

Appendix E

Aboriginal Cultural Heritage Assessment Report

Cessnock Road Upgrade at Testers Hollow

Draft Aboriginal Cultural Heritage Assessment Report

Roads and Maritime Services | July 2019



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Executive summary

This report presents the results of the Aboriginal cultural heritage assessment for the Cessnock Road upgrade at Testers Hollow (the proposal). The proposal is located within the Cessnock Local Government Area (LGA), directly alongside the western boundary of Maitland LGA. The proposal would improve the flood immunity of Cessnock Road at Testers Hollow.

This report documents the various stages of the Aboriginal cultural heritage assessment for the proposal including an environmental background, an outline of the consultation carried out with Aboriginal stakeholders, a cultural values assessment, archaeological assessment, significance assessment, impact assessment and development of management recommendations specific to the Aboriginal site identified and its cultural heritage values.

Summary of cultural values assessment

No specific cultural value mitigation measures were suggested or recommended by Aboriginal knowledge holders regarding the proposal. However, within the context of the current assessment, there are strong ongoing connections to the broader region as well as strong interests in the manner in which it is managed. Knowledge holders expressed a strong on-going cultural knowledge of cultural sites in the landscape surrounding the proposal area. These places within the Aboriginal cultural landscape have been documented to provide a context for future studies.

Summary of archaeological assessment

Archaeological survey identified two Aboriginal sites within the proposal area; an Aboriginal artefact scatter with potential archaeological deposit (PAD) on the south side of Testers Hollow (TS-AS-001 - AHIMS #38-4-1998) and an area of PAD on the north side (TH-PAD-001 - AHIMS #38-4-1997). Further archaeological test excavation of TH-PAD-001 confirmed its archaeological sensitivity and use in prehistory by Aboriginal people as a place for processing plant foods and manufacturing backed stone artefacts. Artefact rich deposits were found to extend up to 50-60 centimetres in silty loams below the current ground surface. Dating suggests the site is likely to be at least mid-Holocene in age. Interpretation of the results suggests the site is likely to be an intermittent campsite linked to others known for the Wentworth Swamp Wallis Creek cultural landscape focusing on the margins of wetlands during the mid to late Holocene.

Archaeological investigation of TH-PAD-001 and consultation with Registered Aboriginal Parties (RAPs) has confirmed it is of moderate significance at the local level. The site possesses high social significance as it provides tangible evidence of the use of the area by Aboriginal people. Whilst the site has low historical significance, it is of moderate to high scientific significance with rankings of high integrity, high structure, moderate contents and moderate representativeness/rarity. The site has research and educational potential to educate the way local Aboriginal populations used this type of landform. As the site abuts the floodplain and creek system, it has potential to divulge information on how Aboriginal people used the surrounding aquatic resources.

In contrast, archaeological investigation of TS-AS-001 and consultation with RAPs has confirmed it is of low significance at a local level. Archaeological investigations revealed occasional stone artefacts within heavily disturbed contexts. Excavations confirmed the significantly disturbed soil profile on the south side of Testers Hollow, with evidence of excavation, soil movement and redeposition. More than 30 centimetres of fill was also found in areas, presumably introduced to level the ground surface. Given the low integrity, low frequency of artefacts, absence of tool types or stratified deposits the site has limited potential to provide any further insights into how Aboriginal people used the Testers Hollow floodplain.

Impact and mitigation recommendations

The construction of the proposal and temporary ancillary facilities would have a direct impact on TH-AS-001 and TH-PAD-001 and result in a loss of their associated scientific, social and cultural heritage significance within the proposal area. However, the proposal area forms part of the much larger stream and wetland area of Testers Hollow and the broader Wallis Creek and Wentworth Swamp Precinct. This wider precinct was used by

Aboriginal people for occupation and resource gathering and is of cultural and scientific significance. As such, as a small part of Testers Hollow, the potential impact of the proposal on the wider landscape and associated Aboriginal sites would be minimal.

Based on the results of this assessment it is recommended that Roads and Maritime Services (Roads and Maritime) establish an exclusion zone in the area of high archaeological sensitivity within TH-PAD-001 and apply for an Aboriginal Heritage Impact Permit (AHIP) to disturb remaining areas of TH-PAD-001, with the requirement for further salvage excavation, and destroy TS-AS-001, with the collection of surface artefacts, prior to the commencement of construction activities. A copy of this report should be provided with the AHIP application to the Office of Environment and Heritage (OEH) in accordance with s.90 of the *National Parks and Wildlife Act 1974* (NPW Act).

In addition to this Aboriginal Cultural Heritage Assessment Report (ACHAR), the AHIP application would need to include a methodology for further archaeological salvage excavation. A draft salvage methodology has been included as part of this ACHAR. The draft salvage methodology would be developed further in consultation with the RAPs as part of the proposal. Possible research questions have been included as part of this assessment to help guide the archaeological salvage methodology.

Additionally, there are opportunities to:

- Confirm the age of the site by fully delineating the possible hearth and obtaining a sequence of dates
- Learn more from the artefacts through multivariate analysis including palynology, usewear and residue analysis.

While no specific cultural value mitigation measures were suggested or recommended by Aboriginal knowledge holders regarding the proposal to upgrade Cessnock Road at Testers Hollow, the delivery of cultural awareness training for the development and delivery teams prior to the program of works is also recommended. This would ensure that due respect is paid to this sensitive cultural landscape.

1. Introduction

1.1 Proposal background

Roads and Maritime propose to upgrade MR195 Cessnock Road (also known as Main Road) at Testers Hollow, between Gillieston Heights and Cliftleigh (the proposal). Cessnock Road is an important regional transport route that connects Kurri Kurri and Maitland and links with the Hunter Expressway and in doing so provides access to jobs, schools and services for the people of Maitland, Heddon Greta, Kurri Kurri and surrounding communities.

Cessnock Road at Testers Hollow is currently affected by flooding and is submerged by flood waters during events equivalent to, and in excess of, the twenty percent Annual Exceedance Probability (AEP) flood which affects local residents, commuters and freight in the surrounding area. Severe weather events can result in parts of the Gillieston Heights community being cut-off from road access. The proposal would improve the flood immunity of Cessnock Road at Testers Hollow.

The following report presents the results of an Aboriginal cultural heritage assessment that will inform the review of environmental factors (REF) currently being prepared for the proposal.

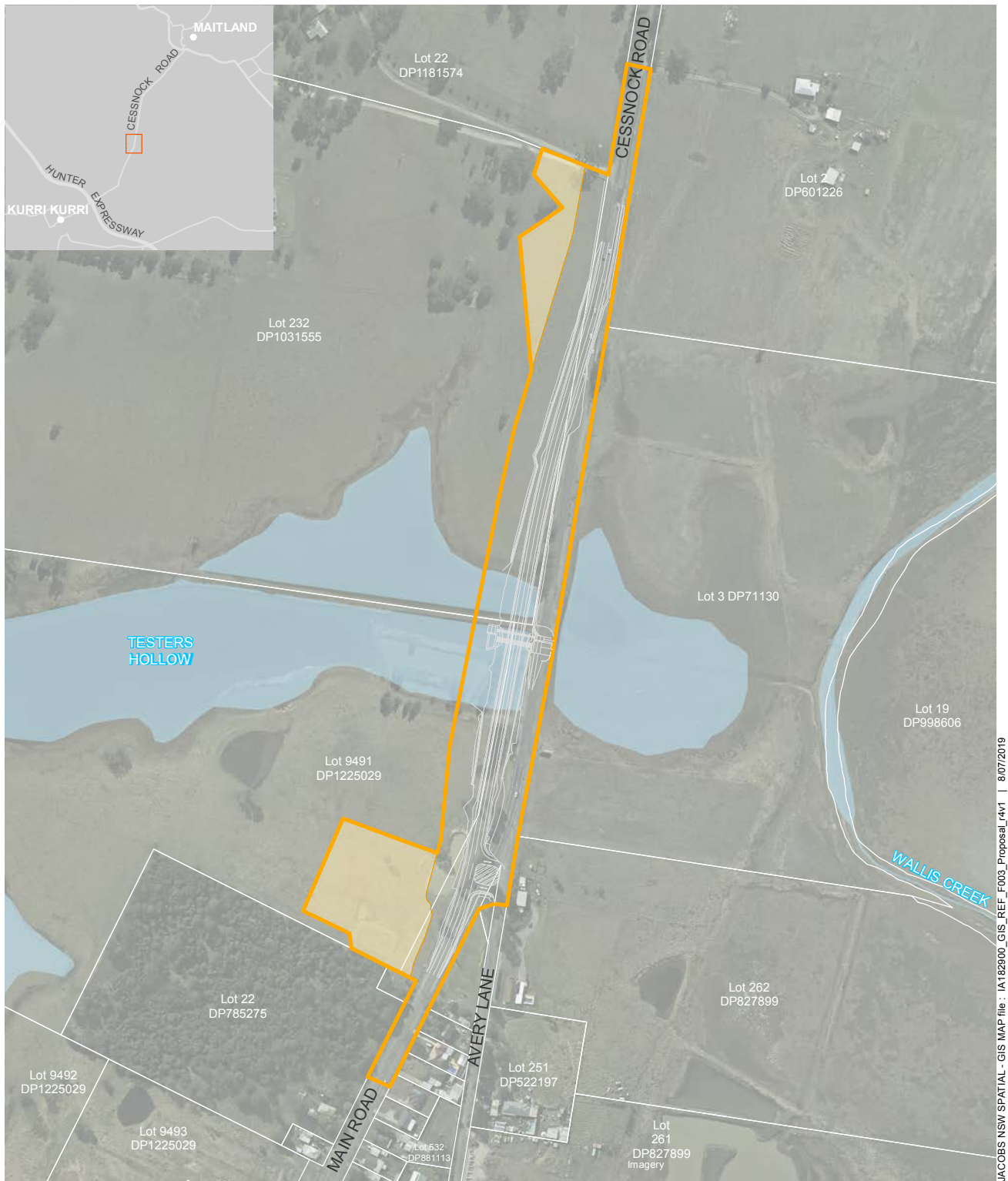
Key features of the proposal include:

