

STEEL RIVER EAST BATTERY ENERGY STORAGE SYSTEM (BESS)
1 MCINTOSH DRIVE, MAYFIELD WEST, NSW

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

Report to Ausgrid

LGA: Newcastle

March 2025



PO Box 236, Nowra, NSW 2541 | heritage@apexarchaeology.com.au | www.apexarchaeology.com.au

ABN 56 625 618 993



Apex Archaeology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and in whose land this assessment took place, and to the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

This report contains confidential information which should not be made publicly available.

DOCUMENT CONTROL

The following register documents the development and issue of the document entitled 'Battery Energy Storage System (BESS) Site, Steel River East: Aboriginal Cultural Heritage Assessment Report', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared by	Reviewed by	Comment	Issue Date
1 – Draft	Marian Bailey & Leigh Bate	Jenni Bate	Client Review	9 January 2025
2 – Draft	Jenni Bate	Ausgrid	RAP Review	29 January 2025
3 – Final	Marian Bailey	RAPs	Issue of final	7 March 2025



EXECUTIVE SUMMARY

Apex Archaeology have been engaged by Ausgrid to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the construction of a Battery Energy Storage System (BESS) and associated infrastructure for the purpose of energy storage at 1 McIntosh Drive, Mayfield West (the site). The Project comprises the area of ground disturbing works within the site at Lot 16 DP270249, which is located within the Newcastle Local Government Area (LGA), approximately 120km northeast of Sydney.

As the project will be determined as part of a State Significant Development Application (SSDA), preparation of an ACHA is required to inform the Environmental Impact Statement (EIS) for the project to meet the Secretary's Environmental Assessment Requirements (SEARs) for the project. This ACHA has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (April 2011) (the Guide); the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010) (the ACHCRs), and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). It details the results of the archaeological assessment completed in accordance with the Code of Practice and the consultation undertaken with the Aboriginal community in accordance with the ACHCRs.

A total of 12 Aboriginal people and organisations registered an interest in being consulted for the project. The following list comprises the registered Aboriginal parties (RAPs) for the project:

- A & K Cultural Heritage Management
- Nukara Indigenous Cultural & Heritage
- Long Gully Cultural Services
- Didge Ngunawal Clan
- AT Gomilaroi Cultural Consultancy
- Widescope Indigenous Group
- Awabakal Traditional Owners Aboriginal Corporation
- Corroboree Aboriginal Corporation
- Awabakal Local Aboriginal Land Council
- Thomas Dahlstrom
- Murrabidgee Mullangari
- Lower Hunter Aboriginal Incorporated

Consultation with the RAPs has been conducted in accordance with the ACHCRs.

No previous archaeological investigations have been conducted within the site, however, many have taken place within the broader Newcastle region.



An archaeological survey was conducted on 22 November 2024 with Leigh Bate of Apex Archaeology, assisted by Kai-mani Hamnett of Awabakal Local Aboriginal Land Council (ALALC).

No surface artefact sites were identified within the Project area during the walkover survey. No areas of sub-surface archaeological potential were identified within the study area. Ground disturbance was extremely high within the entirety of the site. Evidence of disturbance relating to the substation construction, along with significant excavation and dumping of soils and likely landfill from the 1960s, along with significant reclamation along the south channel shore line, was identified from historical images. Vegetation growth was significant and precluded access to the majority of the western portion of the study area; however the Project area is situated on a completely modified landscape which retains no archaeological potential. The area is unlikely to have been an attractive area for Aboriginal site occupation, given its flood prone nature; however it may have been used as a resource gathering area.

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the project:

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the Aboriginal archaeological potential of the Site, which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities.

RECOMMENDATION 2: DEVELOPMENT BOUNDARIES

The proposed development must be contained within the boundaries assessed for this ACHAR. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this ACHAR, further investigation of those areas must be undertaken.

RECOMMENDATION 3: STOP WORK PROVISION

Should unanticipated Aboriginal archaeological material be encountered during construction of the Project, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the



assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

This recommendation should be included in the Project's Construction Environmental Management Plan (CEMP).

RECOMMENDATION 4: REPORTING

One digital copy of this report should be forwarded to Heritage NSW by the consultant for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the RAPs for the project.



GLOSSARY OF TERMS

Aboriginal Object	An object relating to the Aboriginal habitation of NSW (as defined in the NPW Act), which may comprise a deposit, object or material evidence, including Aboriginal human remains.
ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRs	<i>Aboriginal cultural heritage consultation requirements for proponents 2010</i>
AHIMS	Aboriginal Heritage Information Management System maintained by Heritage NSW, detailing known and registered Aboriginal archaeological sites within NSW
AHIP	Aboriginal Heritage Impact Permit
ASIRF	Aboriginal Site Impact Recording Form
BP	Before Present, defined as before 1 January 1950.
BESS	Battery Energy Storage System
Code of Practice	The DECCW September 2010 <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i>
Consultation	Aboriginal community consultation in accordance with the DECCW April 2010 <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> .
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECCW	The Department of Environment, Climate Change and Water (now Heritage NSW)
Disturbed Land	If land has been subject to previous human activity which has changed the land's surface and are clear and observable, then that land is considered to be disturbed
EIS	Environmental Impact Statement
GSV	Ground Surface Visibility
the Guide	<i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i>
Harm	To destroy, deface or damage an Aboriginal object; to move an object from land on which it is situated, or to cause or permit an object to be harmed
Heritage NSW	Heritage NSW within the Department of Climate Change, Energy, the Environment and Water; responsible for overseeing heritage matters within NSW
ka	Kiloannus, a unit of time equating to 1,000 years
LALC	Local Aboriginal Land Council
LGA	Local Government Area
NPW Act	NSW <i>National Parks and Wildlife Act 1974</i>
NPWS	National Parks and Wildlife Service
OEH	The Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
Project Area	The project area is located within the site and comprises the area that will be physically disturbed for the construction and operation of the Project
RAPs	Registered Aboriginal Parties
SEARs	Secretary's Environmental Assessment Requirements
Site	Comprises the area of land owned by Ausgrid forming Lot 16 DP270249
SSDA	State Significant Development Application



CONTENTS

1.0	Introduction.....	1
1.1	Study Area	1
1.2	Project Brief	1
1.3	Purpose of the Aboriginal Cultural Heritage Assessment.....	5
1.4	Project Proponent.....	6
1.5	Investigators and Contributors	6
1.6	Limitations.....	6
1.7	Report Structure	7
2.0	Statutory Context.....	8
2.1	Commonwealth Legislation.....	8
2.1.1	Aboriginal and Torres Strait Islander Heritage Protection Act 1984.....	8
2.1.2	Environment Protection and Biodiversity Conservation Act 1999	8
2.1.3	Native Title Act 1993.....	9
2.2	New South Wales Legislation	9
2.2.1	National Parks and Wildlife Act 1974.....	9
2.2.2	National Parks and Wildlife Regulation 2019	10
2.2.3	Environmental Planning & Assessment Act 1979	10
2.2.4	Environmental Planning and Assessment Act 1979	10
2.2.5	Newcastle Local Environmental Plan 2012	11
3.0	Aboriginal Consultation Process	13
3.1	The Consultation Process	13
3.2	Stage 1 Consultation: Commencement	14
3.3	Stage 2 & 3 Consultation: Presentation and Gathering of Information.....	15
3.4	Stage 4: Review of Draft Report	17
4.0	Aboriginal Cultural Heritage	18
4.1	Existing Environment	18
4.1.1	Geology	18
4.1.2	Soil Landscapes	19
4.1.3	Hydrology	19
4.1.4	Flora and Fauna.....	20
4.2	Ethnohistory	20
4.2.1	Raw Materials.....	22



4.2.2	Procurement.....	24
4.2.3	Manufacture.....	25
4.3	Land Use History	25
4.3.1	Indigenous Occupation	25
4.3.2	Post Contact Occupation	26
4.4	Archaeological Context.....	31
4.4.1	AHIMS Results.....	31
4.5	Literature Review	31
4.5.1	Regional Heritage Assessments	31
4.5.2	Summary	32
4.6	Predictive Model	34
4.6.1	Regional Site Patterning.....	34
5.0	Field Work	40
5.1	Sampling Strategy.....	40
5.2	Site Inspection	40
5.3	Survey Coverage.....	40
5.4	Survey Results	43
6.0	Aboriginal Cultural Heritage Significance Assessment	49
6.1	Introduction	49
6.2	Criteria	49
6.3	Significance Assessment	50
6.4	Cultural Significance Assessment	52
6.5	Statement of Archaeological Significance.....	52
7.0	Impact Assessment	53
7.1	Proposed Development.....	53
7.2	Potential Impact	53
7.3	Justification.....	53
7.4	Ecologically Sustainable Development (ESD)	53
7.4.1	Intergenerational Equity.....	54
7.4.2	Cumulative Impacts.....	54
7.5	Aboriginal Community Input.....	55
8.0	Management, Mitigation and Recommendations.....	56
8.1	Guiding Principles	56



8.1	Harm Avoidance	56
8.2	Restricted Information and Confidentiality.....	56
9.0	Recommendations	57
10.0	Bibliography	59

APPENDICES

Appendix A: Correspondence Log

Appendix B: Step 1 Letters and Responses

Appendix C: Step 2 Letters and Responses

Appendix D: Advertisement

Appendix E: Methodology, Cover Letters and Responses

RAP Correspondence

Appendix F: Draft Report Emails and Responses

Appendix G: AHIMS Search Results

FIGURES

Figure 1: Study area in its regional context	3
Figure 2: Study area in its local context and proposed works layout (Source: AECOM 2025).....	4
Figure 3: Detail of Newcastle LEP 2012 Heritage Map. Study area outlined in yellow dashes (Source: NSW Planning Portal Spatial Viewer)	12
Figure 4: The Strahler system (Source: Department of Planning and Environment 2016).....	19
Figure 5: Detail of 1954 aerial imagery over study area (approx location circled in red)	29
Figure 6: Detail of 1965 aerial imagery over study area (approx location circled in red)	29
Figure 7: Detail of 1975 aerial imagery over study area (approx location circled in red)	30
Figure 8: Detail of 2000 aerial imagery over study area (approx location circled in red)	30
Figure 9: Survey transect within the study area.....	42



1.0 INTRODUCTION

Apex Archaeology have been engaged by Ausgrid to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed construction of a Battery Energy Storage System (BESS) at 1 McIntosh Drive, Mayfield West. The site is located within the Newcastle Local Government Area (LGA).

As the project will be determined as part of a State Significant Development Application (SSDA), preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) is required to inform the Project's Environmental Impact Statement (EIS), as per the Project's Secretary's Environmental Assessment Requirements (SEARs). This report comprises the ACHAR, and has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (April 2011) (the Guide); the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010) (the ACHCRs), and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). It details the results of the archaeological assessment completed in accordance with the Code of Practice and the consultation undertaken with the Aboriginal community in accordance with the ACHCRs.

1.1 STUDY AREA

The study area (also referred to as the site in the Project EIS) is located at 1 McIntosh Drive, Mayfield West, NSW, within the Newcastle LGA, approximately 120 km northeast of Sydney (Figure 1). Regionally, the site is situated within an industrial precinct of Mayfield West, near the South Channel of the Hunter River. Locally, the study area is bound by McIntosh Drive to the south, Tourle Street to the east, Laurie Place to the west, and an industrial complex and the South Channel of the Hunter River to the north (Figure 2). The Project area comprises the area within the site that will be physically disturbed for construction and operation of the Project, and comprises approximately 4.12 hectares adjacent to an existing electrical substation.

1.2 PROJECT BRIEF

The proposed BESS is critical to improving energy reliability and storage capacity within the national electricity market (NEM), aligning with state and national energy strategies. The BESS will play a significant role in supporting the transition to renewable energy, enhancing grid stability, and meeting the increasing energy demands of this industrial and urban region. The assessment will inform an SSDA under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979*. This report has been prepared to support the EIS required for the Project and to meet the SEARs. Specifically, the SEARs require preparation of an ACHAR to describe and assess any impacts on any Aboriginal cultural heritage values on the land.

The SEARs require the following with regard to Heritage:



- [Preparation of] An Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011) and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010), identifying, describing, and assessing any impacts to any Aboriginal cultural heritage sites or values associated with the site (including impacts from any proposed earth works, construction works and road upgrades), including results of archaeological test excavations (where required), undertaken in accordance with the relevant standards and requirements;
- Evidence of adequate consultation with Aboriginal communities in determining and assessing impacts, identifying and selecting options for avoidance of Aboriginal cultural heritage and identifying appropriate mitigation measures (including the final proposed measures), having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, April 2010).





Figure 2: Study area in its local context and proposed works layout (Source: AECOM 2025)



1.3 PURPOSE OF THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT

The archaeological investigation was undertaken to meet the requirements of the Code of Practice and ACHCRs, as well as the SEARs.

The purpose of the archaeological investigation is to understand and establish the potential harm the Project may have on Aboriginal cultural heritage within the study area, both tangible and intangible.

Aboriginal community consultation was undertaken for the Project with the aim of:

- Identifying the Aboriginal community members who can speak for Country within which the Project is located;
- Involving the Aboriginal community in making decisions about the management of their cultural heritage;
- Identifying, assessing and recording Aboriginal heritage values within the study area;
- Preparing an assessment of the cultural heritage values in consultation with the Aboriginal community;
- Identifying the potential impact of the proposed development on the assessed cultural heritage values; and
- Developing conservation and mitigation strategies for these values, with the aim of minimising impacts to cultural heritage wherever possible.

In addition, this report provides a significance assessment of the identified Aboriginal heritage values, as defined by the registered Aboriginal stakeholders (RAPs) for the Project. Aboriginal people are the primary determinants of the significance of their cultural heritage and therefore Apex Archaeology cannot make a determination on the cultural significance without the input of the RAPs.

Any development works which disturb the ground surface have the potential to impact Aboriginal archaeological deposits and therefore an assessment of whether the study area contains such deposits is required prior to the commencement of construction works. An assessment of whether the proposed development would impact these deposits (if present) is also necessary, and identification of the extent to which the deposits would be impacted is also required. The degree of impact which may be allowable is determined, in part, with consideration of the level of cultural significance attributed to the cultural values of the study area, both tangible and intangible. These factors are considered within this report.

