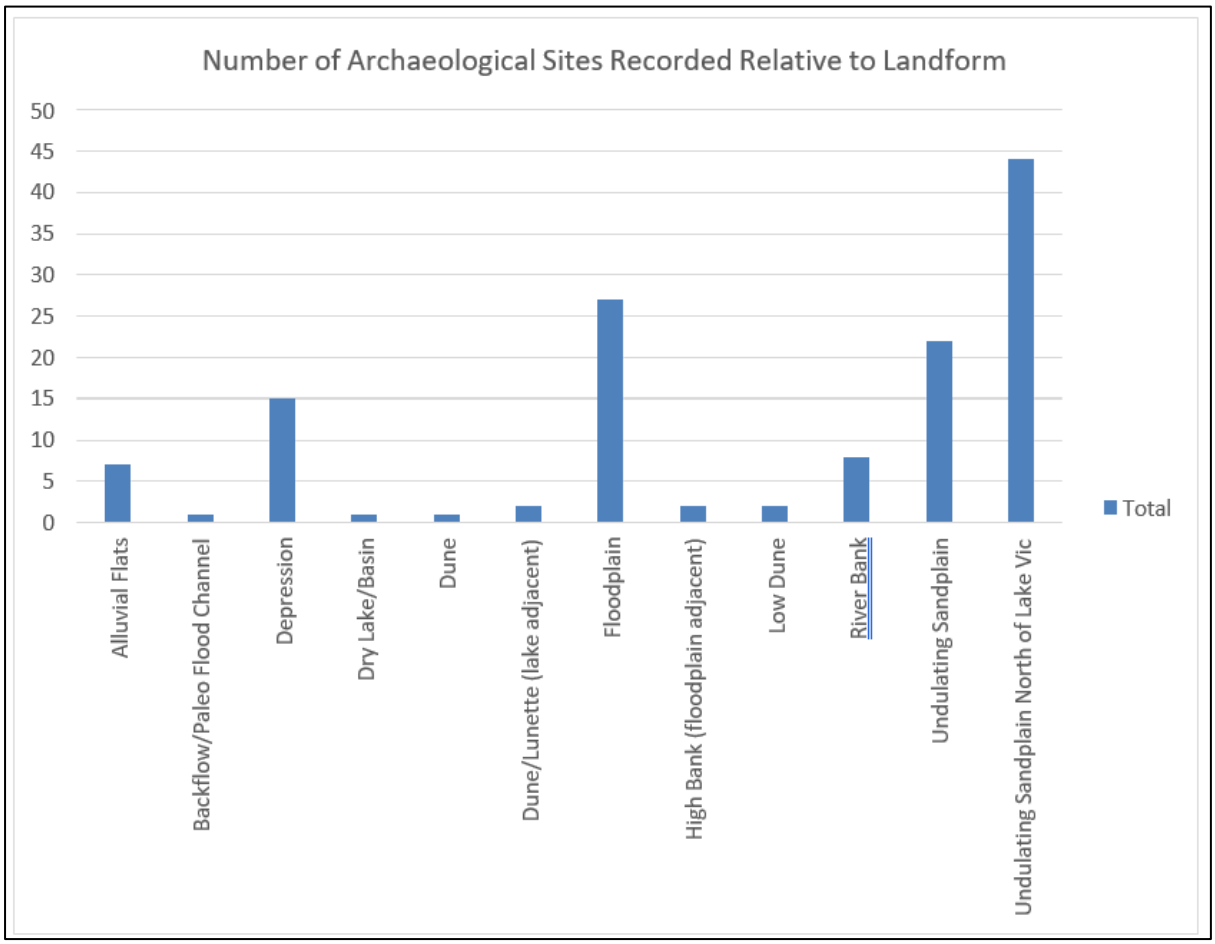

Figure 4-1: Number of archaeological sites recorded relative to landform (NOHC 2021a: Figure 8.8)

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).