- A new two lane 60 and 80 kilometre per hour road, one lane in each direction with two metre shoulders, around 900 metres long between Gillieston Heights and Cliftleigh on the western side of the existing road
- The new road would be on an earth embankment at a height of about six metres Australian Height Datum (AHD) which would allow access in a five per cent Annual Exceedance Probability (AEP) flood event. AEP is the likelihood of a flood event occurring in any one year
- The new road would tie in with the existing road at the northern and southern extents
- Existing access arrangements would be maintained to private property and to the existing combined U-turn bay and intersection at Avery Lane
- New drainage to allow water to pass under the new earth embankment and through the existing road embankment
- Utility and street light relocations
- Partial property acquisitions
- Ancillary works including drainage works, safety barriers, signs, line marking, landscaping and environmental protection works
- Temporary ancillary facilities including site compounds and stockpile sites.

1.2 The proposal area

The proposal is located roughly 3.5 km to the east of Kurri Kurri and about 5.4 km to the west of Maitland within the Cessnock Local Government Area (LGA) and directly alongside the western boundary of the Maitland LGA (refer to **Figure 1.1**). The proposal area is defined as all areas that would be directly impacted by the proposal. It includes the total proposal footprint, ancillary sites, and any other areas that would be temporarily disturbed during construction.

Testers Hollow runs perpendicular to the proposal, separating the areas of archaeological potential into a north side and south side (see **Figure 1.1**). The north side contained the site TH-PAD-001, while the south side contained an open artefact scatter with a potential archaeological deposit (PAD), TH-AS-001.



Legend

- | | |
|--|--|
| Proposal area | Waterbody |
| Potential ancillary site | Design |

0 100 200 m

1:4,800 @ A4



Figure 1.1 | Proposal location

1.3 Scope and objectives

The Aboriginal cultural heritage assessment detailed in this report has been prepared in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b) (Code of Practice). As such, the assessment involved completing the following tasks:

- Carrying out consultation with Aboriginal stakeholders in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a) as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places
- Conducting a detailed cultural values assessment, including desktop review of available ethnographic information and interviews with registered Aboriginal knowledge holders
- Conducting an archaeological assessment, including a desktop assessment (with register search), archaeological field survey and test excavation. Full details of this assessment are documented in the Archaeological Assessment Report (AAR)
- Carrying out a significance assessment of Aboriginal cultural heritage values potentially impacted by the proposal. This includes both scientific (archaeological) and cultural significance for Aboriginal heritage sites and places. Cultural significance has been informed by consultation with the Registered Aboriginal Parties (RAPs) for the proposal
- Providing an assessment of the potential impact to Aboriginal archaeological sites
- Development of management and mitigation measures for the impacts upon archaeological sites.

The Stage 2 PACHCI Aboriginal Archaeological Survey Report of the proposal area for the proposal was prepared by Kayandel Archaeological Services (KAS), on behalf of Roads and Maritime. Information from this initial survey and assessment has been incorporated into this report where relevant (KAS, 2018).

The objectives of the following ACHAR are:

- To conduct an archaeological investigation to locate, identify and study Aboriginal objects, archaeological deposits and historical, oral and environmental sources to provide an assessment of the archaeological and cultural heritage significance of the proposal area
- To prepare an ACHAR that complies with legislative requirements, codes of practice and assessment procedures relevant to the proposal (refer to **Section 1.3**). This includes the Code of Practice and the Roads and Maritime *Procedure for Aboriginal and Cultural Heritage Consultation and Investigation* (Roads and Maritime Services 2011) (PACHCI).

1.4 Report outline

The report is structured as follows:

- **Chapter 2** – This chapter outlines the legislative and policy framework relevant to the investigation and assessment of Aboriginal heritage in New South Wales
- **Chapter 3** – This chapter presents an overview of consultation undertaken with the Aboriginal community in relation to the proposal. Consultation was carried out in accordance with Stage 3 of PACHCI (Roads and Maritime Services, 2011)
- **Chapter 4** – This chapter presents background information relevant to the proposal, including environmental information (geology, soils, climate and vegetation) as well as a discussion of ethnographic data
- **Chapter 5** – This chapter presents a summary of the Aboriginal Cultural Values Assessment (ACV) Report prepared for the proposal. This information has been sourced directly from the RAPs
- **Chapter 6** – This chapter presents a summary of the AAR prepared for the proposal. The AAR describes the archaeological research, fieldwork and analysis that have been conducted in support of this report. The AAR focuses solely on the archaeological (scientific) investigation, whereas this report covers both cultural and scientific values

- **Chapter 7** – This chapter assesses the heritage significance of the identified Aboriginal sites assessed as part of this report using the NSW heritage significance criteria
- **Chapter 8** – This chapter assesses the proposals direct and indirect impact on identified Aboriginal sites and PADs and their significance
- **Chapter 9** – This chapter presents recommended management measures to mitigate the impact of the proposal on Aboriginal sites and their values within the proposal area.

1.5 Investigators and contributors

The report was authored by:

- Andy Roberts (Senior Consultant, Jacobs). Andy holds a Master of Letters by thesis (Archaeology and Paleoanthropology), from the University of New England and has over twenty-five years of experience as a cultural heritage advisor and archaeologist
- Fiona Leslie (Technical Leader and Principal Archaeologist, Jacobs). Fiona holds a Bachelor of Arts (Honours) from the University of Sydney and a Bachelor of Arts and Bachelor of Science from the University of Queensland. Fiona has over 17 years of experience as a cultural heritage advisor, archaeologist and manager
- Alexandra Seifertova (Graduate Archaeologist, Jacobs). Alexandra holds a Bachelor of Arts with Honours from the University of Sydney and has over a year of experience as an archaeologist.

Mapping was prepared by Ajay Arcot (Senior Spatial Consultant, Jacobs) and Kahli Macnab (Spatial Consultant, Jacobs).

2. Legislative and policy framework

The following State and Commonwealth legislation is relevant to the Aboriginal cultural heritage assessment:

- NSW legislation:
 - *Environmental Planning and Assessment Act 1979*
 - *National Parks and Wildlife Act 1974 (NPW Act)*
 - *National Parks and Wildlife Amendment Act 2010*
 - *Native Title Act (NSW) 1994*
 - *Aboriginal Land Rights Act (NSW) 1983.*
- Commonwealth legislation:
 - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
 - *Environment Protection and Biodiversity Conservation Act 1999*
 - *Native Title Act 1993.*

A summary of these acts and associated regulatory documents (which include codes of practice, guidelines and procedures) that govern the proposal are described in **Table 2.1**.

Table 2.1: Summary of State and Commonwealth legislation, codes of practice, procedures and guidelines

Reference	Requirements
State legislation, codes of practice, procedures and guidelines	
<i>Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI)</i> (Roads and Maritime Services 2011)	• This procedure outlines a four-stage process for investigating potential impacts to Aboriginal cultural heritage as a result of Roads and Maritime road planning, development, construction and maintenance activities. • Includes a process of community consultation that aims to ensure that the role, function and views of Aboriginal people are respected by Roads and Maritime.
<i>Environmental Planning and Assessment Act 1979</i> (Department of Planning and Environment)	• Framework for environmental planning and assessment in NSW. This act includes the requirement for environmental impacts to be considered prior to development approval. • Includes requirement for impacts or likely impacts upon Aboriginal cultural heritage to be assessed as part of the proposal's environmental assessment. • Roads and Maritime is the determining authority of the proposal under Division 5.1 of the EP&A Act • An REF is being prepared to describe the proposal, document the likely impacts of the proposal on the environment and to detail the protective measures to be implemented, fulfilling the requirements of Section 5.5 of the Act that Roads and Maritime examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.
<i>National Parks and Wildlife Act 1974 (NPW Act)</i> (OEH 2012a)	The NPW Act provides for the protection of Aboriginal objects and Aboriginal places. Under the Act (Section (s) 5), an Aboriginal object is defined as: <i>'any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction and includes Aboriginal remains'.</i> Procedures that accompany the <i>National Parks and Wildlife Amendment Act 2010</i> include the <i>Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW</i> (OEH 2011), the <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i> (Department of Environment, Climate Change and Water (DECCW 2010a)), the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (DECCW 2010b), and the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW 2010a).