This assessment considers existing and newly identified sites within the study area and determination of whether these could be avoided by any further works within the study area, as well as detailing consultation with the Aboriginal community in order to determine the cultural significance of the area.



1.4 PROJECT PROPONENT

The proponent for the Project is Ausgrid. The Project manager was Radha Rockwood.

1.5 INVESTIGATORS AND CONTRIBUTORS

This archaeological assessment was commissioned by Ausgrid. Apex Archaeology thanks Radha Rockwood for her assistance with the Project. Thanks are also extended to the registered Aboriginal groups for their participation and assistance with the Project.

This report has been prepared by Marian Bailey, Archaeologist with Apex Archaeology and Leigh Bate, Director and Archaeologist with Apex Archaeology. The report was reviewed by Jenni Bate, Director and Archaeologist with Apex Archaeology. Marian has seven years of archaeological research experience, including four years in archaeological consulting. Leigh and Jenni have over eighteen years of archaeological consulting experience within NSW. Project team roles and qualifications are shown in Table 1.

Table 1: Project team roles and qualifications

Name	Role	Qualifications
Leigh Bate	Project Manager; Report Author; Field Inspection; GIS	B.Archaeology; Grad. Dip. CHM
Jenni Bate	Report Review	B.Archaeology; Grad. Dip. Arch; Dip. GIS
Marian Bailey	Report Author	B. Arts, Archaeology; M.AHM, PhD

1.6 LIMITATIONS

This report relies in part on previously recorded archaeological and environmental information for the wider region. This includes information from the Aboriginal Heritage Information Management System (AHIMS), which is acknowledged to be occasionally inaccurate, due to inaccuracies in recording methods. No independent verification of the results of external reports has been made as part of this report.

Field investigations for this report included survey. The results are considered to be indicative of the nature and extent of Aboriginal archaeological remains within the study area, but it should be noted that further Aboriginal objects and sites which have not been identified as part of this assessment may be present within the wider study area.

It is recognised that Aboriginal people are the primary determinants of the significance of their cultural heritage, and as such, Apex Archaeology have relied on the Aboriginal community to provide cultural knowledge regarding the site, where they are willing and able to share such knowledge. However, there may be occasions where RAPs are unwilling or unable to share cultural knowledge regarding the site and thus our assessment of significance relies on scientific assessment only.

This report assesses Aboriginal cultural heritage matters only. No assessment of historical heritage has been made as part of this ACHA.



1.7 REPORT STRUCTURE

This report addresses the requirements of the Guide, the Code of Practice and the ACHCRs. The Guide provides guidance as to what must be contained in an ACHAR. The following outlines how the requirements of both the Guide and the Code of Practice have been addressed in this report. The report has also been prepared in accordance with Requirement 11 of the Code of Practice.

Section 1 of this report outlines the study area, Project brief, details of the proponent, and investigators and contributors to this report.

Section 2 outlines the statutory context and applicable legislation to Aboriginal heritage assessment and management.

Section 3 details the consultation undertaken with the Aboriginal community in accordance with the requirements of the ACHCRs and the NPW Regulation 2019.

Section 4 reviews existing knowledge, including landscape context, previous archaeological work, and provides a predictive model of Aboriginal occupation, in accordance with Requirements 2, 3 and 4 of the Code of Practice.

Section 5 provides details of the fieldwork undertaken for the Project, in accordance with Requirements 5, 7, 8, 9 and 10 of the Code of Practice.

Section 6 makes an assessment of significance for the Project, in accordance with Section 3.4 of the Guide and Section 4.3 of the ACHCRs.

Section 7 details the impact assessment of the proposed works on Aboriginal cultural heritage, in accordance with Section 2.5 of the Guide.

Section 8 provides management and mitigation measures to avoid or minimise harm in accordance with Sections 2.6 and 2.7 of the Guide.

Section 9 details the recommendations made for the Project.



2.0 STATUTORY CONTEXT

Heritage in Australia, including both Aboriginal and non-Aboriginal heritage, is protected and managed under several different Acts. The following section presents a summary of the applicable Acts which provide protection to cultural heritage within NSW.

2.1 COMMONWEALTH LEGISLATION

2.1.1 ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984

This Act provides for the preservation and protection of injury and/or desecration of areas and objects in Australia and its waters that are of significance to Aboriginal people, in accordance with Aboriginal tradition.

Under this Act, the responsible Minister has provision to make both temporary and/or long-term declarations, in order to provide protection to areas and objects which are at threat of injury or desecration. In some instances, this Act can override State or Territory provisions, or be invoked if State or Territory provisions are not enforced. An Aboriginal or Torres Strait Islander individual or organisation must invoke the Act.

No items within the study area are listed or protected under this Act.

2.1.2 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The EPBC Act provides protection to items of national significance, including places with cultural heritage values that contribute to Australia's national identity. The Act aims to respect the role of Indigenous peoples in the conservation and ecologically sustainable use of Australia's biodiversity, and to enhance the protection and management of important natural and cultural places. Additionally, the Act is designed to promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

The National Heritage List (NHL) provides a listing of natural, historic and Indigenous places of outstanding significance to the nation, while the Commonwealth Heritage List (CHL) details the Indigenous, historic and natural places owned or controlled by the Australian Government.

The Register of the National Estate (RNE) is a former statutory register that is no longer in force; however listings can still be searched. The listings on the RNE did not automatically transfer to the NHL.

Under the EPBC Act, approvals are required if any action is proposed that will have (or is likely to have) a significant impact on the National Heritage values of a National Heritage place. In such an event, the action must be referred to the Australian Government Minister for the Environment and Water. The Minister makes a decision as to whether the proposed action will have a significant impact on any matters of



national significance. If so, the action is considered a controlled action and additional assessment may be required.

A search of both the NHL and the CHL did not identify any listed items within the study area.

2.1.3 NATIVE TITLE ACT 1993

The *Native Title Act 1993*, as amended, provides protection and recognition for Native title. Native title is recognised where the rights and interests of over land or waters where Aboriginal and Torres Strait Islander practiced traditional laws and customs prior to the arrival of European settlers, and where these traditional laws and customs have continued to be practiced.

The National Native Title Tribunal (NNTT) was established to mediate native title claims made under this Act. Three registers are maintained by the NNTT, as follows:

- National Native Title Register
- Register of Native Title Claims
- Register of Indigenous Land Use Agreements.

Searching the NNTT registers allows identification of potential Aboriginal stakeholders who may wish to participate in consultation.

A search of all three registers via Native Title Vision did not identify any claims over the study area.

2.2 NEW SOUTH WALES LEGISLATION

2.2.1 NATIONAL PARKS AND WILDLIFE ACT 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides protection for all Aboriginal objects and places within NSW. Aboriginal objects are defined as the material evidence of the Aboriginal occupation of NSW, while Aboriginal Places are defined as areas of cultural significance to the Aboriginal community. All Aboriginal objects are protected equally under the Act, regardless of their level of significance. Aboriginal Places are gazetted if the Minister is satisfied that the location was and/or is of special significance to Aboriginal people.

Following amendments to the NPW Act in 2010, approval to impact Aboriginal cultural heritage sites is only granted under a Section 90 Aboriginal Heritage Impact Permit (AHIP), which is granted by Heritage NSW, which is part of the NSW Department of Climate Change, Energy, the Environment and Water. However, the requirement for an AHIP to permit harm to Aboriginal objects or places is 'turned off' for SSD projects, as described below.



2.2.2 NATIONAL PARKS AND WILDLIFE REGULATION 2019

Part 5, Division 2 of the *National Parks and Wildlife Regulation 2019* addresses Aboriginal objects and places in relation to the NPW Act 1974, and outlines how compliance with relevant codes of practice can be met.

Clause 58(1) outlines the defence of low impact acts or omissions to the offence of harming Aboriginal objects, which includes:

- maintenance works on existing roads and fire trails,
- farming and land management work,
- grazing of animals,
- activities on land that has been disturbed that is exempt or complying development,
- mining exploration work,
- removal of vegetation (aside from Aboriginal culturally modified trees),
- seismic surveying or groundwater monitoring bores on disturbed ground, or
- environmental rehabilitation work (aside from erosion control or soil conservation works such as contour banks).

Clause 58(4) outlines the definition of ‘disturbed land’, as land that “has been the subject of a human activity that has changed the land’s surface, being changes that remain clear and observable”.

Clause 59 relates to the notification of Aboriginal objects and sites and Clause 60 relates to the requirements for the consultation process to support an AHIP application. The regulation sets out the requirements broadly in line with those outlined in the ACHCRs.

2.2.3 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

Under the EP&A Act, it is necessary to consider environmental impacts, including impacts to cultural heritage, as part of the development assessment process. Under this Act councils are required to maintain a list of locally significant heritage items as part of their local environment plan (LEP).

The Project will be assessed as a State Significant Development (SSD) under Part 4, Division 4.7 of the EP&A Act. The consent authority for SSD is the Minister for Planning and Public Spaces or the Independent Planning Commission (IPC).

2.2.4 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Part 4, Division 4.7 State Significant Development outlines the requirements for assessment of SSD projects. Section 4.41 outlines approvals and legislation that do not apply to SSD projects. This section states:

1. The following authorisations are not required for State significant development that is authorised by a development consent granted after



- the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply)-
- a) (repealed)
 - b) A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*
 - c) An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*
 - d) **An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1997***
 - e) (repealed)
 - f) A bush fire safety authority under section 100B of the *Rural Fires Act 1997*
 - g) A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.
2. Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of State significant development that is authorised by a development consent granted after the commencement of this Division.
 3. A reference in this section to State significant development that is authorised by a development consent granted after the commencement of this Division includes a reference to any investigative or other activities that are required to be carried out for the purposed of complying with any environmental assessment requirements under this Part in connection with a development application for any such development.

In accordance with this Act, there is no requirement to obtain consent from Heritage NSW under the provisions of s.90 of the NPW Act if impact to Aboriginal cultural heritage values cannot be avoided.

2.2.5 NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2012

The Newcastle LEP 2012 is the relevant local planning instrument applicable to the Newcastle LGA. Clause 5.10 of the Newcastle LEP 2012 outlines provisions for heritage conservation, including Aboriginal cultural heritage. Specifically, Clause 5.10(1) aims to conserve Aboriginal objects and Aboriginal places of heritage significance, ensuring that these values are considered during development. Clause 5.10(2) states that development consent is required for activities such as disturbing or excavating an archaeological site, erecting a building on land containing an Aboriginal object, or carrying out works within an Aboriginal place of heritage significance.

Despite these local provisions, the Project is being assessed as SSD under Part 4, Division 4.7 of the EP&A Act. Under Section 4.41 of the EP&A Act, SSD projects are exempt from certain approvals, including the requirement for an AHIP under Section 90 of the NPW Act. This legislative provision ensures that the SSD process supersedes local controls, including the requirements of the Newcastle LEP 2012.

Although the Newcastle LEP 2012 does not directly apply to the Project due to its SSD classification, the principles of heritage conservation remain critical to the assessment process. The ACHAR prepared for this Project will address the potential impacts on Aboriginal cultural heritage and outline appropriate measures for the protection and management of cultural values within the study area. This approach ensures compliance with state-level legislation while respecting the objectives of local heritage frameworks.

There are no known items of Aboriginal heritage significance identified within the LEP that fall within the current study area, although there is a general heritage item in the vicinity. This is a remnant garden, with local significance (Figure 3).

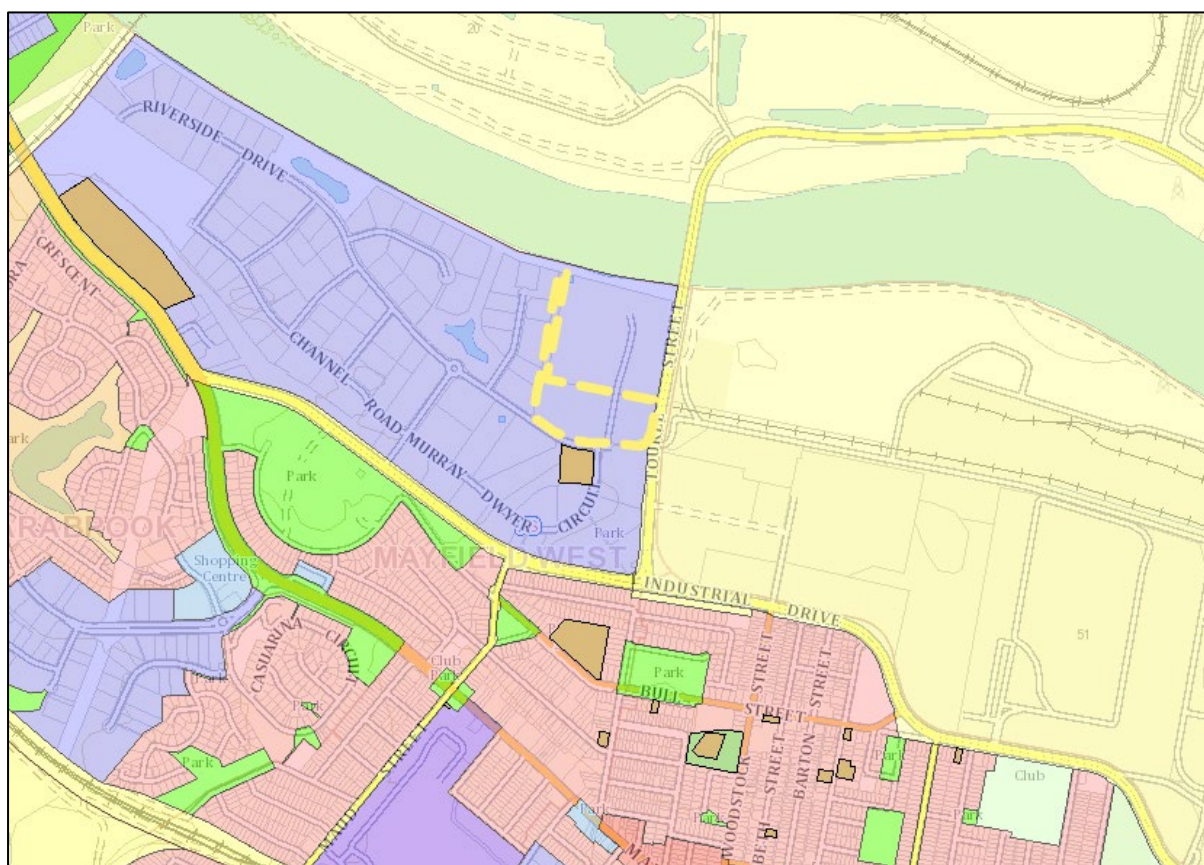


Figure 3: Detail of Newcastle LEP 2012 Heritage Map. Study area outlined in yellow dashes (Source: NSW Planning Portal Spatial Viewer)



3.0 ABORIGINAL CONSULTATION PROCESS

This section details the Aboriginal community consultation undertaken to assist in the heritage assessment of the study area. Aboriginal consultation in accordance with the ACHCRs was undertaken by Apex Archaeology for this Project.