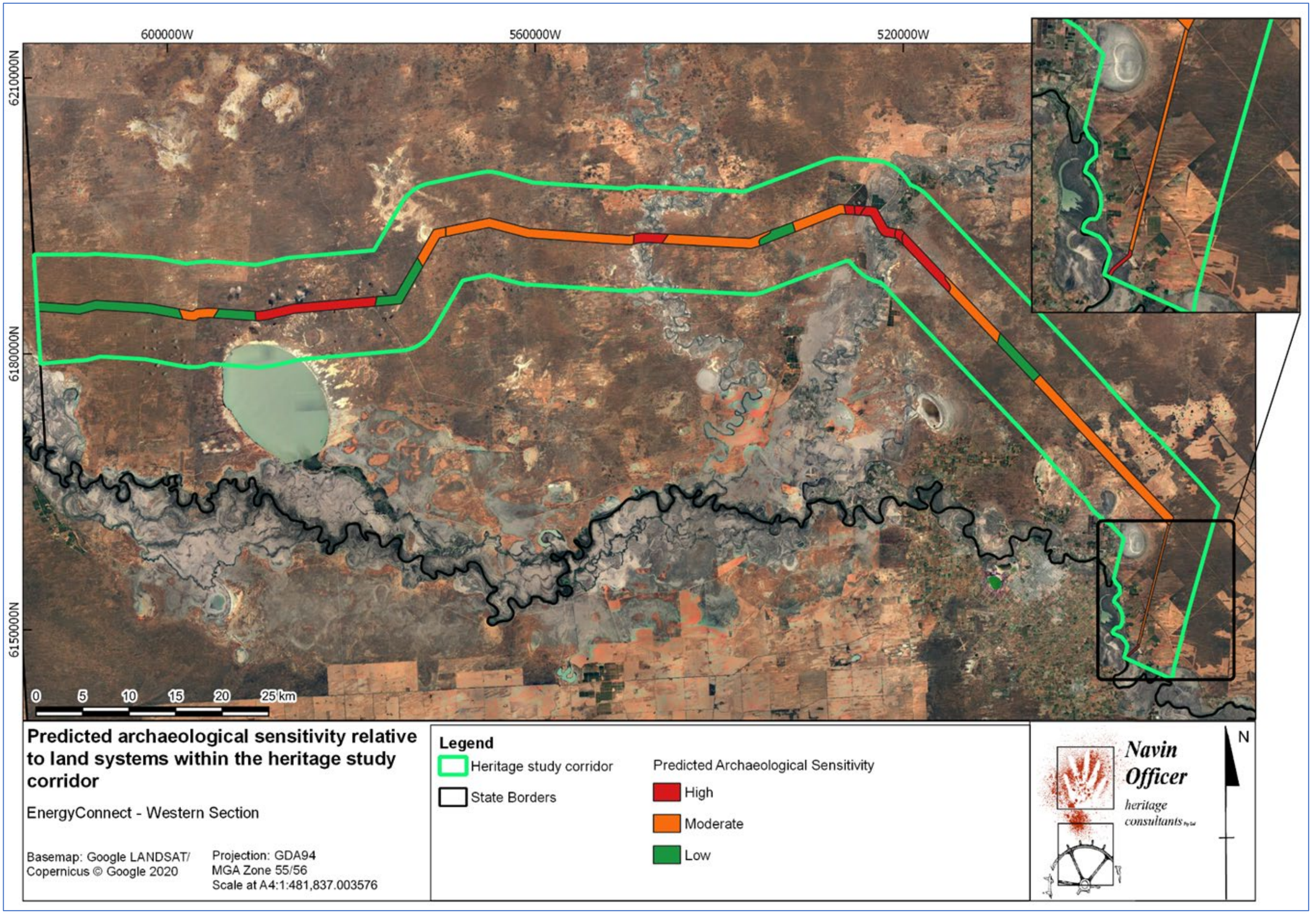

Figure 4-2: Predicted archaeological sensitivity relative to land systems within the proposal study area (NOHC 2021a: Figure 6.6)