Reference	Requirements
Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (DECCW 2011)	In accordance with Division 5.5 of the EP&A Act, the proposal requires that potential impacts to Aboriginal heritage must be considered and mitigation measures implemented. This guide (DECCW 2010b) provides guidelines for the investigation and assessment of Aboriginal cultural heritage (under part 6 of the NPW Act) to explore the harm of a proposed activity on Aboriginal objects and declared Aboriginal places and to clearly set out which impacts are avoidable and which are not. The document provides: • Guidance on the process for investigation and assessing Aboriginal cultural heritage in NSW • OEH's requirements for an ACHAR.
Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCRP) (DECCW 2010a)	This document (DECCW 2010b) establishes the requirements for consultation (under part 6 of the NPW Act) with Aboriginal stakeholders as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making for any application for an AHIP. The ACHCRP comprises four stages with associated timeframes which must be adhered to: • Stage 1 — Notification of project proposal and registration of interest (14 days from date letter sent to register as a registered Aboriginal stakeholders) • Stage 2 — Presentation of information about the proposal (set up Aboriginal Focus Group (AFG) meetings, prepare info etc) • Stage 3 — Gathering information about cultural significance (28 days for registered Aboriginal stakeholders to provide a review and feedback to consultants' methodology) • Stage 4 — Review of draft cultural heritage assessment report (registered Aboriginal stakeholders have 28 days from sending of the report to make a submissions).
Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010b)	The code of practice (DECCW 2010c) sets out the detailed requirements for archaeological investigations of Aboriginal objects in NSW for activities that require assessment under Part 4, Part 5 or Part 5.1 (now Part 4, Division 5.1 and Division 5.2) of the EP&A Act. An AHIP to undertake test excavation is not required if complying with this code, as sub-surface testing complying with it are excluded from the definition of harm to an Aboriginal object. The code sets out the following in detail: • Minimum qualifications for anyone undertaking archaeological investigation under the code in NSW • Assessment steps required to be undertaken for all archaeological investigation • Assessment steps that may be required to be undertaken to adequately characterise the Aboriginal objects being investigated.
Native Title Act (NSW) 1994 (OEH 2012c)	The <i>Native Title Act (NSW) 1994</i> was introduced to ensure that the laws of NSW are consistent with the Commonwealth <i>Native Title Act 1993</i>. The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010b) stipulates that where relevant, consultation must be conducted with Native title holders or registered native title claimants in accordance with the NSW <i>Native Title Act 1994</i>.
Heritage Act (NSW) 1977 (OEH 1977)	The Heritage Act, administered by NSW Office of Environment and Heritage, protects the state's natural and cultural heritage. Aboriginal heritage is primarily protected under the NPW Act but may be subject to the provisions of the Heritage Act if the item is listed on the State Heritage Register or subject to an interim heritage order (IHO). There are currently no items listed on the State Heritage Register or subject to an IHO currently within the proposal area.
Aboriginal Land Rights Act (NSW) 1983 (NSW Government 1983)	The <i>Aboriginal Land Rights Act (NSW) 1983</i> recognises the rights of Aboriginal people in NSW and provides a vehicle for the expression of self-determination and self-governance. The purposes of the Act are: • To provide land rights for Aboriginal persons in NSW • To provide for representative Local Aboriginal Land Councils (LALCs) in NSW • To vest land in those LALCs • To provide for the acquisition of land, and the management of land and other assets and investments, by or for those LALCs and the allocation of funds to and by those LALCs • To provide for the provision of community benefit schemes by or on behalf of those LALCs.

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	The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010b) stipulates that where relevant, consultation must be conducted with Aboriginal owners in accordance with the <i>Aboriginal Land Rights Act (NSW) 1983</i> .
Commonwealth legislation, codes of practice, procedures and guidelines	
<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> (Australian Government 2005)	- Protects Aboriginal cultural property in a wider sense and includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition' - The Act may apply to contemporary Aboriginal cultural property as well as ancient sites - The responsible Minister may make a declaration under s10 of the Act in situations where state or territory laws do not provide adequate protection of heritage places.
<i>Environment Protection Biodiversity Conservation Act 1999 (EPBC Act)</i> (Australian Government 1999)	The EPBC Act includes provisions to protect matters of national environmental significance and Commonwealth land. Lists and registers made under the Act include: - A National Heritage List of places of national heritage significance - A Commonwealth Heritage List of heritage places owned or managed by the Commonwealth - An independent expert body, the Australian Heritage Council, advises the Minister on the listing and protection of heritage places.
<i>Native Title Act 1993</i> (Australian Government 2011)	- Recognises and protects native title, and provides that native title cannot be extinguished contrary to the <i>Native Title Act 1993</i> - National Native Title Tribunal (NNTT) is a Commonwealth Government agency set up under this Act and mediates native title claims under the direction of the Federal Court of Australia - NNTT maintains the following registers: - National Native Title Register - Register of Native Title Claim - Unregistered claimant applications - Register of Aboriginal land use agreements. The ACHCRP (DECCW 2010b) stipulates that where relevant, consultation must be conducted with Native title holders or registered native title claimants in accordance with the <i>Native Title Act 1993</i>.

3. Consultation

Aboriginal stakeholder engagement and involvement is essential to identify Aboriginal cultural values relevant to the proposal. This section summarises the consultation process relating to the organisation and conduct of the cultural heritage assessment.

3.1 Summary of consultation

Aboriginal stakeholder consultation has been completed in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010b). The consultation procedures outlined in the PACHCI were designed to aid compliance with this guideline for Roads and Maritime projects. The PACHCI outlines a four-stage process for investigating potential impacts to Aboriginal cultural heritage as a result of road planning, development, construction and maintenance activities. It includes a process of community consultation with Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s). The PACHCI provides Aboriginal people with the opportunity to participate in decision making regarding the management of their cultural heritage by providing proponents with information regarding cultural significance and providing input into management options.

The proposal is located within the Mindaribba LALC area. Roads and Maritime has consulted with the Mindaribba LALC in accordance with the PACHCI. The following subsections provide further details on consultation that took place at each stage of the PACHCI process. **Table 3.1** provides a summary of consultation carried out to-date.

Table 3.1: Summary of Aboriginal community consultation for the proposal

Consultation stage / task	Completed by	Start	Finish
Stage 2 – Identification of key Aboriginal stakeholders	Roads and Maritime	-	31 May 2018
Stage 2 – Engage Aboriginal stakeholders to undertake a site survey and site survey	Roads and Maritime	June 2018	June 2018
Stage 3 – Seek the names of Aboriginal people with cultural knowledge by letter or notify native title holders	Roads and Maritime	29 June 2018	-
Stage 3 – Notify Aboriginal people with cultural knowledge by letter	Roads and Maritime	31 July 2018	-
Stage 3 – Notify Aboriginal people with cultural knowledge by advertisement	Roads and Maritime	9 July 2018	11 July 2018
Stage 3 – Engage an archaeologist to implement the archaeological methodology and prepare a cultural heritage assessment report	Jacobs	August 2018	May 2019
Stage 3 – Send the names of registered parties to OEH and local Aboriginal land councils	Roads and Maritime	14 September 2018	-
Stage 3 – Send an invitation to attend an AFG meeting and a draft methodology for review	Jacobs	29 October 2019	15 November 2018
Stage 3 – Hold an AFG meeting (AFG 1)	Jacobs	23 November 2018	30 April 2019
Stage 3 – Finalise methodology	Jacobs	29 October 2018	24 January 2019
Stage 3 – Present the results of archaeological testing (north side) and CVA at AFG 2 and AFG 3.	Jacobs	AFG 2 held 25 March 2019 AFG 3 held 30 April 2019	AFG 2 held 25 March 2019 AFG 3 held 30 April 2019
Stage 3 – Seek comment on the draft Archaeological Assessment Report (AAR) (north	Roads and Maritime	3 April 2019	6 May 2018

Consultation stage / task	Completed by	Start	Finish
side) and Cultural Values Assessment (CVA)			
Stage 3 – Present the proposed archaeological assessment methodology for the south side (AFG 3)	Jacobs	30 April 2019	30 April 2019
Stage 3 – Seek comment on the proposed archaeological assessment methodology on the south side	Roads and Maritime	3 April 2019	6 May 2019
Stage 3 – Present the results of archaeological assessment methodology (south side) at AFG 4	Jacobs	AFG 4 to be held 2 July 2019	AFG 4 to be held 2 July 2019
Stage 3 – Present the draft ACHAR for review and comment	Jacobs	AFG 4 to be held 2 July 2019	AFG 4 to be held 2 July 2019
Stage 3 – Seek comment on the draft ACHAR	Jacobs	27 June 2019	25 July 2019

3.2 PACHCI Stage 1 and 2

Stage 1 of the PACHCI involved a desktop risk assessment to determine whether the proposal would potentially impact on Aboriginal cultural heritage and require further assessment or investigation. This included assessing impacts on Aboriginal lands, objects and places defined under the NPW Act (OEH 2012a). A site walkover was carried out by the Roads and Maritime Cultural Heritage Officer.