Aboriginal community consultation is a requirement in order to make assessments of Aboriginal cultural values, as Aboriginal people are the primary determinants of the significance of their cultural heritage and therefore Apex Archaeology cannot make a determination on the cultural significance without the input of the RAPs. Aboriginal people often have a strong connection to their Country, and to their ancestors, both past and present.

Material evidence of past Aboriginal occupation of an area is a tangible link to the intangible traditions, lore, customs, beliefs and history. These intangible values provide a sense of belonging for Aboriginal people, and cultural heritage and cultural practices are kept alive through being incorporated into everyday life, which helps maintain a connection to the past and to the present. It is a vital part of the identity of Aboriginal people.

Therefore, it is important that Aboriginal people are afforded the opportunity to understand, comment on and have input into projects that may impact areas which may be culturally sensitive, or damage items of cultural significance. The process of Aboriginal community consultation provides this opportunity. This ACHAR details the results of the consultation undertaken for this Project.

3.1 THE CONSULTATION PROCESS

The ACHCRs provide the process for undertaking consultation with the Aboriginal community. This process includes identification, registration, engagement and consultation with those Aboriginal people who may have cultural knowledge which is relevant to determining the cultural significance of Aboriginal objects and places which may be within the study area.

The ACHCRs detail a number of stages for consultation, as follows:

- Identification of those people who should be consulted for the project
- Inviting Aboriginal people to register their interest in being consulted for the project
- Providing information regarding the nature and scope of the project to the Aboriginal people who have registered an interest in being consulted – the registered Aboriginal parties (RAPs)
- Providing opportunities for RAPs to comment on the proposed methodology for cultural heritage consultation
- Presenting information about the potential impacts of the proposed development for the RAPs to comment on



- Providing opportunities for RAPs to comment on the cultural significance of the proposed development area
- Providing opportunities for RAPs to comment on the draft reports detailing the results of the archaeological and cultural assessments for the project

A log of all correspondence undertaken as part of the assessment must be maintained. This log is attached as Appendix A.

3.2 STAGE 1 CONSULTATION: COMMENCEMENT

Stage 1 requires a list of Aboriginal people who may have cultural knowledge relevant to the area to be prepared from several sources of information. The first step requires enquiries to be made of certain statutory bodies regarding whether they are aware of Aboriginal people or organisations that may have an interest in the study area, and their contact details. Any Aboriginal people or organisations identified in this step must be contacted and invited to register an interest in the project. In addition, a notification must be placed in local print media requesting Aboriginal people or organisations to register their interest in the project. A list of those who register an interest must be compiled. A minimum of 14 days from the date of the letter or newspaper advertisement must be allowed for registrations of interest.

As a result of the Stage 1 activities, a list of Aboriginal people who wish to be consulted for the project is developed. These Aboriginal people become the registered Aboriginal parties – the RAPs – for the project.

Letters requesting the details of Aboriginal people who may hold cultural knowledge relevant to the study area and who may wish to be consulted for the project were sent to several statutory agencies on 4 September 2024. Copies of these letters and responses are attached in Appendix B. These Step 1 letters were sent to the following agencies:

- Heritage NSW
- Hunter Local Land Services (LLS)
- Newcastle City Council
- Awabakal Local Aboriginal Land Council (ALALC)
- Office of the Registrar, *Aboriginal Land Rights Act 1983 (NSW)* (ORALRA)
- Native Title Services Corp (NTSCorp).

Responses were received from Heritage NSW, Hunter LLS and ORALRA. Heritage NSW provided a list of Aboriginal people and organisations, and Hunter LLS referred us to the LALC. ORALRA noted the area of works are in proximity to an area for which there are Registered Aboriginal Owners: Worimi Conservation Lands. They suggested contacting the LALC and the Joint Management Coordinator for Worimi Conservation Lands, Nadine Russell.



An online search of the National Native Title Tribunal (NNTT) did not result in any Native Title owners or claimants for the study area.

The Aboriginal people and organisations identified during this initial stage were contacted via letter (email if provided or via post if no email address given) on 25 September 2024, inviting them to register an interest in the project. Registrations were accepted until 9 October 2024. This is Step 2 of Stage 1 of consultation. Copies of these letters are attached in Appendix C.

In addition, an advertisement was placed in the *Newcastle Herald* on 17 September 2024, inviting registrations of interest from people who may have cultural knowledge of the project area. A copy of the advertisement is attached in Appendix D.

A total of 12 Aboriginal people and organisations registered an interest in being consulted for the project. The following list comprises the RAPs for the project:

- A & K Cultural Heritage Management
- Nukara Indigenous Cultural & Heritage
- Long Gully Cultural Services
- Didge Ngunawal Clan
- AT Gomilaroi Cultural Consultancy
- Widescope Indigenous Group
- Awabakal Traditional Owners Aboriginal Corporation
- Corroboree Aboriginal Corporation
- Awabakal Local Aboriginal Land Council
- Thomas Dahlstrom
- Murrabidgee Mullangari
- Lower Hunter Aboriginal Incorporated

3.3 STAGE 2 & 3 CONSULTATION: PRESENTATION AND GATHERING OF INFORMATION

During Stage 2, information about the proposed project is provided to the RAPs, including location, scale, proposed development plans, timeframes, methodologies and any other relevant details relating to the project. This information can be provided in writing or at a meeting (or both), and an opportunity for the RAPs to visit the site may also be provided.

During Stage 3, RAPs are invited to share information about the cultural significance of the study area, which can assist in the assessment of the cultural significance of the Aboriginal objects and/or places within the study area. The cultural heritage assessment informs and integrates with the scientific assessment of significance and therefore can assist in the development of mitigation and management measures for the project. A methodology detailing how this information will be gathered must be provided to the RAPs for comment and a minimum of 28 days must be allowed



for responses to be received. Any feedback must be considered and implemented as appropriate into the methodology.

Stage 2 and 3 can be undertaken concurrently. The information about the project and the methodology for seeking cultural knowledge can be provided in the same written documentation or at the same meeting.

Details of the proposed project and the proposed methodology for undertaking the cultural heritage and archaeological assessments for the project were provided in writing to each of the RAPs on 15 October 2024. Comments were accepted until 13 November 2024. Responses were received from the following groups or individuals:

- Didge Ngunawal Clan
- Awabakal Traditional Owners Aboriginal Corporation
- Long Gully Cultural Services
- A&K Cultural Heritage Management.

All responses were favourable and endorsed our proposed methodology. No alternatives to our methodology were suggested or requested. The RAP responses are attached in Appendix E and are detailed in Table 2.

Table 2: RAP responses to Information and Methodology document

RAP	RAP Response	Apex Archaeology Response
Didge Ngunawal Clan	We don't have any troubles with this one either Marian thanks	Noted with thanks
Awabakal Traditional Owners Aboriginal Corporation	Hi Marian, Thank you for your email and apologies for the delayed reply. I have read through the proposed Draft Methodology regarding the Aboriginal Cultural Heritage Assessment (ACHA) for the proposed Battery Energy Storage System (BESS) site within the Mayfield West Zone Sub Station at 1 McIntosh Drive, Mayfield West and we agree with the proposed Field Survey Sampling Strategy. If you require any further information please do not hesitate in contacting me. Kind regards, Kerrie Brauer	Noted with thanks
Long Gully Cultural Services	Hi Marian, I agree with the methodology for this project. Kind regards, Ethan	Noted with thanks



A&K Cultural Heritage Management	Hi Marian, Thank you for your email. On behalf of A & K Cultural Heritage we have reviewed and agree with the Methodology for this project, we have no comments at the stage and would like to be involved in any future meetings, testing and field work for this project. Kind regards, Ali Maher	Noted with thanks
----------------------------------	---	-------------------

No other comments were received from any of the other RAPs for the project, and no specific cultural information pertaining to the study area was received from any of the RAPs for the project during this stage of consultation.

3.4 STAGE 4: REVIEW OF DRAFT REPORT

Stage 4 sees the preparation of the draft ACHAR, which details the results of the cultural heritage assessment. The draft is provided to the RAPs for their review and comment. A minimum of 28 days to comment on the ACHAR must be allowed. All comments must be addressed in the final document and the proponent's response to RAP comments must be included. Copies of any submissions received from RAPs must be included in the final ACHAR.

The draft report was provided to all RAPs on 29/01/2025, with comments accepted until 26/02/2025. One response was received from Widescope, whose reply is outlined in Table 2. No other responses were received from any of the RAPs for the project.

Table 3: Responses regarding draft report

Group	Comment	Response
Widescope	Hi Jenni, Thank you so much for sharing the project information regarding the Ausgrid project at Mayfield West. I have taken the time to review the methods outlined in the draft ACHA, and I am pleased to inform you that I support the approach presented. Should you need any further input or have additional questions, please do not hesitate to reach out. Best regards, Steven Hickey	Noted with thanks

Consultation with the Aboriginal community for this project has been conducted in accordance with the ACHCRs. A log of all correspondence is presented in Appendix A of this ACHAR. Copies of all correspondence are included in Appendix F.



4.0 ABORIGINAL CULTURAL HERITAGE

An analysis of previous archaeological work within the study area assists in the preparation of predictive models for the area, through understanding what has been found previously. By compiling, analysing and synthesising the previous archaeological work, an indication of the nature and range of the material traces of Aboriginal land use is developed. An understanding of the context in which the archaeological assessment is vital, as development does not occur within a vacuum, but within a wider cultural landscape, and this must be considered during any archaeological assessment in order to develop appropriate mitigation and management recommendations.

This section presents information about both the physical and cultural landscape in which the study area is located, based on previous archaeological and ethnohistorical studies, to provide context and background to the existing knowledge of Aboriginal culture in the area.

4.1 EXISTING ENVIRONMENT

The study area is located within the Hunter Region of New South Wales, specifically in the Sydney Basin Bioregion, which is characterised by low-lying floodplains, estuarine systems, and significant alluvial deposits. The broader geophysical region includes the Hunter River catchment, with the South Channel of the Hunter River, situated approximately 320 metres north of the study area. Historically, this region has been shaped by tidal influences, alluvial processes, and anthropogenic modifications, forming a landscape of low-lying plains and reclaimed land.

The study area has been significantly disturbed by previous land use practices, including:

- Extensive land reclamation
- Historical industrial development as part of the Mayfield West Industrial Precinct
- The construction and operation of the adjacent electrical substation
- General earthworks and vegetation clearing, resulting in limited natural surface visibility and significant modification of subsurface soils.

These disturbances have reduced the likelihood of intact Aboriginal cultural heritage deposits or Potential Archaeological Deposits (PADs) within the study area. Visual inspection conducted during site surveys revealed low ground surface visibility (GSV), with extensive evidence of ground disturbance caused by industrial activity and landfill.

4.1.1 GEOLOGY

The study area is underlain by geological formations typical of the Sydney Basin, which is a large sedimentary basin extending across the eastern part of New South Wales. The geology in this region consists primarily of Quaternary alluvial deposits,

including clay, silt, sand, and gravel, associated with the Hunter River floodplain and estuarine systems. These sediments have been deposited through fluvial and tidal processes over time, forming low-lying, flood-prone landscapes. The underlying bedrock consists of Permian sedimentary rocks from the Maitland Group, which include siltstone, sandstone, and shale.

4.1.2 SOIL LANDSCAPES

The study area originally formed part of the Tomago Soil Landscape, which is associated with alluvial and estuarine deposits of the Hunter River floodplain. This landscape typically features poorly drained clays, silts, sands, and organic materials deposited through fluvial and tidal processes. These soils are significant in their natural state because fine-grained sediments, particularly in low-energy environments, can preserve archaeological deposits, including stone artefacts and organic materials, by embedding them and limiting decomposition. Additionally, as sediments are gradually deposited over time, archaeological deposits may be preserved in stratified contexts. However, the soil landscape within the study area has been extensively disturbed and modified by historical and contemporary land use practices. Previous activities, including land reclamation, industrial development, landfill operations, and the construction of the adjacent electrical substation, have resulted in the widespread addition of imported fill, compaction, and removal of natural soil horizons.

4.1.3 HYDROLOGY

The study area is located within the Hunter River catchment in the Newcastle LGA. The closest permanent watercourse is the South Channel of the Hunter River, situated approximately 320 metres north of the site. This watercourse is classified as a fourth-order stream, indicative of a large and permanent river system.

Watercourse classification ranges from first order through to fourth order (and above) with first order being the lowest, i.e. a minor creek or ephemeral watercourse, and fourth or above being a large watercourse such as a river (Figure 4).

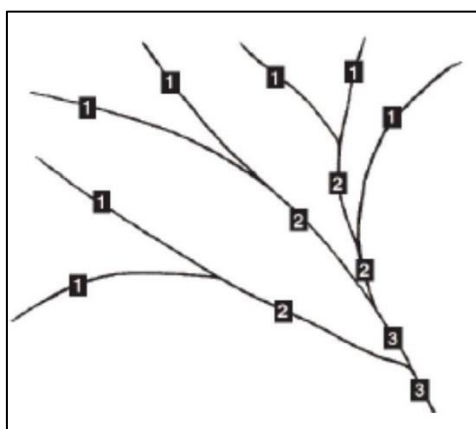


Figure 4: The Strahler system (Source: Department of Planning and Environment 2016).