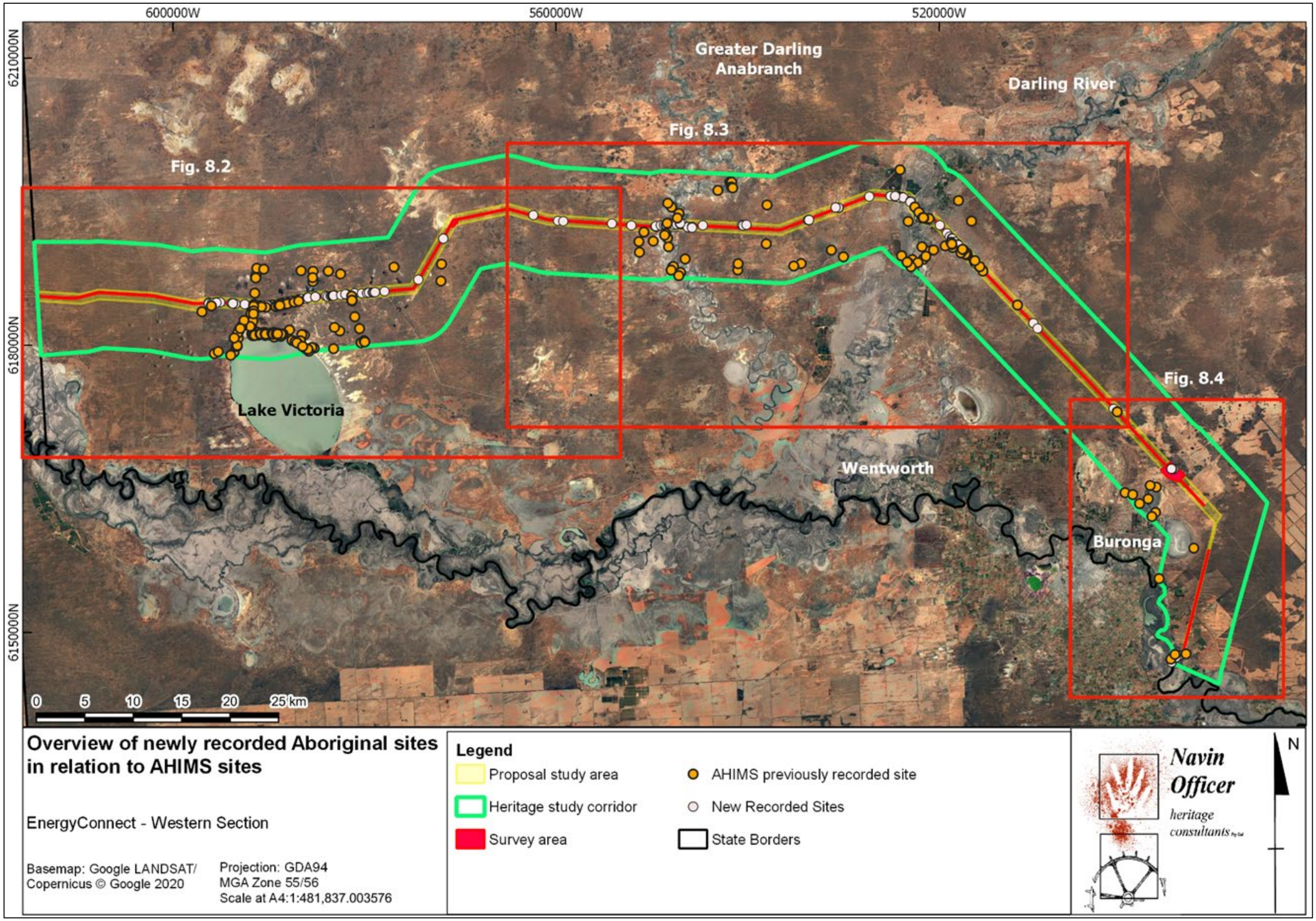

Figure 4-3: Overview of newly recorded Aboriginal sites in relation to AHIMS sites (NOHC 2021a: Figure 8.1)