Searches carried out included a search of the AHIMS on 9 November 2018, which identified no previously recorded Aboriginal items in the proposal area. A search of the Register of Aboriginal Land Claims was also conducted in May 2018 which identified one native title holder to be consulted during Stage 2. PACHCI Stage 2

Consultation carried out for Stage 2 of the PACHCI consisted of a number of actions as summarised below.

Action 1 – Identification of key Aboriginal stakeholders

- Identification of the LALCs relevant for the proposal. These were:
 - Mindaribba LALC
- A search of the Register of Aboriginal Land Claims was updated in February 2019 which identified the following native title claimants:
 - Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People (NSD39/2019)
 - Plains Clans of the Wonnarua People (NSD788/2013).

No additional native title holders were identified during searches undertaken in January, February and March 2019.

Action 2 – Engage Aboriginal stakeholders to undertake a site survey

A representative from Plains Clans of the Wonnarua People (PCWP) native title group (NSD1680/2013) (Mary Franks) and Mindaribba LALC were engaged to take part in a field survey of the proposal area. Details of this are recorded in the consultation records.

Action 3 and 4 – Carry out the site survey

An initial field survey was undertaken by KAS and field staff from the Mindarribba LALC on 28 May 2018. An additional field survey was carried out on 25 June 2018. These were both undertaken to record the characteristics of the proposal area, any physical evidence of Aboriginal land use and any information that could inform predictions about Aboriginal objects within the proposal area. The field survey was attended by an archaeologist from Kayandel Archaeologist Services, Roads and Maritime staff, a site officer from Mindaribba LALC and a representative from the Plains Clans of the Wonnarua People native title group.

Consultation carried out during the survey provided an opportunity for the site officers to provide:

- Comment on the potential for Aboriginal cultural material to be present
- Comment on the cultural significance of any Aboriginal cultural heritage sites identified during the survey
- Comment on the proposed management recommendations, including recommendations for further assessment.

Action 5 – Aboriginal stakeholders(s) prepare a cultural survey report

In accordance with PACHCI, Mindaribba LALC were requested to provide a cultural heritage survey report to Roads and Maritime advising on Aboriginal cultural heritage issues that may arise as a result of the proposal. The cultural heritage survey report was provided by Mindaribba LALC on 22 May 2018.

3.3 PACHCI Stage 3

As outlined in the PACHCI and the ACHCRP (DECCW 2010a), where harm to Aboriginal objects or places is likely to occur, formal consultation is required to be carried out as per the process outlined in these documents. As the initial Stage 2 site survey identified that harm to Aboriginal objects or places was likely to occur, formal consultation commenced.

Action 1 – Seek the names of Aboriginal people with cultural knowledge by letter or notify native title holders

Letters were written and sent to the following organisations on 29 June 2018 seeking the details of Aboriginal people who may have an interest in the proposal and who hold cultural knowledge about objects and places relevant to the proposal:

- Cessnock City Council
- Maitland City Council
- Native Title Services Corporation Limited
- NSW Aboriginal Land Council
- Native Title Tribunal
- Office of Environment and Heritage (OEH)
- Office of the Registrar of the Aboriginal Land Rights Act
- Plains Clans of the Wonnarua People (PCWP) native title group (NSD1680/2013).

Following the statutory response time of 14 days, a list of 32 Aboriginal groups or people with potential cultural knowledge was compiled.

Action 2 – Notify Aboriginal people with cultural knowledge by letter

On 31 July 2018, a letter of notification was sent to all of the Aboriginal groups or people identified at that time inviting them to register their interest in the proposal.

Action 3 – Notify Aboriginal people with cultural knowledge by advertisement

Advertisements inviting Aboriginal groups or people to register their interest in the proposal were placed in the public notices section of the following newspapers on the following dates:

- Maitland Mercury (9 July 2018)
- Singleton Argus (11 July 2018)
- Newcastle Herald (9 July 2018)

- Koori Mail (11 July 2018)
- Cessnock Advertiser (11 July 2018)
- National Indigenous Times (9 July 2018).

Action 4 – Engage an archaeologist to implement the archaeological methodology and prepare a cultural heritage assessment report

Jacobs were engaged in August 2018 to prepare and implement the archaeological methodology for the proposal.

Action 5 – Prepare a register of Aboriginal parties

A register of RAPs who responded to the notification letters and advertisements was compiled and continues to be maintained for the proposal. Each RAP was sent a letter confirming receipt of their registration. In March 2019, there were 32 RAPs for the proposal.

Action 6 – Send the names of registered parties to OEH and local Aboriginal land councils

The list of RAPs was issued to the CEO at Mindaribba LALC and the OEH on 14 September 2018.

Action 7 – Send an invitation to attend an AFG meeting and a draft methodology for review

On 29 October 2018, invitations to attend the initial AFG meeting were sent to all RAPs registered for the proposal. Included with the invitation letters was:

- An agenda for the AFG meeting
- A copy of PACHCI Resource 19 – Aboriginal site officer application form
- A draft copy of the Test Excavation Methodology for the proposed Cessnock (Main) Road upgrade at Testers Hollow (Jacobs, 2018).

On 6 November 2018, an invitation was issued to OEH to comment on the draft Test Excavation Methodology for the proposed Cessnock (Main) Road upgrade at Testers Hollow (Jacobs, 2018). An invitation to attend the AFG meeting was also provided.

In response to queries from RAPs, a copy of the Stage 2 Aboriginal Archaeological survey report (Kayandel Archaeological Services 2018) was provided to RAPs on 15 November 2018.

Action 8 – Hold an AFG meeting

To date there have been three AFG meetings for the proposal with a fourth AFG scheduled for June 2019. These are summarised below.

AFG 1

An initial AFG meeting for the proposal was held on 23 November 2018. During the meeting, the proposal characteristics and its surrounds were presented to participants. The draft archaeological methodology was also reviewed and feedback from RAPs documented.

AFG 2

A second AFG meeting was held on 25 March 2019. The meeting provided a proposal update and discussed the results of the north side test excavation program carried out in February 2019. Following feedback from RAPs at this AFG, an archaeological methodology for the southern side was developed.

AFG 3

A third AFG meeting was held on 30 April 2019. The meeting outlined the proposed archaeological methodology for the southern side. The meeting also presented the key results of archaeological investigations on the northern side and outlined management measures for the northern side. Following feedback from RAPs at AFG 3, a site familiarisation visit was held on 14 May 2019.

AFG 4

A fourth AFG meeting was held on 2 July 2019. The meeting presented the key results of the archaeological investigations for the southern side. Management measures for the proposal and the content of the Aboriginal Heritage Impact Permit (AHIP) application were also discussed.

Action 9 – Provide meeting minutes to Aboriginal parties

Written summary of the comments and minutes from AFG 1 was provided to RAPs via email on 10 December 2018. Written summary of the comments and minutes from AFG 2 was provided to RAPs via email on 3 April 2019. Written summary of the comments and minutes from AFG 3 was provided to RAPs via email on 6 May 2019. Written summary of the comments and minutes from AFG 4 was provided to RAPs via email on 12 July 2019.

Action 10 – Finalise methodology

Review of the archaeological methodology for the northern side commenced on 29 October 2018 when the draft methodology was sent to the RAPs. Comments from RAPs and OEH were compiled for consideration and incorporated where appropriate to refine the methodology. The review period ended on 24 January 2019.

Review of the archaeological methodology for the southern side commenced on 3 April 2019 when the draft methodology was sent to the RAPs. Comments from RAPs and OEH were compiled for consideration and incorporated where appropriate to refine the methodology. The review period ended on 6 May 2019.

Action 14 – Engage Aboriginal site officers

The invitation to attend AFG 1 also included an invitation to apply to be an Aboriginal site officer during the north side test excavations, with all nominations to be received by 14 December 2018. Nominations to participate in the cultural values assessment were also opened at AFG 1, and with all nominations received by January 2019, which was then extended until end of February 2019. Site officers for the south side test excavations were selected from the existing pool of approved Aboriginal site officers, as discussed at AFG 3.

Consultation log

A log summarising all of the consultation carried out with Aboriginal parties in relation to the proposal has been compiled.

3.4 Further consultation

As required by the PACHCI and the ACHCRP (DECCW 2010a), a copy of this report will be provided to all RAPs for the proposal for review and comment. This report will be updated based on the comments received from the RAPs after the 28 day mandatory review period.

4. Background information

This chapter describes the environmental context within and surrounding the proposal area including landscape regions, geology and soils, vegetation, climate, historical and current land use and the ethnographic background.