The broader hydrology of the area is influenced by tidal processes, given the proximity to the Hunter River estuary and surrounding low-lying floodplains. The site is also subject to stormwater runoff management requirements under the Newcastle Development Control Plan (DCP) 2023. Specifically, the DCP identifies the importance of ensuring stormwater quality and quantity controls to minimise impacts on downstream waterways, including the Hunter River and its estuarine environments.

Historically, hydrological conditions within the study area have been altered through land reclamation and industrial development, which have impacted natural drainage patterns. While the natural hydrology has been modified, understanding these systems remains relevant to assess potential impacts from the proposed works, particularly regarding stormwater management and the prevention of erosion or sedimentation in nearby watercourses.

4.1.4 FLORA AND FAUNA

The vegetation within the area consists of disturbed remnant vegetation interspersed with non-native grasses, shrubs, and opportunistic weed species resulting from historic land reclamation and industrial use. The area was once likely part of the Hunter River floodplain, which would have supported riparian vegetation and native plant species, including Casuarinas, Eucalypts, and Melaleucas. Many of these would have provided resources for Aboriginal people, either for dietary needs or to provide tools, or to feed fauna that were hunted.

These plant species would have supported a range of fauna including kangaroos, wallabies, possums, small birds, reptiles, and amphibians. Both floral and faunal resources would have been exploited by Aboriginal people in the area. Plants would have provided wood for tools and implements, such as canoes, shields, and coolamons, and supplied a range of edible resources including berries, tubers, seeds, leaves, and nectar for food.

The diet of Aboriginal people also relied on the native wildlife which varied, depending on the availability of species within the local environment. The proximity of the Hunter River and its tributaries would have provided abundant food sources, including fish, shellfish, and aquatic birds. Terrestrial animals, such as wallabies, possums, small birds, amphibians, and reptiles, would have been hunted, while other resources may have been obtained through trade with neighbouring groups.

4.2 ETHNOHISTORY

Ethnohistorical evidence is based on the reports of colonisers and does not tend to include the Aboriginal perspective, leading to a Eurocentric view of Aboriginality. Additionally, historical records can be contradictory and incomplete regarding the exact tribal boundaries and locations of ceremonial or domiciliary activities of Aboriginal people pre-contact within the Hunter region. Boot (2002:58) notes:



The problem associated with ethnohistoric documents include their tendency to record unusual, rather than everyday events, and their focus on religious behaviour to the exclusion of woman and children (Attenbrow 1976:34; Sullivan 1983:12.4).

The study area is located within proximity to several tribal areas, notably the Kuringgai (Guringai), Darkinjung and Awabakal groups. It is difficult to know the exact tribal boundaries given post occupation settlement and displacement by European settlers; however, these are the likely tribal groups who would have utilised the area. The Darkinjung language group was considered by Tindale to have originally extended from the Hawkesbury River in the south to the Hunter River in the north, and west as far as Wollombi (Tindale 1974). The traditional lifestyles of Aboriginal groups such as the Awabakal people depended largely on the environment in which they lived. The diet of Aboriginal people varied depending on the resources available to them, which were intrinsically linked to the diverse landscape they inhabited. The study area at Mayfield West is located within the traditional lands of the Awabakal people, whose Country spans the Hunter Region, including Newcastle and the Lower Hunter Valley. Awabakal Country encompasses coastal plains, estuarine wetlands, tidal creeks, and the Hunter River catchment, which provided abundant natural resources that sustained their way of life.

Aboriginal society was constructed of a hierarchy of social levels and groups, with fluid boundaries (Peterson 1976), with the smallest group comprising a family of a man and his wife/wives, children and some grandparents, referred to as a 'clan' (Attenbrow 2010). The next level consists of bands, which were small groups of several families who worked together for hunting and gathering purposes, also known as a 'band' (Attenbrow 2010). The third level comprised regional networks with a number of bands, and these bands generally shared a common language dialect and/or had a belief in a common ancestor. Networks would come together for specific ceremonial purposes. The highest level is described as a tribe, which is usually described as a linguistic unit with flexible territorial boundaries (Peterson 1976); although Attenbrow (2010) argues that "these groups were not tribes in the current anthropological sense of the word".

The Hunter River, known as Coquun in the Awabakal language, and its associated wetlands were critical for food, water, and cultural practices. Awabakal people were skilled fishers and hunters, utilising the river and estuarine systems to harvest fish, eels, crustacea, and shellfish. Shell middens found throughout the Newcastle area provide physical evidence of the use of these marine and estuarine resources. In addition, terrestrial game, including kangaroos, wallabies, possums, birds, and reptiles, formed part of their diet, alongside plant resources such as berries, tubers, and seeds, which were collected from riparian and woodland environments.

Aboriginal society was organised into small family-based clans that formed larger social and ceremonial networks. These groups moved seasonally, adapting to the



availability of resources. Coastal and riparian areas like Mayfield West would have been occupied during periods of abundant aquatic resources, while inland areas were used for hunting and foraging. Hunting and gathering tools included wooden spears, stone scrapers, boomerangs, and woven baskets, crafted from locally available materials. The cultural significance of the region extends beyond tangible resources.

The landscape was deeply intertwined with spiritual and cultural connections, with significant sites linked to Awabakal lore, storytelling, and ceremonial practices. Prominent natural features, such as Whibayganba (Nobbys Head), Yohaaba (Port Hunter), and Coquun (Hunter River), remain integral to understanding the cultural landscape and connection to Country. Awabakal shelters, often referred to as gunyahs, were constructed from bark, branches, and leaves and adapted to the environment (Attenbrow 2010; Penfold 2017). These shelters provided protection and were part of a semi-nomadic lifestyle, enabling the Awabakal people to move between resource-rich areas while maintaining their connection to Country.

4.2.1 RAW MATERIALS

A wide range of raw materials were selected by Aboriginal people for flaking to create stone implements. Material types ranged from high quality to poor quality for flaking purposes, depending on the geology of the area and readily available material types. The following is a description of a range of raw material types known to have been utilised by Aboriginal people for the creation of stone artefacts.

BRECCIA

Breccias are coarse, angular volcanic fragments cemented together by a finer grained tuffaceous matrix.

CHALCEDONY

Chalcedony is a microcrystalline, siliceous rock which is very smooth and can be glossy. Introduction of impurities can produce different coloured versions of chalcedony, including yellow/brown (referred to as carnelian), brown (sard), jasper (red/burgundy) and multicoloured agate. It flakes with a sharp edge and was a prized material type for the creation of stone artefacts in parts of Australia (Kuskie & Kamminga 2000: 186).

CHERT

Chert is a highly siliceous sedimentary rock, formed in marine sediments and also found within nodules of limestone. Accumulation of substances such as iron oxide during the formation process often results in banded materials with strong colours. Chert is found in the Illawarra Coal Measures and also as pebbles and colluvial gravels. It flakes with durable, sharp edges and can range in colour from cream to red to brown and grey.



PETRIFIED WOOD

Petrified wood is formed following burial of dead wood by sediment and the original wood being replaced by silica. Petrified wood is a type of chert and is a brown and grey banded rock and fractures irregularly along the original grain.

QUARTZ

Pure quartz is formed of silicon dioxide, and has a glossy texture and is translucent. Introduction of traces of minerals can lead to colouration of the quartz, such as pink, grey or yellow. The crystalline nature of quartz allows for minute vacuoles to fill with gas or liquid, giving the material a milky appearance.

Often quartz exhibits internal flaws which can affect the flaking quality of the material, meaning that in general it is a low-quality flaking material (Kuskie & Kamminga 2000: 186). However, quartz is an abundant and widely available material type and therefore is one of the most common raw materials used for artefact manufacture in Australia. Flaking of quartz can produce small, very sharp flakes which can be used for activities such as cutting plant materials, butchering and skinning.

QUARTZITE

Formed from sandstone, quartzite is a metamorphic stone high in silica that has been heated or had silica infiltrate the voids found between the sand grains. Quartzite ranges in colour from grey to yellow and brown.

SILCRETE

Silcrete is a siliceous material formed by the cementing of quartz clasts with a matrix. These clasts may be very fine grained to quite large. It ranges in colour from grey to white, brown, red or yellow. Silcrete flakes with sharp edges and is quite durable, making silcrete suitable for use in heavy duty woodworking activities and also for spear barbs (Kuskie & Kamminga 2000:184).

TUFF/INDURATED MUDSTONE

There is some disagreement relating to the identification of lithic materials as tuff or indurated mudstone. The material is a finely textured, very hard yellow/orange/reddish-brown or grey rock. Kuskie and Kamminga (2000: 6, 180) describe that identification of lithic materials followed the classification developed by Hughes (1984), with indurated mudstone described as a common stone material in the area. However, Kuskie and Kamminga's analysis, which included x-ray diffraction, identified that lithics identified as 'indurated mudstone' was actually rhyolitic tuff, with significant differences in mineral composition and fracture mechanics between the stone types. They define mudstone as rocks formed from more than 50% clay and silt with very fine grain sizes and then hardened.

The lithification of these mudstones results in shale (Kuskie & Kamminga 2000: 181) and thus 'indurated mudstone', in the opinion of Kuskie and Kamminga, do not produce stones with the properties required for lithic manufacture.



In 2011, Hughes, Hiscock and Watchman undertook an assessment of the different types of stones to determine whether tuff or indurated mudstone is the most appropriate terminology for describing this lithic material. The authors undertook thin section studies of a number of rocks and determined that the term 'indurated mudstone' is appropriate, with an acknowledgment that some of this material may have been volcanic in origin. They also acknowledge that precise interpretation of the differences between material types is difficult without detailed petrological examination, and suggest that artefacts produced on this material are labelled as 'IMT' or 'indurated mudstone/tuff'. Volcanic tuff forms from the tiny ash particles that are also released during volcanic explosions. When it cools it hardens into a fine-grained rock called 'tuff'.

BASALT

Basalt, which is commonly referred to as 'blue metal', is solidified lava that was produced by now extinct volcanoes and diatremes that are spread-out within the Sydney Basin. If the lava cools quickly it results in fine-grained basalt that is easily flaked or ground to make tools, implements or weapons.

Basalt would have been either collected from the primary deposits formed during the eruption, which would require pieces to be broken off (quarried) or it was collected in cobble-form from a creek bed or shoreline. Cobbles are referred to as secondary sources as they are formed from pieces of rock that have been dislodged from their primary source and end up in creeks and/or river systems (Petrequin 2016; Attenbrow et al. 2017). The flow of water moves them around and smooths them into water-rolled cobbles that can be transported considerable distance from the original source. Basalt was often used to make axes which were either flaked into the desired shape from quarried stone, or from cobbles which quite often only required only one end to be ground into a sharp working edge.

Basalt cobbles can be found along the banks of rivers, and in bedrock quarries within the Hunter Region. Recent research undertaken by the Australian Museum and University of New England using portable XRF technology demonstrated that a number of stone axes held at the Australian Museum from the Hunter Valley area have been traced to these sources (Attenbrow et al. 2017).

4.2.2 PROCUREMENT

Assemblage characteristics are related to and dependent on the distance of the knapping site from raw materials for artefact manufacture, and different material types were better suited for certain tasks than other material types. Considerations such as social or territorial limitations or restrictions on access to raw material sources, movement of groups across the landscape and knowledge of source locations can influence the procurement behaviour of Aboriginal people. Raw materials may also have been used for trade or special exchange between different tribes.



4.2.3 MANUFACTURE

A range of methodologies were used in the manufacture of stone artefacts and tools, through the reduction of a stone source. Stone may have been sourced from river gravels, rock outcrops, or opportunistic cobble selection. Hiscock (1988:36-40) suggests artefact manufacture comprises six stages, as follows:

1. The initial reduction of a selected stone material may have occurred at the initial source location, or once the stone had been transported to the site.
2. The initial reduction phase produced large flakes which were relatively thick and contained high percentages of cortex. Generally the blows were struck by direct percussion and would often take advantage of prominent natural ridges in the source material.
3. Some of these initial flakes would be selected for further reduction. Generally only larger flakes with a weight greater than 13-15 grams would be selected for further flaking activities.
4. Beginning of 'tranchet reduction', whereby the ventral surface of a larger flake was struck to remove smaller flakes from the dorsal surface, with this retouch applied to the lateral margins to create potential platforms, and to the distal and proximal ends to create ridges and remove any unwanted mass. These steps were alternated during further reduction of the flake.
5. Flakes were selected for further working in the form of backing.
6. Suitable flakes such as microblades were retouched along a thick margin opposite the chord to create a backed blade.

Hiscock (1986) proposed that working of stone materials followed a production line style of working, with initial reduction of cores to produce large flakes, followed by heat treatment of suitable flakes before the commencement of tranchet reduction. These steps did not necessarily have to occur at the same physical location, but instead may have been undertaken as the opportunity presented.

Although probably less common than the process of flaking stone to modify it, the grinding technique was used within the Sydney Basin. This has been documented by early settlers particularly in the manufacture of axe heads where the end of a cobble was ground to achieve a working edge (Corkill 2005).

4.3 LAND USE HISTORY

4.3.1 INDIGENOUS OCCUPATION

When Aboriginal occupation of Australia is likely to have first commenced, around 60,000 years ago (Mulvaney and Kamminga 1999; Bowdler *et al* 2003; Attenbrow 2010), sea levels were around 30-35m lower than present levels, and this further decreased to up to 130m lower than present sea levels (Attenbrow 2010). Sea levels stabilised around 7-6,500 years ago, reaching roughly their current levels, and as a result many older coastal sites would have been inundated with increasing sea levels. It is possible that areas that are now considered "coastal" would once have



limited resources available to Aboriginal people, and as such would have been less likely to have been occupied or used for repeated habitation sites.

Archaeological work at the Madjebebe site in Arnhem Land in the Northern Territory revealed evidence confidently dated to the period before 45-46 ka and possibly up to 50-55 ka (Clarkson et al 2015). In NSW, there is strong evidence available to support Aboriginal occupation of the Cumberland Plain region in the Pleistocene period (approximately 40 ka) and possibly earlier. Work in Cranebrook Terrace was dated to 41,700 years BCE by Stockton and Holland (1974), and a site in Parramatta within deep sandy deposits was dated to 25-30 ka (JMcDCHM 2005). Kohen's 1984 assessment of Shaws Creek in the Blue Mountain foothills yielded ages of 13 ka, while Loggers Shelter at Mangrove Creek was dated to 11 ka by Attenbrow (1987). Deeply stratified occupation deposits at Pitt Town were dated to 39ka (Apex Archaeology 2018). These ages are obtained from both radiocarbon and optically stimulated luminescence (OSL) dating.