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

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Sandplains						
Belvedere	Be	Undulating sandplain with broad, low, linear, east-west trending dunes and broad swales. Vegetation comprises clumped Belah, Rosewood and Sugarwood, Narrow-leaf Hopbush and shrubs	Open campsites, scarred trees, hearths, isolated hearths, isolated artefacts	Margins of Anabranch, margins of depressions	The sandplain and swales comprise deep red earthy sands and solonized brown soils. The dunes are deep siliceous sands and calcareous red earths.	Moderate
Bulgamurra	Bm	Extensive undulating sandplain with areas of east-west trending dunes and rises and open calcareous flats with scattered swamps and depressions. The sandplain comprises clumps of Belah, Rosewood, scattered Wilga and Nelia. Dunes have White Cypress Pine or Mallee and Porcupine Grass. Swamps and with fringing Black Box	Open campsites, isolated hearths, isolated artefacts	Margins of Canally and Riverland, margins of depressions & swamps, linear dunes	The sandplain comprises solonized brown soils. Dunes have deep brownish sands. Swamps and depressions comprise grey cracking clays	Low - Moderate
Hatfield	Hf	Extensive undulating sandplains with east-west trending dunes and depressions. Vegetation comprises clumped Rosewood and Belah, dense Bluebush and Bladder Saltbush on the plains, clumped White Cypress Pine, Prickly Wattle and Bluebush on the dunes and Nitre Goosefoot, Dillon Bush and Canegrass in the depressions.	Open campsites	Margins of land systems containing depressions; scalds	The plains comprise solonized brown soils, red and brown texture-contrast soils and red earths with deep brownish sands on the dunes	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
					and grey clays in the depressions	
Menilta	Mt	Undulating partially scalded sandplain with unstable dunes adjacent to the Darling River floodplain. There are depressions and swamps in the transitional zone between floodplain and sandplain. Sandplain vegetated with scattered Belah, Rosewood and White Cypress Pine. There is Black Box around the depressions and scattered Black Bluebush, variable Speargrass, burrs and forbs	Open campsites, scarred trees, hearths, isolated artefacts, burials	Margins of depressions in Canally/ margins of Darling, particularly dunes	Sandplain is of loamy brown soils, siliceous sands and brown and red texture-contrast soils. Grey cracking clays in depressions and swales	Moderate
Overnewton	Ov	Extensive undulating open sandplains with clumps of Belah or Rosewood, scattered Bluebush and shrubs. The sandy rises have Mallee and White Cypress Pine or Nelia, grasses and forbs	Open campsites, scarred tree, hearths	Scalded sandplain at margin of Anabranch/sandy rises near Anabranch	Sandplains with loamy brown soils and dunes and rises of deep brownish sands	Moderate
Roo Roo	Rr	Undulating sandplain with isolated rises and circular depressions. The latter are mainly restricted to the sloping margins of the Ana Branch lakes system. There is scattered belah and rosewood, dense bluebush, grasses, burrs and forbs.	Open campsites, shell middens, burials	Sandy rises and dunes (burials) adjacent to Lacustrine and riparian landsystems. Erosional surfaces in inter-lake areas and margins of depressions and pans/sandy rises and dunes (open	The sandplain comprises loamy red texture-contrast soils and brown solonized soils with grey cracking clays in the depressions and deep brownish and siliceous sands on the dunes and rises	High