4.1 Environmental context

4.1.1 Topography and hydrology

The proposal area lies within a region which extends across a range of landforms and geological features. It is located in the north east of the Sydney Basin Bioregion, which consists of a geological basin filled with near horizontal sandstones and shales of Permian to Triassic age that overlie older basement rocks of the Lachlan Fold Belt. The sedimentary rocks have been subject to uplift with gentle folding and minor faulting during the formation of the Great Dividing Range. Erosion by coastal streams has also created a landscape of deep cliffed gorges and remnant plateaus.

Located within the Central Lowlands, a broad belt of lowlands about 15 km wide, the proposal area lies at the centre of the Bioregion. It is bounded on all sides by steep rugged country, except in the far west where the Cassilis Gate provides access to the interior. To the south is dissected plateau country, and to the north and west are the Liverpool Range and Barrington Uplands respectively. Although land use in the area has historically been primarily rural, open cut mining has developed throughout the region on a large scale, especially around Singleton and Muswellbrook (Story *et al* 1963).

The proposal area is situated between Swamp Creek and associated Wentworth Swamps (about two kilometres north-west) and Wallis Creek (about 250 metres to the east). It has broad crests and slopes to Testers Hollow, which is an alluvial plain, and an alluvial plain on the southern side of Testers Hollow. The alluvial plain has moderate foundation and water erosion hazards with localised seasonal waterlogging.

Streams in the area drain north into the Hunter River from elevated landforms to the south (Brayshaw 1994). Seasonal stresses during spring-summer may affect plant growth, however adequate soil moisture is available throughout most of the year (Matthei 1995). The proximity of permanent water, ephemeral streams, and wetland to the wider area around the proposal, would have meant that the area is likely to have been suitable for Aboriginal occupation.

4.1.2 Geology and soils

The proposal is located in the north eastern portion of the Sydney Basin Bioregion. The larger scale geology of the Sydney Basin Bioregion is characterised by marine deposition events from the Carboniferous to the early Permian. Numerous coal deposits accumulated before large river systems covered the region in quartz sandstone, known as the Hawkesbury Sandstone. The Hawkesbury Sandstone, which forms the bedrock for all of the Sydney Basin, dates to the mid Triassic. This bedrock of sandstone is then capped by a thin layer of shale (Branagan and Packham 2000).

The Bolwarra Heights and Wallis Creek soil landscapes have been identified in the proposal area (Matthei 1995), with the Bolwarra Heights soil landscape at the north and south of the proposal, and with Wallis Creek soil landscape running along the Testers Hollow in the centre of the proposal.

The Bolwarra Heights soil is an erosional soil landscape, which is characterised by rolling low hills on Permian sediments in the centre-west of the sheet in the East Maitland Hills region with slopes of usually 5-20%. The soils are moderately deep (<150 centimetres), well-drained Yellow, Red and Brown Podzolic Soils; with some moderately deep (<100 centimetres), well-drained Lithosols on crests; and, moderately deep (<140 centimetres), imperfectly drained yellow Soloths on lower slopes. Soils are typically shallow, susceptible to water erosion, high run-on (localised), seasonal waterlogging (localised) and localised steep slopes with mass movement (Matthei 1995).

The Wallis Creek soil is an alluvial soil landscape, which is characterised by narrow to moderately broad, level to gently undulating floodplains on Quaternary alluvium, with slopes usually <3 %. The soils are deep (>200 centimetres) alluvial soils and siliceous sands on floodplains, with some deep (>200 centimetres) alluvial soils on back-swamps and ox-bows. Soils are typically susceptible to flooding, permanently high water-tables, high run-on, high stream bank erosion hazard, ground water pollution hazard, non-cohesive soils of low fertility (Matthei 1995).

4.1.3 Vegetation

The original vegetation that would have been present within the proposal area has been removed or modified following European occupation of the Hunter Valley. Prior to European settlement the vegetation would have been made up of foliage with a density of 30-70 per cent, medium sized (10-30 metres tall) Eucalyptus, and tall shrubs (>2 metres) in the understorey (Geoscience Australia 2003).

4.1.4 Climate

The proposal lies within the Hunter Valley, where the climate is mostly cool and temperate. A review of the automatic weather station (AWS) of the nearby Cessnock Airport (Station 061260) indicates that the annual mean maximum temperatures over the past 50 years range between 17.5 and 30.5 degrees Celsius. Station data indicates that rainfall is generally spread uniformly throughout the year with a slight summer-autumn dominance, with an annual average of about 734 millimetres. The lowest recorded rainfall is zero millimetres in July 1970 and the highest of 352 millimetres in June 2017, with 2008 as the wettest year on record (BOM, 2019).

4.1.5 Former land use and disturbance

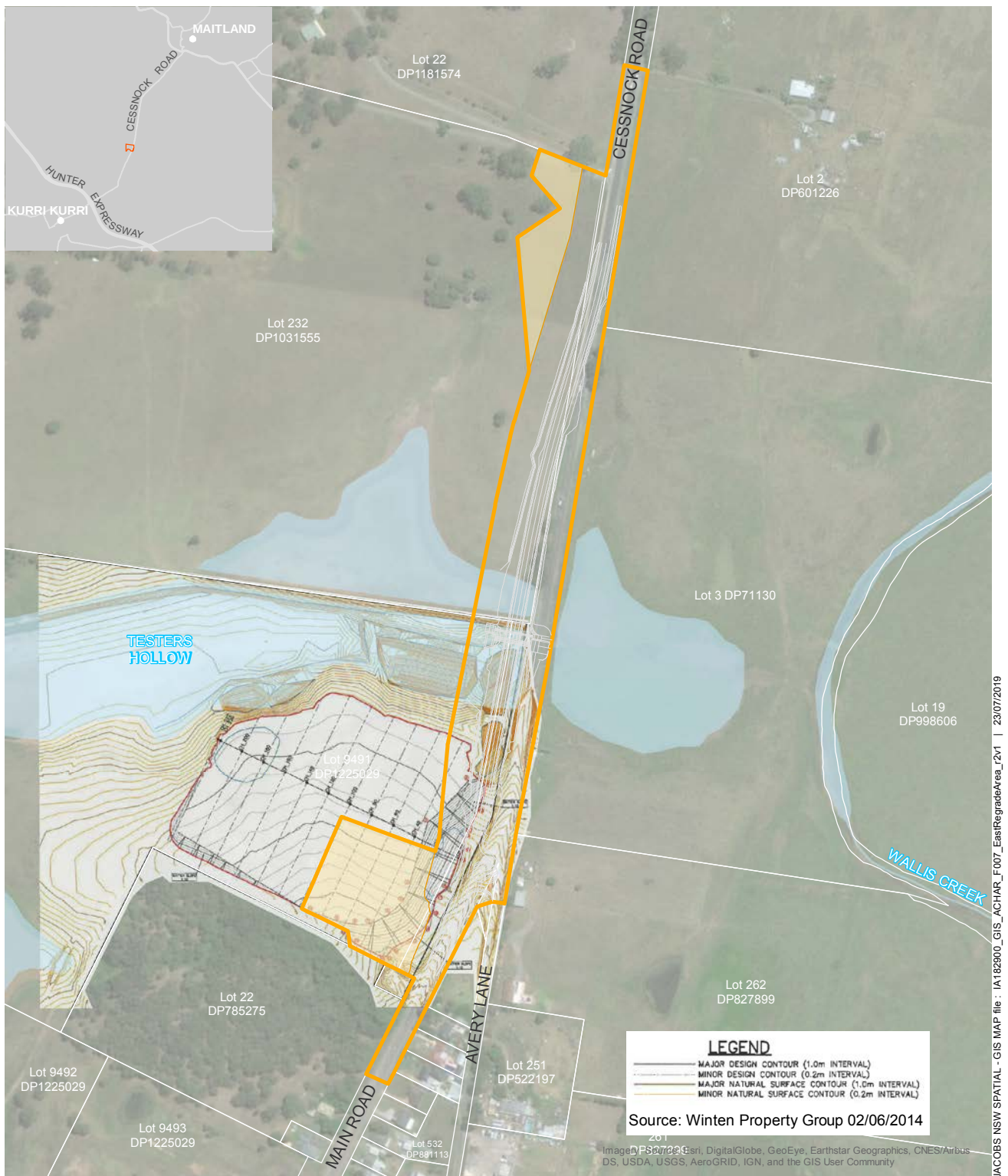
Land use across the proposal area since European occupation began in the early-to-mid 19th century has been primarily for grazing practices. The majority of the broader changes/impacts observed have occurred primarily as a consequence of European land management strategies.

Previous ground disturbances in the proposal area include:

- Dam construction
- Localised bulk earthworks to the west of Cessnock Road (including dam backfilling)
- Cessnock Road construction
- Farming practices, including vegetation clearance for paddock creation, fencing and stock grazing
- Vegetation clearance.