Some experts have cast doubt onto the assessment of the items from Cranebrook Terrace as artefactual (Mulvaney & Kamminga 1999; McDonald 2008), although they do not doubt the results of the radiocarbon dates – it is the association of the artefacts with the dated deposits that is problematic, and Mulvaney and Kamminga (1999) consider that there are better examples of sites with more robust identification of age available. There has certainly been a great deal of research undertaken within the Sydney region in the intervening years.

Changing sea levels resulted in the ecological systems of the hinterland areas changing too, resulting in differing resources becoming available. This led to an increase in evidence of habitation of areas from around 6,500 BP, although it is unclear whether this relates to the survivability of more recent sites, or an increase in population. Hughes and Lampert (1982) suggested that a population increase is the only plausible explanation for the exponential increase in Holocene sites from 6,000 BP.

During the Holocene period around 6.5ka, sea levels increased and stabilised, which led to those groups on the coastal fringes turning inland (McDonald 2008). Around 5ka a change in archaeological assemblages can be seen, with an emphasis on the use of locally available stone for artefact production. Around 4,000 years ago people began to decrease their residential mobility and inhabit certain biogeographic zone on a permanent basis (McDonald 2008).

4.3.2 POST CONTACT OCCUPATION

Following the establishment of the first European settlement at Sydney Cove, the need for additional agricultural land was identified, as Sydney Cove was considered unsuitable for farming. By November 1788, food supplies were running low for the settlement, and an expedition led by Governor Philip set off up the Parramatta River in search of arable land. An area known as Rose Hill (now Parramatta) was settled



by a small group of 11 soldiers and 10 convicts. The grain crops at Sydney Cove failed, and the settlement at Rose Hill was ordered to be used for agriculture. These crops were luckily successful, and a further settlement comprising a convict farm was established at Toongabbie.

European settlement in Mayfield began with land grants following the establishment of Newcastle as a penal colony in 1804. John Laurie Platt was one of the first settlers, receiving a grant of 2,000 acres in 1821, which encompassed parts of what is now Mayfield West. Platt established a homestead named "Ironbark" and cultivated wheat, though his agricultural pursuits were hindered by poor soil quality. His early efforts to develop the area, including the construction of a windmill, earned the region the nickname "Platt's Folly" (Goold, 1950). By the mid-19th century, settlers had begun converting the area's fertile floodplains into vineyards and orchards. Peter Crebert, a German immigrant and winemaker, became a notable figure in Mayfield's agricultural history. Crebert's vineyard and wine production were landmarks of the local economy, attracting visitors to the area. However, agricultural success was eventually undermined by pests, theft, and the encroachment of industrial development (Newcastle Morning Herald and Miners' Advocate, 1936).

The transition from agriculture to industry began in earnest in the late 19th century, spurred by Newcastle's growing reputation as an industrial centre. The establishment of the Australian Agricultural Company (AA Co.) in the 1820s initiated coal mining in the region, which became a cornerstone of Newcastle's economy. Mayfield's proximity to the Hunter River and Newcastle made it an attractive site for industrial ventures.

The pivotal moment in Mayfield's history came in 1913 with the establishment of the Broken Hill Proprietary (BHP) steelworks at Port Waratah. This marked the beginning of large-scale industrialisation, as the area was transformed into a manufacturing powerhouse. BHP's operations attracted workers from across Australia, driving population growth and the construction of worker housing. By the 1920s and 1930s, Mayfield had become a vibrant industrial suburb, with businesses and residential areas expanding along Maitland Road (University of Newcastle, n.d.).

Significant landmarks emerged during Mayfield's industrial boom, each reflecting a different aspect of the suburb's growth and identity. The Ironworkers' Building stands as an enduring symbol of Mayfield's industrial heritage, representing the contributions of the workers who shaped the area's economic foundation during the height of the steelworks era. Maitland Road evolved into the commercial heart of Mayfield, illustrating the suburb's transformation into a mixed-use hub where industrial, residential, and retail activities coexisted. St. Andrew's Church and Cemetery further highlight Mayfield's cultural and spiritual development, serving as a historical marker of the community's social and religious life during the early stages of its growth (University of Newcastle, n.d.).

Mayfield's industrial growth brought diverse communities together, including European immigrants who contributed to its cultural fabric. The suburb developed as a mix of affluent neighbourhoods and working-class communities. By the mid-20th century, Mayfield's identity had shifted towards a predominantly industrial and working-class character, though remnants of its agricultural and residential past remain visible in heritage-listed sites and street names.

The aerial maps of Mayfield West demonstrate a clear progression in land use over time, transitioning from rural landscapes to a fully industrialised area. In 1954 (Figure 5), the area surrounding 1 McIntosh Drive is characterised by open agricultural fields, scattered vegetation, and minimal development, reflecting a rural setting with limited industrial activity. The study area itself is partially within a former branch of the Hunter River, which has since been reclaimed. By 1965 (Figure 6), industrial expansion becomes evident, with increased land clearing and the establishment of infrastructure to support Newcastle's growing role as an industrial hub. This shift is particularly noticeable near the Hunter River, where industrial facilities and transport routes begin to dominate the landscape.

By 1975 (Figure 7), the transformation is complete, with large industrial facilities and warehouses surrounding 1 McIntosh Drive, indicative of the area's integration into Newcastle's industrial network. The steelworks and associated industries have become defining features of the landscape, supported by reclaimed land along the Hunter River. Residential development also becomes more defined during this period, catering to the workforce needed for the growing industrial sector. By 2000 (Figure 8), the industrial zone is fully established, with dense infrastructure and refined transport networks such as Industrial Drive, reflecting a mature and consolidated industrial precinct. This transformation highlights Mayfield West's evolution into a key industrial area, driven by proximity to the river and Newcastle's economic expansion.

From these images it is clear that the study area is located within an area of reclamation, which is unlikely to retain any archaeological integrity given the level of historic disturbance.



Figure 5: Detail of 1954 aerial imagery over study area (approx location circled in red)



Figure 6: Detail of 1965 aerial imagery over study area (approx location circled in red)



Figure 7: Detail of 1975 aerial imagery over study area (approx location circled in red)



Figure 8: Detail of 2000 aerial imagery over study area (approx location circled in red)



4.4 ARCHAEOLOGICAL CONTEXT

Previous archaeological assessments assist in understanding the archaeological context of the area and in forming predictions for the location of Aboriginal cultural material within a landscape. This includes searching the AHIMS database for previously registered sites and a review of previously completed archaeological assessments.

4.4.1 AHIMS RESULTS

A basic search of the study area using the Lot and DP with a 200 m buffer did not identify any previously registered Aboriginal sites on the AHIMS database.

4.5 LITERATURE REVIEW

The archaeological work previously completed within the wider region is summarised here. Although there does not appear to be a specific archaeological assessment undertaken for the current area, there have been archaeological assessments completed across the surrounding areas, including a range of academic assessments, resource management studies and development impact assessments. All of these assist in informing the archaeological assessment of sites within the region.

4.5.1 REGIONAL HERITAGE ASSESSMENTS

A number of previous archaeological assessments have been undertaken in the broader region the study area is situated within.

Consultant	Date	Sites Identified	Region
Haglund, H	1982	2 sites identified	Bagnals Beach
Comber, J	1990	2 sites identified	Anna Bay
Dean-Jones, P	1990	No sites identified (potential occupation areas avoided)	Anna Bay
Baker, N	1994	Salvage excavation dated to between 6000-17000 years ago	Moffat's Swamp
Dallas, M and Cowlshaw, G	1994	3 sites identified	Salamander Bay
Douglas et al	2001	4000+ artefacts recovered from salvage excavation	700 Hunter Street, Newcastle
ERM	2003	15 sites identified	Tomago to Tomaree
Kuskie, P	2004	1 site identified	Anna Bay
McCardle	2004	Fern Bay Archaeological Complex	Fern Bay
MDCA	2004	Archaeological complex identified (Midden sites and Camp Sites)	Boardwalk Site, Newcastle
GML	2009	551 artefacts recovered from surface salvage	Stockton Rifle Range
Umwelt	2010	Mitigation and research design for 6 registered sites	Tomago to Tomaree
RPS	2011	3 registered sites re-identified	Birubi point
AHMS	2011	5534 artefacts recovered from salvage excavation	Former Palais Royale Site (now KFC), 684 Hunter Street, Newcastle



Consultant	Date	Sites Identified	Region
McCardle	2012	4 new sites identified. 67 artefacts recovered from subsequent test excavation.	Nelson Bay Road upgrade
AMAC	2012	Post Contact Aboriginal flaked material recorded	Lee Wharf Development: Square-about and Lot 24 Honeysuckle Drive, Newcastle
RPS	2013a	No sites identified	Birubi Lane, Anna Bay
RPS	2013b	One site identified	4011 Nelson Bay Road, Bobs Farm
AMAC	2014	No Sites identified	18 Honeysuckle Drive, Newcastle
AMAC	2014-2017	500 artefacts recovered from test excavation and 6500+ artefacts recovered from subsequent salvage excavations	University of Newcastle, New Space, 409 Hunter Street, Newcastle
RPS	2014	1 previously registered site identified	Anna Bay
Artefact	2015	391 artefacts recovered from test excavation and 3912 artefacts recovered from subsequent targeted salvage excavations	Wickham Transport Interchange
RPS	2016	Four PAD sites identified	Newcastle Light Rail
Umwelt	2017	11 new sites identified	Stockton Rifle Range
Heritage Now	2020	No Sites Identified	21D and 21F School Drive, Tomago
Apex Archaeology	2023	No New Sites Identified – Multiple registered sites avoided by underboring and directional change.	Stockton to Anna Bay, NSW – Proposed Telecommunications Route

The results of the previous archaeological assessments summarised above suggest a consistent example of coastal site types in the Newcastle area. All assessments throughout the region and close to the study area exhibited evidence of artefactual archaeological material to exist within these coastal environments along with midden deposits in less frequency. The assessments above provide a cohesive understanding of the type and condition of Aboriginal sites throughout the Newcastle area and assist to form an assumption of sites that have the potential to exist within the study area being assessed in this report.

4.5.2 SUMMARY

Early investigations into Aboriginal cultural heritage in the region began in the late 20th century. Haglund (1982) identified two significant sites at Bagnals Beach, while Comber (1990) documented two additional sites near Anna Bay. These early studies primarily recorded surface finds, such as artefact scatters and middens, reflecting Aboriginal reliance on coastal and estuarine resources. Other investigations, such as Dean-Jones' work in 1990 at Anna Bay, focused on avoiding potential areas of Aboriginal significance, highlighting the increasing awareness of protecting cultural heritage during development projects.



Salvage excavations have contributed significantly to our understanding of Aboriginal occupation in the Newcastle area. Baker (1994) conducted a major salvage excavation at Moffat's Swamp, dating Aboriginal occupation in the area to between 6,000 and 17,000 years ago. This timeframe emphasises the region's deep temporal history of human presence. Similarly, Douglas et al. (2001) recovered over 4,000 artefacts during a salvage excavation at 700 Hunter Street, Newcastle, demonstrating extensive late Holocene occupation. AHMS (2011) added to this understanding by recovering 5,534 artefacts from the former Palais Royale site, now KFC, at 684 Hunter Street, further underscoring the density and preservation of Aboriginal cultural material even in heavily urbanised areas.

The adaptability of Aboriginal people to post-contact circumstances is evident in the discovery of post-contact modified materials. AMAC (2012) recorded Aboriginal flaked glass and ceramics during investigations at the Lee Wharf Development site at Honeysuckle Drive, Newcastle. These artefacts illustrate how traditional tool-making practices were adapted to incorporate European-introduced materials while maintaining cultural continuity. Additionally, archaeological complexes such as the Fern Bay Archaeological Complex, identified by McCardle (2004), and the Stockton Rifle Range, investigated by MDCA (2004) and Umwelt (2017), represent significant clusters of middens and artefact scatters. These complexes reflect the enduring importance of coastal zones for habitation, ceremonial activities, and resource use.

Urban development projects in Newcastle have also yielded substantial archaeological finds. The University of Newcastle's New Space development from 2014 to 2017 resulted in the recovery of over 6,500 artefacts during salvage excavations. Similarly, the Wickham Transport Interchange project in 2015 uncovered 391 artefacts during test excavations and 3,912 artefacts during subsequent targeted salvage excavations. These findings, including stone tools and occupation-related materials, highlight the continued archaeological significance of urban spaces in Newcastle. Mitigation efforts for large-scale projects, such as Apex Archaeology's 2023 work on the Stockton to Anna Bay telecommunications route, exemplify modern approaches to heritage management, where registered sites are preserved through strategies like directional boring and site avoidance.

Overall, the archaeological record of Mayfield West and its surrounding areas reflects patterns of long-term occupation, with evidence ranging from early Holocene habitation to post-contact adaptations. Many sites demonstrate Aboriginal reliance on coastal and estuarine resources, as seen in the large assemblages recovered from Stockton, Tomago, and other areas. Artefact scatters, middens, and occupation sites attest to the dynamic ways in which Aboriginal groups engaged with the landscape over thousands of years.



4.6 PREDICTIVE MODEL

4.6.1 REGIONAL SITE PATTERNING

As part of the many archaeological investigations undertaken within NSW, over 5,000 archaeological sites have been recorded and registered on AHIMS. Within the Hunter Region, the dominant site types identified include middens, artefact scatters, grinding grooves, and occasionally, rock shelters with archaeological deposits or art. Middens, often located near coastal and estuarine environments, reflect the reliance of Aboriginal groups on marine and freshwater resources. Artefact concentrations in open contexts are also common, particularly in areas where resource availability supported habitation or tool production. The nature and extent of individual sites is closely related to the environmental context in which they are found – for example, rockshelters are found within sandstone escarpments, while middens are generally located close to water bodies including marine, estuarine and freshwater contexts, and grinding grooves are found on flat sandstone platforms in close proximity to water sources.