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
				campsites. Middens are likely to occur on the crests of dunes and within 400 m of depressions or pans		
Trelega	Te	Sandplains with east-west trending dunes and associated flats and swales. Plains and swales have stands of dense Belah scattered Rosewood, Wilga, dense Bluebush and dense Mallee and Spinifex on dunes	Open campsites	Associated with localised claypans and depressions	Plains and swales with highly calcareous solonized brown soils and deep earthy sands	Low
Dunefields						
Arumpo	Ap	Long, linear, east-west trending parallel dunes and sandplain with narrow swales and flats merging to level sandplains. The dunes are vegetated with dense mallee and porcupine grass, swales with Belah, Rosewood and shrubs; the sandplains with grasses and forbs.	Isolated artefacts, isolated hearths	Interdunal swales	Dunes comprise deep brownish and calcareous sands; swales have highly calcareous brown soils and texture-contrast soils; sandplains have brown solonized soils and calcareous red earths	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Haythorpe	Hy	Undulating sandplains with well developed linear, east-west trending dunes with narrow swales. Large lakes are often associated with the sandplains. Scattered Belah, dense clumps of Narrow-leaf Hopbush and Turpentine, Black Bluebush, Speargrass, burrs and forbs.	Open campsite, scarred tree, shell midden	Margins of sinks or depressions	Red sandy earths, calcareous red earths, sands and solonized brown soils	Low
Leaghur	Lh	Plains with unstable dunes and lunettes associated with major lakes (eg Lake Victoria). Sandplains and dunefields with Belah and Rosewood with scattered Bluebush	Open campsites, shell middens, waterholes/wells, burials. Faunal remains often occur within midden/burial. Likely to contain stratified sediments with numerous exposures of archaeological deposit dating to the late Pleistocene.	Most erosional exposures associated with lunettes, dunes, plains and swamps. One of the most archaeologically sensitive and culturally significant areas in southwest NSW	Plains of red texture contrast soils, deep brownish sands and red sandy earths. Dunes and sand drifts of deep siliceous and calcareous sands. Swamps of grey cracking clays and fringing red texture contrast soils.	High
Mandelman	Mm	Parabolic and unaligned dunes merging into sandplains. Vegetation comprises dense mallee and porcupine grass, dense shrubs, grasses and burrs	Open campsites	None known	Dunes have deep siliceous and brownish sands while the plains and dune swales comprise solonized brown soils and red	Low

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
					texture-contrast soils.	
Alluvial Plains						
Anabranch	An	Ancestral channel of the Darling River comprising a floodplain of grey fine-textured alluvium, sinuous perennial river channels, riverside swamps and billabongs, elevated plains and backplains and riverside lunettes. There is scattered and clumped Black Box and River Red Gum along the channels. Lignum and Nitre Goosefoot occupy depressions. Prickly Wattle, Narrow-leaf Hopbush and occasional Bluebush occur on lunettes. There are abundant forbs and grasses over the system following flooding.	Open campsites, scarred tree, shell middens, isolated hearths	Riverside lunettes, channels & banks (terraces), floodplain	Grey cracking and silty compact clays on floodplain, channels and banks; brown duplex soils on levees, cemented sands on riverside lunettes	Moderate
Canally	Cy	Alluvial flats and dunes adjacent to the Darling River. There is Black Box, Lignum and Canegrass on the flats and Black Box, Belah, Mallee or Prickly Wattle on the dunes	Open campsites, scarred trees, isolated artefact, hearths, isolated hearths	Scalds on sandplains, margin of Anabranch land system, margins of drainage channels	Dunes comprise deep brownish sands. Flats and pans of the floodplains comprise grey cracking clays. Extensive aeolian backplains comprise red texture-contrast soils and solonized brown soils	High

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Darling	Dl	Lower Darling River and its floodplain. Landforms comprise the floodplain; levees and lunettes. There is sparse to moderate Black Box, River Red Gum and River Cooba; stands of Lignum, Nitre Goosefoot, Canegrass and Narrow-leaf Hopbush as well as Saltbush, burrs and forbs across the system	Open campsites, scarred trees, shell middens, isolated artefacts, hearths	River & creek margins, scalded plains & levees, floodplain	Grey cracking and non-cracking clays on the floodplain. Broen and red texture contrast soils on levees. Lunettes of deep, cemented siliceous and calcareous sands	High
Riverland	Rl	This is the active floodplain of the Murray River with associated billabongs, swamps, channels, levees and lunettes. There are Red Gums fringing the channels and Black Box, Lignum, Cooba and Nitre Goosefoot elsewhere	Open campsites, scarred trees, shell middens, isolated artefacts, hearths	River & creek margins, scalded plains & levees, floodplain	Self mulching and cracking grey clays in the depressions and on plains with deep brownish sands and brown soils on the lunettes and levees	Moderate
Wentworth	We	Floodplain if fine-grained Quaternary alluvium adjacent to the confluence of the Murray and Darling Rivers. Minor drainage lines with isolated source bordering dunes, depressions, scalded levees.	Open campsites; burials in dunes	Margins of swamps and along the margins of adjacent floodplain landsystems; isolated source bordering dunes	Plains with brown and grey cracking clays, some red sands and texture contrast soils and non-cracking clays	Low-moderate
Playas and Basins						