A dam was constructed to the west of Cessnock Road in the proposal area and was backfilled as part of a development application approved by Cessnock City Council (Development Consent 8/2007/757/16). The construction certificate as part for these works was endorsed in July 2014. **Figure 4.1** indicates the location of these works in the context of the proposal area, while a cross section indicating depth of excavation is shown in **Figure 4.2**.

Construction of dams, Cessnock Road and bulk earthworks would have resulted in major ground disturbance, while vegetation clearance for farm practices would have resulted in low levels of ground disturbance.



Legend

- Proposal area
- Potential ancillary site
- Waterbody
- Design

0 100 200 m

1:4,800 @ A4



Figure 4.1 | Regrade area within proposal area

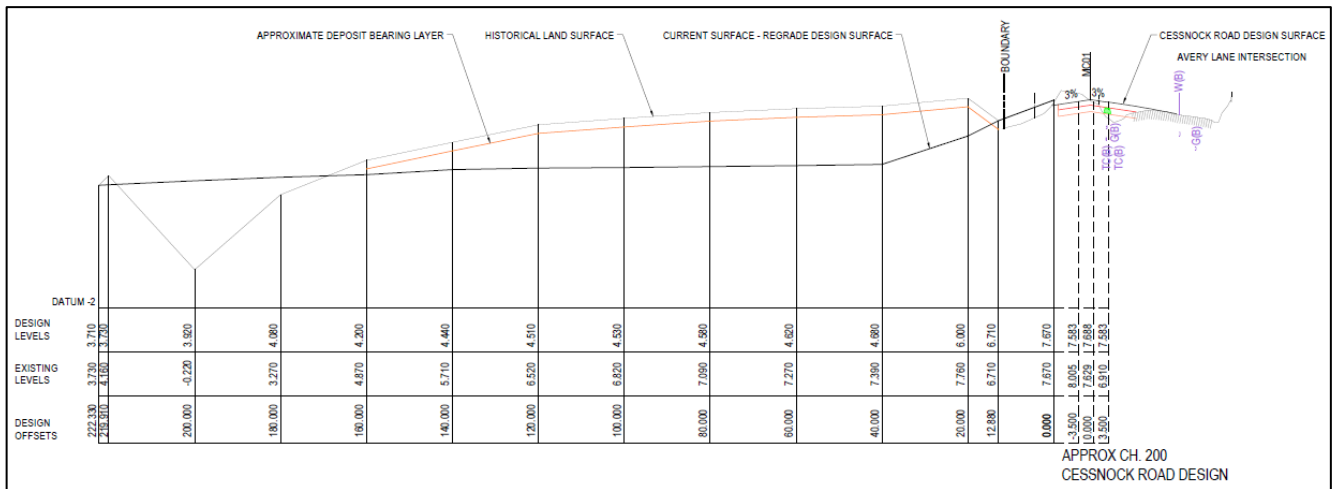


Figure 4.2: Regrade cross section

4.1.6 Implications for the distribution of Aboriginal cultural heritage

Over the course of European occupation within the Maitland/Heddon Greta area, the original vegetation and other natural features of the proposal area and surrounds have been removed or modified. Prior to European land clearance, the wider Maitland/Heddon Greta area would have supported a wide range of vegetation communities related to the varied underlying geology, topography and soils (NSW National Parks and Wildlife Services (NPWS) 2002). The diverse flora and fauna of these communities would have provided valuable resources to the local Aboriginal people.

A review of Australia's vegetation around 1788 by Geoscience Australia (2003) identified that vegetation within the proposal area was likely to have a foliage density of 30-70 per cent, medium sized (10-30 metres tall) Eucalyptus and tall shrubs (greater than two metres) in the understory. No evidence of raw materials suitable for artefact manufacture is present in the proposal area. Other raw stone materials such as silcrete, chert, mudstone and quartz suitable for artefact manufacture would have been sourced from areas in the Hunter Valley.

The presence of major permanent watercourses near the proposal indicates likely presence of main campsites outside of the proposal area and therefore areas where artefacts would have been discarded. It is possible that the area to the north of the proposal area may have been a preferred location for camping, due to the broad crest and slope towards the alluvial plain. The area to the south of the proposal area may have been a preferred location for hunting and gathering due to the presence of the alluvial plain.

4.2 Ethnographic background

Ethnographic information relating to Aboriginal peoples' occupation of the area is derived from publications and other surviving forms of documentation which were compiled by early non-Aboriginal explorers, settlers, missionaries and government officials who went to the region during the mid to late 19th century. Problems encountered with these sources of information are well documented and include language barriers, cultural bias and ethnocentrism (Triandis 1990 cited in Gross 1995; Martinez 2010).

The following information was compiled from a number of written sources based on language research and ethno-historic observations. Unfortunately, within the ethnographic record, early researchers sometimes referred to tribes as having as few as 10 members, to as many as 500, which makes the determination of social organisation within certain groups difficult to determine (Kuskie, 1997). It should be noted that the information provided here does not necessarily reflect the opinions of the RAPs regarding their tribal affiliations and boundaries.

4.2.1 Aboriginal tribal boundaries

According to Tindale (1974) in relation to Australian Aboriginal people, the term 'tribe' describes a group of people that share a common language. Tindale (1974) describes Aboriginal tribal boundaries as the limits beyond which it is dangerous to move without adequate recognition, while Stanner (1965) argues that a tribe's territory is the sum of its constituent clan estates. According to the tribal boundaries as defined by Tindale (1974) the proposal area traverses the traditional lands of the Wonnarua people to those of the Gamilaroi. Tindale (1974) defines the territory of the Wonnarua as the Upper Hunter River from a few miles above Maitland west to the Dividing Range. The southern boundary with the Darkinjung is on the divide north of Wollombi.

The grammar and vocabulary published by Hale (1845) ostensibly of the Gamilaroi tribe relates to the Geawegal of the lower Hunter River. Mathews (1904) with a broad-brush type of statement suggested the Gamilaroi language extended to Jerry's Plains but this included about one half of the Geawegal territory and also some Wonnarua country. Historical records from the 19th century are severely limited by disruptions prior to the first ethno-historical observations and the lack of anthropological expertise from the observers. It should be noted, however, that the identification of names and boundaries of tribal groups in the Upper Hunter regions remains unclear and may never be resolved. More recent attempts to delineate the grammar of languages in the Hunter and Lake Macquarie region, however, have indicated that there was a degree of bilingualism and shared lexicon amongst the tribes in the district (Lissarrague 2006).

4.2.2 Social organisation, settlement and subsistence

Peterson (1976) describes Aboriginal society as being comprised of a hierarchy of organisational levels and groups with fluid boundaries between them. The smallest group in the hierarchy is the family, which comprises a man with one or more wives, their children and some of their parents. The second level of the hierarchy consists of bands which are small groups consisting of members of several nuclear families who conduct hunting and gathering tasks together for most of the year. The third level of the hierarchy consists of regional networks or clans, comprising a large number of bands. Members of these regional networks usually share beliefs in a common language dialect and assemble for specific ceremonies. The tribe is the next highest unit which is recognised as a linguistic unit with flexible territorial boundaries. The highest level of the hierarchy is the 'cultural area', which consists of groups who share certain cultural characteristics, such as initiation ceremonies and closely related languages.

The main subsistence strategy employed by Aboriginal people in the Hunter region focused on a hunter-gather lifestyle. In general, males undertook hunting activities, while women gathered smaller faunal and plant resources (Department of Education, 1985). The second most basic unit in Aboriginal society was a 'band' that consisted of a collection of families, who grouped together for subsistence purposes (Brayshaw 1987). Land ownership resided with the larger 'clan' or descendent group, of which the bands formed a part (Brayshaw 1987).

Single men were said to have lived separately to married men, single women and children. A single male entering a married man's camp without invitation would be met with violence (Wallsend and Plattsburg 1890 cited in Canning 2016; Maynard 1999). Campsites were thought to be on the banks of rivers:

'In choosing the site [for their camps], proximity to fresh water was one essential, some food supply a second, whilst a vantage ground in case of attack from an enemy was a third.' (Fawcett 1898 as cited in Brayshaw 1987)

Kinship was an integral part of Aboriginal society, and created complex relationships between individuals, which governed the foods people consumed, and the land they used. The kinship network extended social links beyond the band and even the language territory, resulting in economic ties outside the core group. As such, other territories could be visited; social gatherings promoted and maintained these extended rights and ties. Inter-clan and inter-tribal participation was also known to occur for ceremonies, such as initiation rites, and trade was a physical expression of these inter-tribal and clan networks (Brayshaw 1987).