In 1986, Kohen developed site location patterning predictions based on a study of archaeological investigations undertaken to date on the Cumberland Plain. Proximity to water was an important consideration in site patterning, with 65% of open artefact scatters located within 100 m of permanent fresh water sources (Kohen 1986), and only 8% of sites located more than 500 m from a permanent water source. He argued that sites increased in size, in complexity and in density with increasing proximity to water, especially permanent waterways such as creeks and rivers.

Further investigations within the Cumberland Plain have identified that Kohen's work was limited by his reliance on available surface evidence. McDonald (1997) undertook further investigations within the Cumberland Plain and identified that 28% of sites excavated had no surface expressions of artefacts prior to their excavation, with the ratio of surface to excavated artefacts being 1:25, and the nature and extent of the excavated sites could not be determined on the basis of surface expressions of artefacts alone. In summary, she found that a lack of surface evidence does not constitute a reliable estimate for subsurface archaeological potential (McDonald 1997).

These results demonstrate how test excavations can assist in the identification of the nature and extent of subsurface archaeological deposits within the Cumberland Plain. Based on the results of previous archaeological investigations within the wider region, a number of predictions regarding Aboriginal use of the area can be made. These predictions focus on the nature, extent and integrity of the remaining evidence.

The landscape characteristics of the area influence the prediction of the nature of potential sites within the landscape itself. Based on the results of previous



archaeological investigations within the wider Hunter Region, a number of predictions regarding Aboriginal use of the area can be made. These predictions focus on the nature, extent, and integrity of the remaining evidence.

The landscape characteristics of the region significantly influence the types of potential sites that may be present. Site types commonly associated with sandstone outcrops, such as grinding grooves, rock art sites, petroglyphs (rock engravings), and sandstone rockshelters with art and/or archaeological deposits, are less likely to occur within areas like Mayfield West due to the absence of sandstone escarpments in the immediate vicinity. Cultural shell middens, which are predominantly found along the coast and in estuarine contexts such as Stockton and Anna Bay, are unlikely to occur within inland portions of the study area.

The study area is also not associated with sand dunes, a landscape formation known to contain Aboriginal burials in regions like Stockton or Birubi Point. Similarly, culturally modified trees are considered unlikely to be found in the study area due to the high levels of historical land clearing and industrial development that have extensively altered the natural landscape. However, open artefact scatters or isolated artefacts, such as those found during investigations in Newcastle's urban developments (e.g., Hunter Street, Honeysuckle, and Wickham), may still be present, albeit with reduced integrity due to extensive ground disturbance over time

Disturbance is the predominant factor determining whether artefacts made from stone or other materials are likely to be identified within a landscape. Surface sites are likely to have been impacted by land clearing, and the construction and demolishment of buildings. Natural actions such as bioturbation are likely to have impacted at least the upper levels of archaeological deposits, as are cultural activities such as excavation, construction, demolition, ploughing, clearing and planting. Whilst these actions may impact the integrity of stratigraphy within the deposit, this does not necessarily mean associated archaeological objects will also be disturbed.

Previous archaeological investigations within the Hunter Region suggest that the majority of archaeological material is typically concentrated near water sources, particularly along the banks of the Hunter River, its tributaries, and other higher-order watercourses. Denser and more complex archaeological sites, such as middens, artefact scatters, and occupation sites, are often located in proximity to these water sources, as they provided vital resources for Aboriginal groups. Gently inclined footslopes, estuarine environments, and level to gently undulating plains are considered to have the highest potential for archaeological material, given their suitability for habitation and resource use.

Within the study area, the most likely archaeological material to remain are isolated stone artefacts and/or stone artefact scatters. These artefacts could occur anywhere across the landscape, particularly in areas where undisturbed soils or



landforms persist. However, given the extensive historical land clearing and industrial development in regions like Mayfield West, the integrity of such deposits may be compromised, and any surviving material is expected to be sparse or heavily disturbed. Particularly relevant is the fact that the study area falls within an area of reclamation of a branch of the Hunter River, and thus is considered unlikely to have contained or to retain any archaeological potential given the level of disturbance which has occurred.

In general, Aboriginal use of an area is based on a number of factors, such as:

- Proximity to permanent water sources – generally permanent or areas of repeat habitation are located within approximately 200 m of permanent water
- Proximity to ephemeral water sources – generally sites near ephemeral water sources were utilised for one-off occupation
- Ease of travel – ridgelines were often utilised for travel during subsistence activities, and
- The local relief – flatter, more level areas were more likely to be utilised for long term or repeat habitation sites than areas of greater relief, especially if the slopes are at a distance from water.

STONE ARTEFACTS

Stone artefacts can be identified on the ground surface or within subsurface deposits. Generally, artefact concentrations are representative of debris from knapping activities, which includes flakes, flake fragments, cores, and pieces likely to have been knapped but with no or inconclusive diagnostic features, referred to as flaked pieces. Modified artefacts can also be identified, including backed artefacts, scrapers, or edge ground axes, although these are generally a smaller proportion of the artefact assemblage. During excavation, very small debris (~3-5 mm) can be identified within sieved material, and is referred to as debitage. This is indicative of *in situ* knapping activities.

As the detection of stone artefacts relies on surface visibility, factors such as vegetation cover can prevent their identification. Conversely, areas of exposure can assist in their identification. Within the study area, extensive land clearing and industrial development make it unlikely for intact archaeological material to remain, though isolated artefacts or scatters may still occur in less disturbed areas. These would be likely to be associated with fill material which has been brought to the site.

QUARRY AND PROCUREMENT

Exposures of stone which can be exploited for the production of lithics are referred to as quarries or procurement sites. Quarries generally have evidence of extraction visible, while procurement sites can be inferred through the presence of artefactual material made from raw material sources present within the area.



Within the study area, silcrete or other tool-making materials have not been noted, and there is no evidence to suggest quarrying activities. The landscape's historical disturbance and limited natural exposures make it unlikely for significant lithic procurement sites to have been present. Any stone artefacts encountered would likely have been brought into the area, rather than sourced locally.

MIDDENS

Middens are concentrations of shell, and may also contain stone artefacts, bone and sometimes human burials. These sites are generally recorded along coastal areas. Middens are formed through the exploitation of locally available species by humans for resources, and accumulation of the shell material within a specific location. Middens can range in size from small, discrete deposits, to deposits covering a large area.

Generally, middens reflect the species available in the local area. In estuarine regions, estuarine species will dominate the composition of the midden, while around headlands, rock platform species tend to dominate. The extensive historical clearing and industrial development have significantly altered the landscape, reducing the likelihood of intact midden deposits surviving.

BURIALS

Aboriginal people across Australia utilised a range of burial forms, which depended on the customs of the individual tribes. Common burial practices included inhumation, cremation, desiccation and exposure. Burials are known to occur within sandy contexts in the wider region. These are generally found within coastal Holocene sand bodies, and generally are not identified during field survey as there is usually minimal surface expression of this type of site.

Burials are highly unlikely to occur within the study area. Aboriginal burials in the Hunter Region are typically associated with sand dunes, particularly along coastal zones such as Stockton and Birubi Point, where burial practices made use of soft, sandy soils. The study area at Mayfield West, which is now heavily industrialised, lacks the sandy dune landscapes or other undisturbed natural contexts typically associated with Aboriginal burial practices.

Additionally, the significant historical disturbance and modification of the area due to industrial development, including land reclamation and infrastructure construction, further reduce the likelihood of intact burials being present. Any potential burials in the area would likely have been disturbed or destroyed during prior developments.

ROCK SHELTERS

Rock shelters are formed by rock overhangs which would have provided shelter to Aboriginal people in the past. Often, evidence of this occupation can be found in the form of art and/or artefacts. Shell, midden material, grinding grooves, pictographs



(rock engravings), artworks including stencils and paintings, and potential archaeological deposits (PAD) are common features of rock shelter sites.

Rock shelters are extremely unlikely to occur within the study area. Rock shelters in the Hunter Region are typically associated with sandstone escarpments or other prominent geological formations that provide natural overhangs or cavities. The study area is characterised by a heavily modified industrial landscape and lacks the geological features necessary to form rock shelters.

Furthermore, the region's historical clearing and development have significantly altered the natural topography, making it highly improbable for any intact rock shelter features to exist within the study area.

GRINDING GROOVES

Grinding grooves are formed on sandstone exposures through the creation and maintenance of ground edge tools, such as axes and spears. Usually, stone was ground to form a sharp edge, although bone and shell were also ground to create sharp points.

Generally, fine grained sandstone was favoured for these maintenance activities, and the presence of a water source nearby or overflowing the sandstone was also favoured. Grinding grooves range from individual examples through to hundreds of grooves within an area, sometimes arranged in a specific pattern. Horizontal sandstone was generally preferred, although there are examples of vertical grooves.

Grinding grooves are unlikely to occur within the study area. The study area lacks the sandstone outcrops required for the creation of grinding grooves and has had significant industrial modification of the area.

SCARRED AND CARVED TREES

Scarred and carved trees are created during the removal of bark from a tree for a range of reasons, both domestic and ceremonial. This type of site can be identified within areas containing trees of the correct species and appropriate age. Deliberately scarred trees can be difficult to differentiate from naturally occurring damage to trees, and specific criteria must be considered when assessing a scar for a cultural origin.

Scarred or carved trees are highly unlikely within the study area due to extensive historical land clearing and industrial development, which would have removed any mature trees of cultural significance.

CEREMONIAL SITES

Specific places were used for ritual and ceremonial purposes, including initiation and burial practices. Secret rituals were also undertaken at specific places by specific individuals, such as at water holes and by clever men.

The landscape itself was also considered to hold significance to Aboriginal people, and the understanding of this is referred to as a sacred geography. This includes



natural features which were associated with spirits or creation beings. The meaning attributed to the landscape provided Aboriginal people with legitimacy regarding their role as guardians of the places which had been created by the spiritual ancestors (Boot 2002).

Many areas within NSW are considered to be sacred to the original inhabitants. There are no known recorded areas within the study area, although this does not preclude these values from existing within this location.

CONTACT SITES

Contact sites contain evidence of Aboriginal occupation concurrent with initial colonisers in an area. This could include evidence such as flaked artefacts formed on glass, or burials containing non-Aboriginal grave goods. Often Aboriginal camps would form around newly built towns, allowing for employment (or exploitation) of the Aboriginal people by the colonists, and also for trade to exist between the two communities. Contact sites can also occur around Aboriginal mission sites, where Aboriginal children were taken from their families to raise in the European manner. Families often camped around the mission boundaries to try to catch a glimpse of their children.

There is no known evidence of initial contact between Aboriginal people and colonists within the study area. The probability of evidence of contact sites occurring within the study area is considered low.



5.0 FIELD WORK

5.1 SAMPLING STRATEGY

A sampling strategy was developed and provided to the RAPs as part of the consultation process completed for the ACHA. The strategy included assessment of all landforms within the study area that have the potential to be impacted by the Project. Areas considered likely to have archaeological potential were closely scrutinised, although the entire study area was considered.

The survey was conducted on foot for the purposes of discovering Aboriginal objects within the study area, including areas considered to have potential for subsurface objects to be present. During the survey completed by Apex Archaeology the study area was inspected for Aboriginal archaeological evidence.

5.2 SITE INSPECTION

A site survey was undertaken on 22 November 2024 by Leigh Bate of Apex Archaeology, and Kai-mani Hamnett of Awabakal LALC.

5.3 SURVEY COVERAGE

The survey was undertaken with two survey participants for the entire survey track length. Each participant was responsible for inspecting a 2 m wide portion of the study area inspected. This meant that on each pass an area covering 4 m would be observed for archaeological material. Some areas of the site were inaccessible with high grass cover and no visibility, so areas of exposure were targeted as a priority.

Table 4: Survey units

Unit name	Landform Element	Number of participants	Total Length
ATU 1	Flat, Gentle simple slope (GSS)	2	1,075 m

An assessment of landform element and slope was made for the study area, with the results presented in Table 5.

Table 5: Survey unit results

Survey Area #	Landform Element	Slope	Vegetation	Detection Limiting Factors	Ground Disturbance
ATU 1	Flat, GSS	Level Gentle >1.45°- 5.45°	Cleared (Grassed/Revegetated)	Leaf litter, sediment, Exotic grasses, weeds and illegally dumped materials and soils	High

The total survey coverage (meaning the areas physically inspected for archaeological evidence) was approximately 4,300 m². The total area of the



development impact is approximately 44,420 m². A range of factors were considered and recorded during the survey, including the surface visibility (percentage of bare ground within a survey unit); archaeological visibility (amount of bare ground within an area in which artefacts could be expected to be identified if present); exposure type (A or B soil horizon) and calculations of how effective the survey coverage was. The results of the survey coverage are presented in Table 6.