Land system	Symbol	Description	Expected site types	Archaeologically sensitive landforms	Nature of sediments	Overall archaeological sensitivity in relation to the Project
Huntingfield	Hu	Small relict groundwater discharge basins and lunettes with associated sandplains, copi islands and calcareous rises. These are essentially treeless basins although the rises and islands have scattered Belah and Mallee. The sandplains and lunettes have scattered Belah, Sugarwood and Rosewood	Open campsites, hearths, isolated hearths, isolated artefacts	Margins of basins, lunettes. Possibility of Pleistocene deposit in lunettes	Plains are of grey calcareous earths and lunettes are deeply cemented silicious sands	Moderate
Marona	Mo	Sandplains and dunefields with Mallee. Small relict lakes and pans with lunettes; extensive sandplain merging into dunefields. Mallee, Porcupine Grass; dense Bluebush on sandplains	Open campsites, hearths, isolated hearths, isolated artefacts	On eroded exposures along margins of basins and pans. Lunettes on around margins of lakes	Deep sands on lunettes and dunes; shallow on sandplain and eroded exposures; grey clays on lakes and pans	Unknown

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

Burials will generally be found in lunettes and sand bodies, such as, source bordering dunes, point bar deposits and sandy riverbanks/escarpments. A variety of burial practices occur throughout time and include flexed, extended and cremated inhumations with the most common comprising extended inhumations with an east-west attitude. Bundle burials appear to be restricted to the late Holocene (Pardoe 1995: 704). Isolated burials are likely to date anywhere from around 25,000 years BP through to the time of early European settlement. Those dating between 25,000-14,000 will most likely be preserved in the lower lunette sediments around the lake systems. Burials in identified 'cemeteries' will predominantly comprise male skeletal remains but there will be proportionately more children than comprise single burials. Burials in 'cemeteries may be as old as 14,000 years BP but will more likely post-date 7,000 years BP. Dates for burials in the study region are summarised in Pardoe (1995: Table 2), and range from around 6,500 years through to 350 years.

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.*

Table 5-1: Revised mitigation measures 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. These surveys will be carried out in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (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	Detailed design and construction	All locations

- 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

Land system name	Code	Archaeological sensitivity	Landforms of archaeological sensitivity	Survey area (square metres)
Anabranch	An	Moderate	Riverside lunettes, channels & banks (terraces), floodplain	1,847
Arumpo	Ap	Low	Interdunal swales	23,375
Belvedere	Be	Moderate	Margins of An, margins of depressions	34,125
Bulgamurra	Bm	Low-modertae	Margins of Cy and Rl, margins of depressions & swamps, linear dunes	740,609
Canally	Cy	High	Scalds on sandplains, margin of Anabranch land system, margins of drainage channels	65,044
Darling	Dl	High	River & creek margins, scalded plains & levees, floodplain	28,158
Hatfield	Hf	Low	Margins of land systems containing depressions, scalds	14,182
Huntingfield	Hu	Moderate	Margins of basins, lunettes. Possibility of Pleistocene deposit in lunettes	20,466
Haythorpe	Hy	Low	Margins of sinks or depressions	72,354
Leaghur	Lh	High	Most erosional exposures associated with lunettes, dunes, plains and swamps	3,761
Mandleman	Mm	Low	None known	48,412
Marona	Mo	Unknown but likely to be low	On eroded exposures along margins of basins and pans. Lunettes on around margins of lakes	10

Land system name	Code	Archaeological sensitivity	Landforms of archaeological sensitivity	Survey area (square metres)
Menilta	Mt	Moderate	Margins of depressions in Cy, margins of Darling, particularly dunes	23,842
Overnewton	Ov	Moderate	Scalded sandplain at margin of An, sandy rises near An	32,505
Riverland	Rl	Moderate	River & creek margins, scalded plains & levees, floodplain	339
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	13,302
Trelega	Te	Low	Localised claypans and depressions	33
Wentworth	We	Moderate	Margins of swamps and along the margins of adjacent floodplain land systems, isolated source bordering dunes	17,139
Total				**1,139,503**

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