Trade between the Awabakal and tribes to the south was recorded by Barrallier (1802 as cited in Gunson 1974). There was also a known travelling route north, along Wollombi Brook and the Macdonald River to Mangrove Mountain, used to visit the Brisbane Waters (Brayshaw 1987). Brayshaw (1987) notes:

“The coastal areas of the Hunter Region were occupied by the Awabakal centred on Lake Macquarie and its mountainous hinterland; to their north were Gaddang speaking tribes, who included the Worimi centred around Port Stephens, possibly the Gringai of the Dungog area, and the Birpai, north of the Worimi. To the south of the Awabakal were the Kuringgai (or Guringgai), living both north and south of Broken Bay. Inland of the Kuringgai and bordering both the Awabakal and the Wonnarua were the Darkinjung tribes, whose territory extended from the Hawkesbury River northwards towards the southern drainage of the Hunter River”.

Recent linguistic studies indicate that the Awabakal may have had most in common with the Wonnarua (Gunson 1974:3) and possibly although not necessarily were a subgroup of the Wonnarua, the suffix 'kal' (or 'gal') indicating a kinship group rather than a full 'tribe'. They also associated frequently with the Worimi (Gunson 1974:3; Threlkeld 1892). Vinnicombe (1980) research indicated that there *“was clearly a considerable amount of come and go between the Awabakal and the Kuringgai to the south, although there was also considerable enmity and ritualised fighting between them”*.

Ethnographic reports indicate that within the area where the proposal is located traditionally men commonly hunted terrestrial game and women fished (Sokoloff 1977). Children had cultural restrictions on the food type they could eat and animals such as the Dingo were eaten by older males only. These reports indicate that during the hot summer months when fish were most plentiful, the Wonnarua visited the cooler coastal lands of the Worimi or Awabakal while in the cooler months, reciprocal journeys were made to Wonnarua country where they took part in *'ritual'* kangaroo hunts (Brayshaw 1987; Canning 2016). Oral histories indicate the hunting of kangaroo was achieved by corralling the kangaroos near a bend in the river. Flying foxes (numerous in Raymond Terrace area (Brayshaw 1987) were considered food in the Hunter region but not in the Lake Macquarie district (Brayshaw 1987:79).

Worimi subsistence discussed in Sokoloff (1977) also identified cultural places including camp sites, resource collection areas, ancient spirits and totem markers in the landscape, pathways, song lines, ceremonial gathering points, and women's and men's ceremonial areas. Worimi social organisation and dispute resolution is also described in Sokoloff (1977).

Early historical accounts describe the rotation of local Aboriginal groups between the Old House Paddock and Tarro campsites around the Big (Hexham) Swamp (Wallsend & Plattsburg Sun 1890-17/12 in Barkuma Neighbourhood Centre 2003; Canning 2016; Maynard 2015). These groups used smoke to signal one another before the rotation around the swamp occurred.

4.2.3 Resources

The traditional use of resources for the Hunter region was perhaps best described in ethnographical terms by Threlkeld at Lake Macquarie. Whereas this is some distance from the proposal area traversing the Upper Hunter it does comprehensively describe the variety of the diet available to people at the time. At his mission, Threlkeld (1892) noted that Aboriginal people ate a variety of different fauna and flora. Threlkeld (1892) observed that people used the resources year round, eating certain species when they were available, such as wild plums, cobra (maggots from grass trees), snakes, cockles, lizards, fish, flying-foxes, ducks, pigeons, kangaroo, possum, swans, wallaby, kangaroo rat, eels, craw-fish, geese, oysters, honey and goanna (Dillion 1989; Gunson 1974; Neal and Stock 1986; Threlkeld 1892). Even whale was consumed when stranded on the beaches and was feasted on by all Aboriginal people within reasonable travelling distance (Dillion 1989; Gunson 1974; Thomas 2008; Threlkeld 1892).

Hunting practices, such as beating grasslands with waddies to flush out bandicoots, and the trapping of kangaroos through the use of fire, were also recorded (Gunson 1968). Men hunted for possum while women climbed trees in search of honey (Dillion 1989). Sometimes, a worker bee would be caught and a tuft of down attached to it, so it could be tracked to its hive (Scott cited in DEDJTR 2015). In addition, women would dive for lobster among the rocks, and would fish with lines, while men used spears. Fishing was such an important role

for women, that a mother would select a female child and appoint her in the same role; this was signified by amputating the little finger on her right hand (Gunson 1974) (Dawson cited in DEDJTR 2015). Cooking was said to have been done exclusively by men (Dillion 1989). Fish was usually consumed after being cooked, with fires kept alight on canoes during angling (Dillion 1989; Thomas 2008). Threlkeld noted that:

'Their mode of fishing is curious, sometimes angling with hook and line thrown by the hand as they are seated in the bark canoe, sometimes diving for shell fish, sometimes standing in their frail bark darting their spears into the fish as they pass, or at other times, using hand nets forming a circle in shallow waters and enclosing the fish, but the most curious method is that of planting sprigs of bushes in a zig-zag form across the streams leaving an interval at the point of every angle where the men stand with their nets to catch what others frighten towards them by splashing in water.' (Gunson 1974:30).

Plant resources such as ferns potentially Bracken Fern (*Pteridium esculentum*) or Swamp Fern (*Blechnum spp.*) were crushed or sometimes roasted, before being ground to produce a flour for bread-making (Gunson 1974; Habermann 2003; Thomas 2008). Bracken Ferns comprise an edible starchy rhizome, and are available from late summer to autumn (Thomas 2008). According to Scott (2015), however, Aboriginal people had ceased eating ferns in preference for the root of the Gigantic Lily (*Doryanthus excelsa*), although this had to be soaked (Scott cited in DEDJTR 2015). The consumption of *Macrozamia* nuts was also noted, but due to their toxic nature, had to be soaked for two to three weeks prior to being consumed (Murphy and Thomson 2013; Thomas 2008). The *Macrozamia* seeds or nuts were also roasted prior to consumption (Murphy and Thomson 2013; Thomas 2008). It is also possible that Kangaroo Grass seeds were ground and eaten, although there is no direct ethnographic evidence to support this (Thomas 2008).

The Hunter people were great proponents of fire farming, which altered the landscape (Dillion 1989). 'Fire-stick farming' resulted in both long- and short-term gain, with cleared areas exposing the burrows and nests of prey, and in the long term, created breaks in forest cover, attracting herbivores (Dillion 1989).

Brayshaw (1987:21) describes the use of fire carried out one month prior to a hunt to attract game to the new grass (Dyall 1971; Kuskie 1997). Sokoloff notes fire was also used in burials, for fishing, and farming (Sokoloff 1978a; 1978b; 1978c).

4.2.4 Material culture

The majority of the proposal region's material culture (shields, spears, boomerangs, clubs, digging sticks, canoes, containers, shelters, and woven nets and bags) were made from wood or other vegetative material that is rarely preserved in the archaeological record. Generally, artefacts crafted from shell, bone or stone are preserved for future generations to record.

Bark and wood implements

Aboriginal people were recorded within the Hunter region as utilising a variety of bark and wood resources. Bark and wood used was harvested from a variety of Stringybark species (*Eucalyptus globoidea* and *E eugenioides*), Tea-Tree (*Melaleuca quinquenervia*), Grass Trees (*Xanthorrhoea australis*), Cabbage-tree (*Livistona australis*), River Gum (*E camaldulensis*), Kurrajong (*Brachychiton populneus*), Iron Bark (*E crebra* or *E paniculata*) and Swamp Mahogany (*E robusta*) (Maynard 1999; RPS 2011). The extraction of bark from the Nettle Tree (*Urticaceae*) and the Giant Fig Tree (*Ficus sp.*) was also recorded for use in shield making (Gunson 1974). Bark and timber were used to make canoes, spears, clubs, and shelter, among many other items. Bark was also used in burial practices (RPS 2011)

Up to four different types of spears have been recorded for the region, and these could be thrown up to a distance of 36 metres (Dawson 1830 cited in Kuskie 1997). Spears were crafted from the stem of Grass Trees. The fish spear – the 'Kul-là-ra' and 'Mo-ting' – was about 1.8 metres in length, with four pieces of hardwood at the base, which added about an extra 0.6 metres to the length. The hardwood pieces were fastened with bark-thread covered with Grass Tree gum, and held apart through small wedges, also smeared with gum. The wooden points were fire hardened, and had gum-fastened bone barbs at the tips. The hunting spear, or the 'wa-rai', had one hardened joint of wood at the base. The battle spear was also constructed similarly, although it had pieces of quartz adhered to one side of the wooden joint, and were likened to the teeth of a saw. Following

European settlement, glass was sometimes substituted for quartz (Gunson 1974; Kuskie 1997). Spears were thrown using a 'wom-mur-rur', which was tapered at the end where the barb was fixed, and were 1.2 metres in length and 2 centimetres thick. Spears were traded for possum skin cloaks and 'hanks of line, spun by hand from the fur of animals of the opossum tribe' further inland (Gunson 1974; Kuskie 1997).

Shelters or huts ('gunyers') were made from bark and at Raymond Terrace comprised three, 0.9 metres long embedded sticks (set in a triangle), fastened at the peak with two sides covered in bark (Brayshaw 1986; Kuskie 1997). At Lake Macquarie, shelters comprised boughs of trees with bark sheets placed upright supported by stakes (Brayshaw 1986; Kuskie 1997). Dawson (as cited in Department of Education 1985) however, stated that Aboriginal people often slept in front of the campfire, in a circle, with coverings of bark in inclement weather.