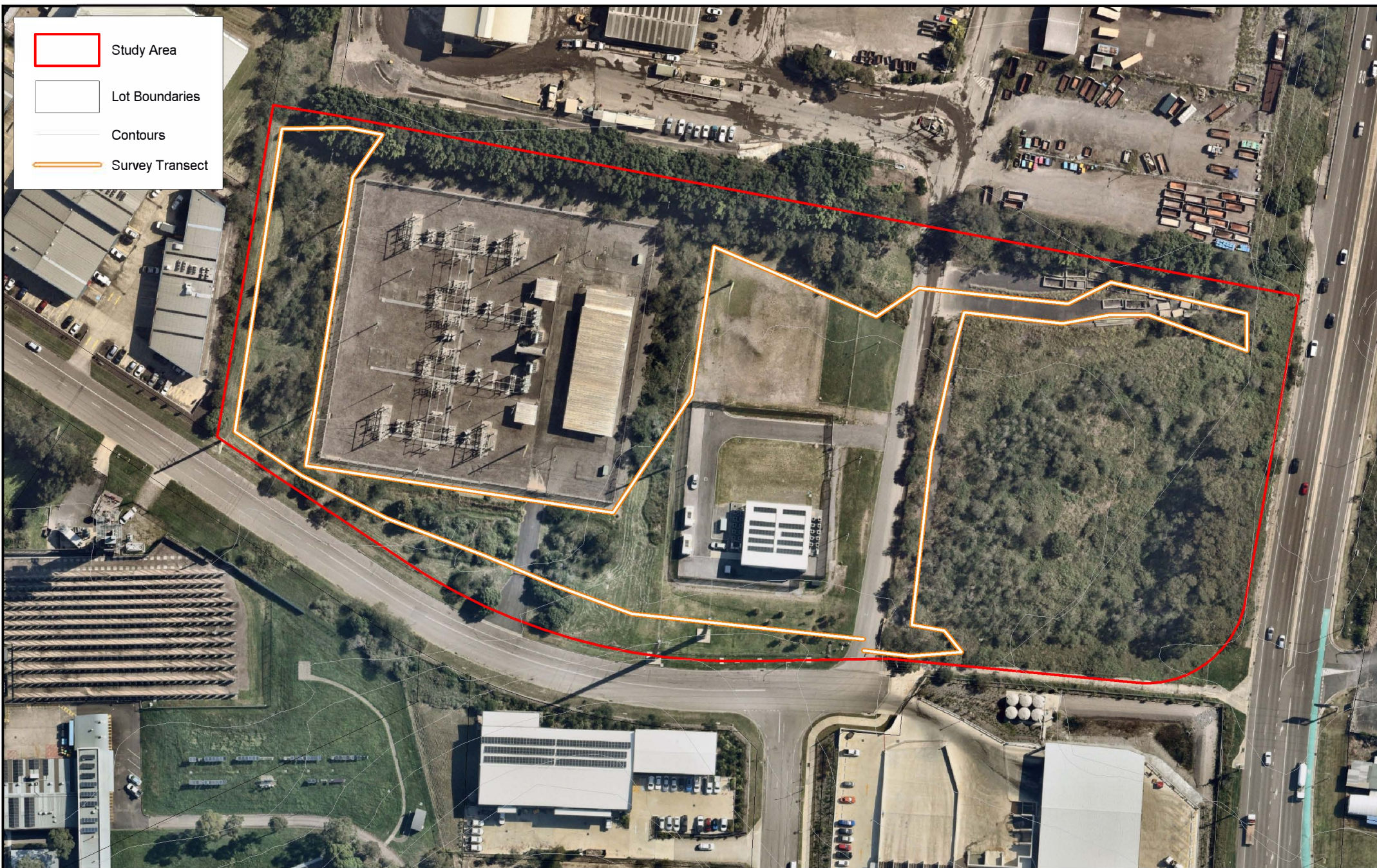
Table 6: Survey coverage results

Survey Area #	Total Area Surveyed (m ²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	Effective Coverage (m ²)	% Total Effective Survey Coverage of Context
ATU 1	4,300	10	1	A	4.3	0.1

Surface visibility across the study areas was limited due to surface vegetation such as exotic pasture grasses, leaf litter and weeds. Total effective survey coverage of the survey transect was 0.1%. Total effective survey coverage for the entire study area was 0.009% (Table 7).

Table 7: Total effective survey coverage results

Survey Area #	Total Area of Study Area (m ²)	Total Area Effectively Surveyed (m ²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	% Effective Survey Coverage of Context (Total Area)
ATU 1	44,420	4.3	10	1	A	0.009



Study Area

Lot Boundaries

Contours

Survey Transect

P.O. Box 236
 NSWRA
 NEW SOUTH WALES 2541

0

62.5

125

metres

Projection:
 MGA Zone 56 (GDA 94)
 Base Map:
 NearMaps 2024
 Image Date: 22/05/2024
 Final - Version 1

Figure 9: Survey transect within the study area.

5.4 SURVEY RESULTS

The survey did not identify any archaeological sites within the study area, nor any areas of subsurface potential archaeological deposits.

Ground disturbance was extremely high within the entirety of the study area. Evidence of disturbance relating to the substation construction, along with significant excavation and dumping of soils and likely landfill from the 1960s and significant reclamation along the south channel shoreline was identified from historical images. Vegetation growth was significant and precluded access to the majority of the study area; however the proposed BESS site is situated on a completely modified landscape which retains no archaeological potential. The area is unlikely to have been an attractive area for Aboriginal site occupation within the past given its flood prone nature, however it may have been used as a resource gathering area. Evidence of this is considered unlikely to survive within the study area.

As a result of the site inspection and pedestrian survey, as well as consideration of previous disturbance across the study area, test excavation was not considered to be necessary given the high levels of disturbance across the study area, along with the lack of landforms suitable for occupation or activity to occur.



Plate 1: Looking north into the eastern portion of the study area.



Plate 2: Looking north along existing bitumen hardstand within eastern portion of the study area.



Plate 3: Looking east along the northern boundary of the study area.



Plate 4: Concrete casing for underground services stored within the northern portion of the site.



Plate 5: Looking west across the central portion of the study area.



Plate 6: Looking north in to the frontage of the existing Zone Substation.



Plate 7: Looking west across the southern boundary of the study area.



Plate 8: Looking north along the western boundary of the study area adjacent to the Zone Substation.



Plate 9: Looking east along the northern boundary directly behind the Zone Substation.



Plate 10: Looking south east across the site.

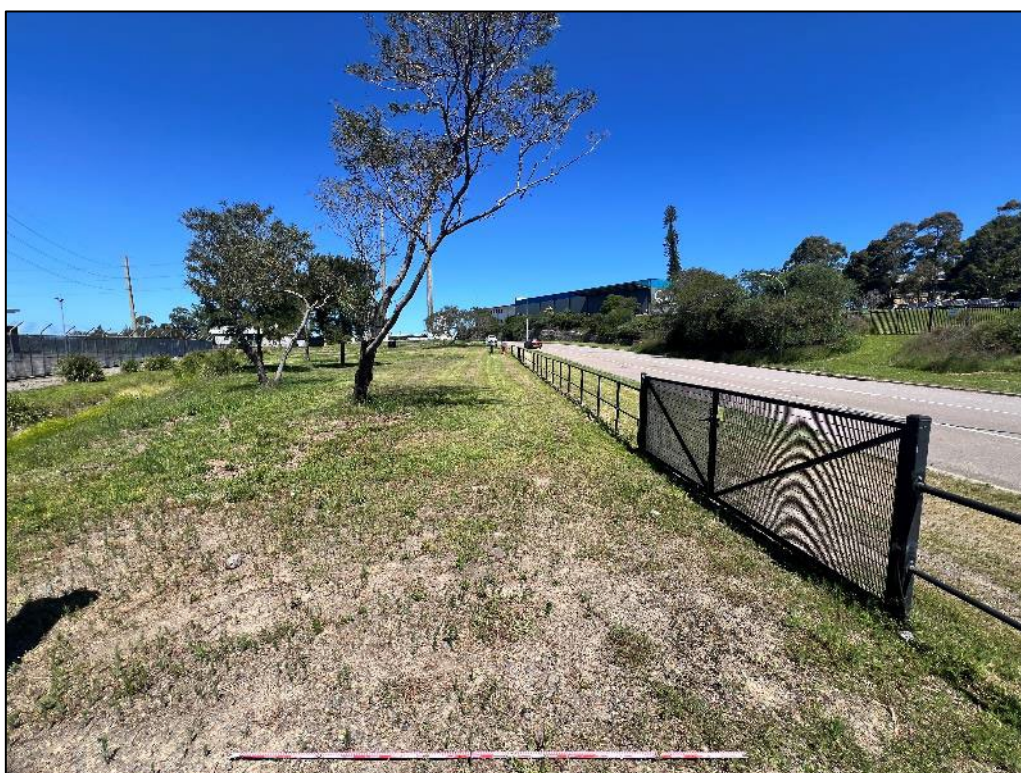


Plate 11: Looking west along the southern boundary of the site.



6.0 ABORIGINAL CULTURAL HERITAGE SIGNIFICANCE ASSESSMENT

6.1 INTRODUCTION

The *Aboriginal cultural heritage consultation requirements for proponents 2010* acknowledge that:

- Aboriginal people have the right to maintain their culture, language, knowledge and identity
- Aboriginal people have the right to directly participate in matters that may affect their heritage
- Aboriginal people are the primary determinants of the cultural significance of their heritage

Undertaking consultation with Aboriginal people ensures that potential harm to Aboriginal objects and places from proposed developments is identified and mitigation measures are developed early in the planning process.

6.2 CRITERIA

The Burra Charter is considered an appropriate framework for the assessment of cultural heritage, which can be made based on the following assessment criteria:

- **Social value:** Also referred to as cultural value, this criterion considers the spiritual, traditional, historical or contemporary associations an area or place has for Aboriginal people
- **Historic value:** the relationship between a place and people, events, phases or activities of importance to the Aboriginal community; specifically considering the “associations of a place with a historically important person, event, phase or activity in an Aboriginal community” (DECCW 2010)
- **Scientific value:** assessment under this criterion considered the ability of a landscape, place, area or object to inform scientific research and/or analysis and to assist in answering research questions
- **Aesthetic value:** the ability of a place, area, landscape or object to demonstrate aesthetic characteristics, or possess creative or technical values

Additionally, archaeological significance is assessed based on the archaeological or scientific values of an area. These values can be defined as the importance of the area relating to several criteria. Criteria used for determining the archaeological significance of an area are as follows:

- **Research or educational potential:** Can the site contribute to an understanding of the area/region and/or the state’s natural and cultural history? Is the site able to provide information that no other site or resource is able to do?



- **Representativeness:** is the site representative of this type of site? Is there variability both inside and outside the study area? Are similar site types conserved?
- **Rarity:** is the subject area a rare site type? Does it contain rare archaeological material or demonstrate cultural activities that no other site can demonstrate? Is this type of site in danger of being lost?
- **Integrity/Intactness:** Has the site been subject to significant disturbance? Is the site likely to contain deposits which may possess intact stratigraphy?

Further, an assessment of the grade of significance is made, based on how well the item fulfils the assessment criteria. The Heritage Branch of the Department of Planning (now Heritage NSW of the Department of Climate Change, Energy, the Environment and Water) 2009 guideline *Assessing Significance for Historical Archaeological Sites and 'Relics'* defines the grading of significance as follows:

Table 8: Grading of significance, from Heritage Branch 2009

Grading	Justification
Exceptional (E)	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.
High (H)	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.
Moderate (M)	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.
Little (L)	Alterations detract from significance. Difficult to interpret.
Intrusive (I)	Damaging to the item's heritage significance.

Whilst this was developed for the assessment of significance of historical items, the criteria are applicable to Aboriginal significance assessments as well. It is important to note that the below assessment is specific to Aboriginal cultural heritage and does not consider the non-Aboriginal significance of the site.

6.3 SIGNIFICANCE ASSESSMENT

No sites were located within the study area, and the archaeological significance of the study area is considered to be low. Discussion around the significance assessment for the study area as a whole is outlined below.

SOCIAL VALUE

The Aboriginal community are best placed to make a determination of the social or cultural value of the study areas. No specific comments regarding the social value of the areas to Aboriginal people have been received from the RAPs to date, although it is noted that all areas with evidence of Aboriginal occupation hold significance to Aboriginal people, and can be considered cultural landscapes.



HISTORIC VALUE

This should consider the association of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance and may have shared historic values with other communities. Specific artefact types that are regionally rare or related to a specific technological phase may have higher historical value than other artefact assemblages.

The study area is not known to be associated with any specific Aboriginal individuals or historical events and thus is considered to have limited significance under this criterion.

SCIENTIFIC VALUE

The study area is considered to have low scientific value. No evidence of Aboriginal cultural material has been identified within the study area, and the heavily industrialised and disturbed nature of the landscape reduces the likelihood of intact subsurface deposits. The absence of cultural material and the significant historical modification of the site mean it holds limited value for contributing to archaeological science or answering research questions about past Aboriginal use of the area.

AESTHETIC VALUE

Generally, aesthetic value is determined by the response evoked by a setting. The study area is considered to hold low aesthetic significance with regards to Aboriginal heritage, based on its highly disturbed context within an industrial development.

RESEARCH POTENTIAL

The study area is considered to possess low research potential regarding Aboriginal heritage due to the lack of identified sites or objects. While the site's proximity to the broader Hunter Region archaeological landscape could theoretically provide limited contextual information, the heavily disturbed nature of the area significantly diminishes its ability to inform about past Aboriginal occupation.

REPRESENTATIVENESS

The study area is generally representative of a heavily disturbed context within an industrialised landscape. It does not exhibit representative examples of intact Aboriginal cultural sites or deposits. As such, the study area has limited value in demonstrating the broader cultural values or continuity of occupation that characterise more intact sites within the Hunter Region.

RARITY

Archaeological sites with predominantly intact deposit are relatively rare within the Hunter region. The study area is considered to have low value under this criterion due to the level of disturbance present, and absence of identified Aboriginal artefacts or features.



INTEGRITY/INTACTNESS

The study area is considered to be highly disturbed due to extensive historical land clearing, reclamation, and industrial activities. These disturbances have significantly altered the natural stratigraphy and landscape, leaving the site with low integrity and minimal potential for intact archaeological deposits.

6.4 CULTURAL SIGNIFICANCE ASSESSMENT

Generally, all Aboriginal sites are of high significance and importance to the Aboriginal community, both locally and more broadly. The Aboriginal social or cultural value of the study area can only be determined by the Aboriginal community and to date, no comments have been received from the RAPs regarding the specific social significance of the study area.

It is acknowledged that the overall significance of a site is determined by both the cultural and scientific values of the area; with cultural values potentially extending beyond a specific study area and incorporating cultural landscapes in many cases. The cultural significance of an area can only be determined by the Traditional Owners of that area. Generally, all sites with evidence of Aboriginal occupation are considered significant to Aboriginal people as part of a larger cultural landscape.

The absence of evidence for Aboriginal occupation within the study area limits its overall significance under cultural and scientific criteria, but the importance of the Hunter Region as a cultural landscape is recognised by the Aboriginal community

6.5 STATEMENT OF ARCHAEOLOGICAL SIGNIFICANCE

The study area is considered to have negligible archaeological significance based on its low research potential, representativeness, rarity and integrity. The study area is located in a highly disturbed and industrialised landscape, with no identified Aboriginal cultural heritage sites or objects. The extensive reclamation, land clearing and development have substantially altered the natural environment, limiting its potential for intact archaeological deposits. Overall, the potential for the site to contribute a greater understanding of the archaeological record is considered low.



7.0 IMPACT ASSESSMENT

7.1 PROPOSED DEVELOPMENT

It is proposed to construct a BESS and associated infrastructure within the site, located in Mayfield West. The works include the following:

- Construction, operation, and maintenance of a BESS with a 200 MW maximum power output capacity with 2-hour duration (i.e. 400 MWh)
- Containerised battery units (112 Megapacks) and associated infrastructure, including inverters and 56 medium voltage transformers
- 33kV underground cable connection from the battery units to Mayfield West zone substation infrastructure
- Combined switch room and control room building
- Eight Ring Main Units (RMU)
- Onsite workshop facility
- Two auxiliary transformers
- Backup diesel generator
- Two spaces for onsite car parking
- Other ancillary infrastructure including fire suppression, stormwater management, 2.4m high boundary security chain wire fencing, lighting and CCTV.

These activities are confined to an area that has been heavily modified through historical industrial development, minimising the likelihood of impacting any significant cultural or natural features.

7.2 POTENTIAL IMPACT

No known or potential Aboriginal sites are considered likely to be impacted by the proposed development.

7.3 JUSTIFICATION

The Project is considered essential to meet growing energy demand, stabilise the electricity grid, and support the integration of renewable energy sources into the NEM. This infrastructure is vital to ensuring energy reliability and addressing the increasing need for sustainable energy solutions within the Hunter Region and beyond. The site has been strategically selected for its proximity to existing energy infrastructure, reducing the need for extensive new network connections and minimising the environmental footprint. The development will support state and national renewable energy targets, contributing to a reduction in greenhouse gas emissions and facilitating the transition towards cleaner energy sources.

7.4 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

It is a requirement of Section 2A(2) of the NPW Act to apply the principles of ESD when considering any impact to Aboriginal objects and places. ESD integrates



economic and environmental considerations, which includes cultural heritage, into decision-making processes. In general, ESD can be achieved through consideration and implementation of two key principles, being intergenerational equity and the precautionary principle.

Intergenerational equity refers to the present generation having consideration for the health, diversity and productivity of the environment for those generations to come. In terms of Aboriginal cultural heritage, this relates to cumulative impacts to Aboriginal objects and places within a region. Intergenerational equity therefore relies on the understanding that a reduction in the number of Aboriginal objects and places within a region results in fewer opportunities for Aboriginal people to access their cultural heritage in the future. Thus, it is essential to understand what comprises the Aboriginal heritage resource, both known and potential, when assessing intergenerational equity within a region.

The precautionary principle relates to threats of serious or irreversible environmental damage, and that lack of scientific certainty regarding the degree of potential damage should not be a reason to postpone adequate reasonable measures to prevent harm to the environment. Regarding Aboriginal cultural heritage, the precautionary principle relates to where a proposed development may seriously or irreversibly impact Aboriginal objects or places, or their significance; and where there may be uncertainty relating to the integrity, rarity or representativeness of Aboriginal cultural values.

The Code of Practice also outlines that a precautionary approach should be taken to avoid or reduce damage to Aboriginal objects or places, with cost-effective measures implemented wherever possible. Additionally, a cumulative impact assessment should be completed to determine how the proposed development would impact the cultural resource in the wider region (see below).

Consideration should be given to the significance of the sites present within an area, and whether they are able to transmit cultural information to future generations, or to act as teaching aids.

7.4.1 INTERGENERATIONAL EQUITY

As no Aboriginal cultural material was identified within the study area, it is considered that the impact of the development of this site would be negligible with regards to the ongoing transmission of cultural knowledge to future generations, and thus would not result on future generations accessing Aboriginal objects and places. The proposal is not considered to impact on intergenerational equity.

7.4.2 CUMULATIVE IMPACTS

The cumulative impact of the Project on the Aboriginal cultural resource must be considered as part of an assessment, and managed appropriately and sensitively. Avoidance of impact is the best practice approach wherever possible, particularly for sites that are intact, contain high numbers of artefacts, or are considered significant to the community.



In terms of cumulative impact, the site does not contain evidence of Aboriginal occupation in a disturbed or undisturbed context, with low identified cultural significance.

Given the industrialised and heavily modified nature of the landscape, there is a low likelihood of encountering unrecorded Aboriginal cultural heritage during the construction and operation of the Project. As such, it is considered that the cumulative impact of the proposed Project on Aboriginal cultural heritage would be minimal.

7.5 ABORIGINAL COMMUNITY INPUT

Consultation with the Aboriginal community has been undertaken for this Project in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010*. The input of the RAPs has been integral to ensuring the ACHA is comprehensive, respectful, and inclusive. All RAPs identified through statutory notifications and consultation processes were invited to contribute to the Project assessment. The RAPs were provided with relevant information about the Project, the study area, and the methodologies used in the assessment, and their feedback, where received, has been incorporated into the report as appropriate.



8.0 MANAGEMENT, MITIGATION AND RECOMMENDATIONS

8.1 GUIDING PRINCIPLES

Wherever possible and practicable, it is preferred to avoid impact to Aboriginal archaeological sites. In situations where conservation is not possible or practicable, mitigation measures must be implemented.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013 (The Burra Charter) provides guidance for the management of culturally sensitive places. The Burra Charter is predominantly focussed on places of built heritage significance, but the principles are applicable to other places of significance as well.

The first guiding principle for management of culturally significant sites states that “places of cultural significance should be conserved” (Article 2.1). A cautious approach should be adopted, whereby only “as much as necessary but as little as possible” (Article 3.1) should be changed or impacted.

The nature and detail of mitigation measures depend on the significance assessment for the site. The cultural significance of sites should also be considered in consultation with the Aboriginal community during community consultation.

8.1 HARM AVOIDANCE

The study area does not contain any previously registered Aboriginal sites and none were found during the investigation. As such, no harm avoidance or mitigation measures for this site are necessary.

8.2 RESTRICTED INFORMATION AND CONFIDENTIALITY

The identified Aboriginal stakeholders have not identified any restricted, confidential or culturally sensitive information related to the Project.

It is noted that all AHIMS data and Aboriginal site specific information, along with associated mapped information, must be treated as confidential and should not be shared with the general public. As such, an unredacted version of this report should not be uploaded to any publicly accessible forums.

9.0 RECOMMENDATIONS

The following recommendations are made on the basis of:

- The statutory requirements of the NP&W Act 1974
- The requirements of Heritage NSW
- The Project SEARs;
- The results of the cultural and archaeological assessment
- An assessment of the likely impacts of the proposed development, and
- The interests of the registered Aboriginal stakeholders and the cultural heritage record.

It was found that:

- There were no previously registered sites within the study area.
- No surface artefacts were identified during the survey.
- No areas considered to have potential for subsurface archaeological deposits were identified within the study area.
- The area was considered to be highly disturbed throughout due to historical clearance, land reclamation, land use practices and ongoing disturbance factors.
- The site is not considered to contain potential for Aboriginal cultural material to be present.

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the Project:

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the Aboriginal archaeological potential of the Site, which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities.

RECOMMENDATION 2: DEVELOPMENT BOUNDARIES

The proposed development must be contained within the boundaries assessed for this ACHAR. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this ACHAR, further investigation of those areas must be undertaken.

RECOMMENDATION 3: STOP WORK PROVISION

Should unanticipated Aboriginal archaeological material be encountered during construction of the Project, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.



In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

This recommendation should be included in the Project's Construction Environmental Management Plan (CEMP).

RECOMMENDATION 4: REPORTING

One digital copy of this report should be forwarded to Heritage NSW by the consultant for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the RAPs for the project.



10.0 BIBLIOGRAPHY

Attenbrow, V. 2010, *Sydney's Aboriginal Past: Investigating the archaeological and historical records*. UNSW Press, Sydney (Second Edition).

Attenbrow, V., Corkill, T., Pogson, R., Sutherland, L., Grave, P. 2017. 'Non-destructive Provenancing of Ground-Edged Mafic Artifacts: A Holocene Case Study from the Sydney Basin, Australia'. *Journal of Field Archaeology* 42(3): 173-186.

Apex Archaeology. 2018, *Vermont Estate Central Precinct Stage 3: Archaeological Technical Report*. Report to Johnson Property Group.

Boot, P. 2002, *Didthul, Bhundoo, Gulaga and Wadbilliga: An Archaeological Study of the Aboriginals of the New South Wales South Coast Hinterland*. Thesis submitted for the degree of Doctor of Philosophy of the Australian National University.

Bowdler, S. 1970, *Bass Point: The Excavation of a South East Australian Shell Midden Showing Cultural and Economic Change*. Unpublished BA (Hons) Thesis, University of Sydney, Sydney.

Bowdler, J.M., Johnston, H., Olley J.M., Prescott, J.R., Roberts, R.G., Shawcross, W and Spooner, N. 2003, 'New ages for human occupation and climatic change at Lake Mungo, Australia.' *Nature* Vol 421:30, pp.837-840.

Corkill, T. 2005. "Sourcing Stone from the Sydney Region: A Hatchet Job." *Australian Archaeology* 60: 41–50.

Clarkson, C., Smith, M., Marwick, B., Fullagar, R., Wallis, L., Faulkner, P., Manne, T., Hayes, E., Roberts, R., Jacobs, Z., Carah, X., Lowe, K., Matthews, J and Florin, S. 2015, The archaeology, chronology and stratigraphy of Madjedbebe (Malakunanja II): A site in northern Australia with early occupation. *Journal of Human Evolution*. 83:46-64

DECCW 2010a. *Aboriginal cultural heritage consultation requirements for proponents 2010*. DECCW, Sydney South.

DECCW 2010b. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. DECCW, Sydney South.

DECCW 2010c. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. DECCW, Sydney South.

Eades, D.K. 1976, *The Dharawal and Dhurga Languages of the NSW South Coast*, Australian institute of Aboriginal Studies, ANU, Canberra.

Fitzhardinge, L. F. 1779, *Sydney's First Four Years, A Narrative of the Expedition to Botany Bay and a Complete Account of the settlement of Port Jackson 1788 – 1791 by Captain Watkin Tench of the Marines*. Library of Australian History: Sydney.



Goold, W. J. (1950). *50 years of progress: Mayfield Jubilee celebrations 1900-1950*. Newcastle: Jubilee Committee.

Grant, J. 1801, Extract from Ships journal in letter from Governor King to Duke of Portland. In *Historical Records of New South Wales*, Vol IV, Hunter and King 1800, 1801, 1802. Charles Potter, Government Printer, Facsimile Edition 1976.

Heritage Branch Department of Planning. 2009, *Assessing Significance for Historical Archaeological Sites and 'Relics'*. Heritage Council of NSW, Sydney.

Howitt, AW. 1904, *The Native Tribes of South-East Australia*. Macentimetresillan & Co. London.

Hughes, P & R Lampert. 1982, Prehistorical population changes in southern coastal New South Wales. In S. Bowdler (ed) *Coastal Archaeology in Eastern Australia: Proceedings of the 1980 Valla Conference on Australian Prehistory*. Pp 16-28. Occasional Papers in Prehistory 11. Department of Prehistory Research School of Pacific Studies, Australian National University, Canberra.

JMcD CHM 2005 *Archaeological salvage excavation of site RTA-G1 109-113 George Street Parramatta*. Unpublished report to Landcom Pty Ltd.

Kuskie, P. and Kamminga, J. 2000 *Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales*. Unpublished report by Southeast Archaeology to Northern Region, Roads and Traffic Authority.

Kohen, JL., Stockton, ED., and Williams, MAJ. 1984, 'Shaws Creek KII rockshelter: a prehistoric occupation site in the Blue Mountains piedmont, eastern New South Wales'. *Archaeology in Oceania* 19(2):57-73.

Lampert, RJ. 1971, Coastal Aborigines of Southeastern Australia. In DJ Mulvaney and J Golson (Eds), *Aboriginal Man and Environment in Australia*. Pp 114-132. Australian National University Press, Canberra.

McDonald J. 2005, *Archaeological Salvage Excavation of Eight Archaeological Landscapes in the Second Ponds Creek Valley Rouse Hill Development Area, NSW*. Unpublished report to Rouse Hill Infrastructure Pty Ltd and Landcom.

McDonald, J. 2008, *Dreamtime superhighway: An analysis of Sydney Basin rock art and prehistoric information exchange*. *Terra Australis*. Australian National University E Press, Canberra.

Mulvaney, J & Kamminga, J. 1999, *Prehistory of Australia*. Allen & Unwin, Crows Nest.

Newcastle Morning Herald and Miners' Advocate. (1936, February 8). *Mayfield history: From vineyard to busy suburb*. [08 Feb 1936 - MAYFIELD HISTORY - Trove](#)



Nicol, G & Sewell, J. 1793, *A Complete Account of the Settlement at Port Jackson in New South Wales, Including An Accurate Description of the Situation of the Colony; of the Natives; and Of Its Natural Productions*. London.

Peterson, N. 1976. *Tribes and Boundaries in Australia*. Humanities Press, Canberra: Australian Institute of Aboriginal Studies.

O'Connell, J.F and Allen, J. 2004. Dating the colonization of Sahul (Pleistocene Australia-New Guinea): a review of recent research. *Journal of Archaeological Science* 31:835-853.

OEH 2011. *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. OEH, Sydney South.

Smith, MA. 2013, *The Archaeology of Australia's Deserts*. Cambridge University Press, New York.

Stockton, ED. 1973. 'Shaws Creek Shelter: Human Displacement of Artefacts and its significance.' *Mankind* 9: 112-117

Stockton, ED. & Holland, WN. 1974. 'Cultural sites and their environment in the Blue Mountains.' *Archaeology and Physical Anthropology in Oceania*. 9:36-65

Tindale, N.B. 1974, *Aboriginal Tribes of Australia – Their Terrain, Environmental Controls, Distribution, Limits and Proper Names*. Online resource, accessed from <http://archives.samuseum.sa.gov.au/tribalmmap/index.html>

University of Newcastle, Cultural Industries and Practices Research Centre. (n.d.). *Mayfield: Living the life – Heritage walk brochure*. Newcastle, Australia.