Canoes were observed at Maitland (Brayshaw 1986; Grant 1803; Gunson 1974; Kuskie 1997), and described as being from 1.2 metres in length, up to 4.2 metres in length and 1.2 metres wide (Barralier 1802 cited in Brayshaw 1986; Gunson 1974). Three types of canoe have been recorded, one made from a strong strip of gum bark, which was scraped and fire hardened. The second type was made from bark that was closed and pointed at both ends, with the third type ('mooten'), crafted from fire. A log would be selected that was still aflame, and Aboriginal people would control the fire to form a canoe (Maynard 1999).

Other implements known to have been used included – waddies (often crafted from ironbark), yamsticks (up to two metres long and 40 millimetres in diameter), fire sticks, wooden bowls (crafted from tree burls), bark water carriers with twig handles, shields (oval and up to 0.9 metres long, 0.4 metres wide and painted white with two red bands or stripes), clubs, boomerangs, baskets (made from palm leaves), and lances (up to 6.7 metres in length) (Barralier 1802 cited in Brayshaw 1986; Department of Education 1985; Gunson 1974; Kuskie 1997; Maynard 1999). Plant fibres (and fur cords) were also used to make fishing nets and twined dilly bags (Gunson 1974; Kuskie 1997; Maynard 1999). Women were described as having made string from bark, and also being the crafters of fishing nets (Dawson 1830 as cited in Kuskie 1997; Maynard 1999).

Stone

Few ethnographic references describe the stone artefacts used by Aboriginal people in the Hunter region (Kuskie 1997), however, stone axes were observed and an Australian Museum collection of implements included those made from chert (Thorpe 1928 as cited in Kuskie 1997; Maynard 1999). Stone axes had ground edges and were often made from basalt or diorite, with the stone fastened to a handle with gum. The handle was crafted from vines or saplings, which were heat treated (Matthews 1894 as cited in Kuskie 1997). Stone axes were used for cutting saplings, peeling bark, and cutting notches into trees (Gunson 1974; Kuskie 1997).

While not specified as being made from stone, Mathews (1984 as cited in Kuskie 1997) stated that the 'largest knives' were used for skinning and dressing prey. Barralier (1897) also noted the use of a fish weir at Newcastle. Near Merewether, chert (silicified tuff) was described as being abundant (Thorpe 1928 as cited in Kuskie 1997). An Awabakal toolkit included stone artefacts that could be used as chisels, scrapers, gravers, rasps, and spoke shavers (Maynard 1999). The Keeparra initiation ceremony used white/quartz stones that were given to invited initiates/groups (Enright 1932; 1936; Mathews and Corres 1896).

Shell and bone

Shell was used to make fish hooks and tools. Fish hooks were made from oyster shell, while shell tools could be used to sharpen spears (until the advent of glass) (Gunson 1974; Kuskie 1997; Maynard 1999; RPS 2011). Kangaroo bones were made into combs or awls, the latter of which were used for sewing kangaroo and possum skin, belts and headbands (Brayshaw 1986; Kuskie 1997; RPS 2011). Shell and glass were traded for possum skins, yarn and headbands (Dawson 1830 as cited in Kuskie 1997). According to Thorpe (1928 as cited in Maynard 1999), shell middens extended from Port Waratah to Sandgate along the Hunter River. The sheer volume and size of the middens indicated a population of thousands (Dyall 1972; Maynard 1999).

4.2.5 Spiritual locations and culture

Other aspects of Aboriginal culture, such as burials, initiation ceremonies, corroborrees and cosmological beings have been described in the ethnographic record (Thomas 2008). The following sites were considered to

be of importance to Aboriginal people (Department of Transport Planning and Local Infrastructure 2014; from Wallsend & Plattsburg Sun 1890 and 1891, Threlkeld cited in Gunson 1974; Thomas 2008):

- 'Pòr-ro-bung' a bora ring
- 'Yu-lung' a ring where tooth extraction occurred
- 'Ko-pur-ra-ba' another volcano on the Hunter River, where red ochre ('ko-pur-ra') was sourced
- 'Pit-to-ba' a source of pipe-clay ('pit-to')
- 'Pu-r-ri-bang-ba', the ants' nest place, and another source of yellow ochre ('Pur-ro-bàng')
- 'Nir-rit-ti-ba' island, or Moon Island, where mutton bird and their eggs are eaten
- 'Nul-ka-nul-ka' at Reid's Mistake, a source of silicified tuff.

The Eaglehawk was an important animal to the many tribal groups, and was significant in astronomy, legend and social structure (Dillion 1989; Gunson 1974). The use of fire has also been described as an integral part of the Aboriginal way of life, as it was used in farming, hunting, cooking, warmth, communication, initiation ceremonies, burials, mourning, weapon making, canoe construction, and fishing (Chandler 2008; Thomas 2008).

Initiation ceremonies often took place within one or two cleared circles, with the circles sometimes up to 350 metres apart (Habermann 2003). Carved trees often marked the area around the circle. One known initiation ceremony included the extraction of a front tooth for boys (Threlkeld cited in Gunson 1974; Brayshaw 1987). Burials were often deposited in the ground, with the body placed in various positions, often covered in a bark shroud (Habermann 2003). Grave goods, such as spears and stone tools, were often buried with the deceased (Habermann 2003).

The understanding and perception of the landscape expressed by the knowledge holders and the community is an area traversed by an interconnecting network of physical, social and spiritual places. The World Heritage Convention of UNESCO defines an associative cultural landscape as one which has "powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent" (World Heritage Convention, United Nations Educational Scientific and Cultural Organisation (UNESCO) 1991). The relationship between Aboriginal Australians and the land is conceived in spiritual terms rather than primarily in material terms (Andrews *et al.* 2006).

4.2.6 European and Aboriginal interaction

Many of the initial interactions between Aboriginal people and non-Aboriginal settlers (such as timber cutters, convicts and settlers) have been described as friendly (Allom Lovell and Associates 1998; Graeme Butler & Associates 2007; Threlkeld cited in Gunson 1974; Thomas 2008). In 1790, four convicts landed at Port Stephens after seizing a small vessel and sailing from Port Jackson. After landing, they lived with local Aboriginals for five years (Goold 1981; Thomas 2008). Another group of convicts, this time of 15 individuals, stole the Norfolk and wrecked it at Stockton, where six men chose to live with the local Aboriginal people. After several months, three men made their way back to Sydney, assisted by Aboriginal guides (Goold 1981).

In 1799, conflict arose on the shores of the Hunter River, where the Aboriginal people gathered in great numbers on the foreshores' and drove the non-Aboriginal people away. An armed party was sent to rescue the remaining men, who the Aboriginal people had said had returned to Sydney overland, but they were not believed. Several Aboriginal people were wounded as a consequence of the resulting attack (Goold 1981). The early 1800s saw a variety of conflicts between escaped convicts and farmers (Andrews 2016), but in 1821, when Governor Macquarie visited Maitland, he was greeted by the chief of the 'Boan Native Tribe', Bungaree, who with his family, held a corroboree in welcome (Heritage Alliance 2008).

Aboriginal people also served as guides and trackers. In 1842, the explorer FW Ludwig Leichhardt was guided by Bo-win-bah (Gorman, chief of the Pambalong) and Biraban (Johnny M'Gill) from Ash Island to Minmi cattle station, around the margins of Hexham Wetlands (Department of Transport Planning and Local Infrastructure 2014; Thomas 2008). Peaceful encounters were soon replaced with serious conflict, however, and were generated from the mistreatment of Aboriginal women, misunderstandings with pastoral settlers, and violent

behaviour from the convicts towards Aboriginal people (Gunson 1974; Dawson 1830 cited in Thomas 2008). Timber harvesting and hunting soon became other causes of conflict, due to spiritual beliefs (trees were thought to house the souls of Aboriginal people awaiting rebirth, with some fauna being totem animals to Aboriginal people) (Allom Lovell and Associates 1998). From the 1830s, Aboriginal groups raided settlers for food and those who were captured were tried before the Supreme Court in Sydney; some were acquitted, others sentenced to death (Wooldridge 2016).

Aboriginal populations suffered a dramatic decline after the arrival of non-Aboriginal settlers, with disease, the loss of traditional hunting grounds, and conflict with settlers (including massacres of Aboriginal people (Dillion 1989)) all contributing to the reduced number of Aboriginal people. In 1821 in the Lake Macquarie area, over 100 individuals were observed by Reverend Middleton, whereas in 1840, only 15 adult males, seven adult females and four children were recorded (Thomas 2008). Diseases such as smallpox, typhoid, influenza, scarlet fever, measles, diphtheria, whooping cough and croup were all disastrous to the Aboriginal people (DEPI 2015; Dillion 1989; Thomas 2008). The smallpox epidemics alone, in 1789, 1829 and 1831, meant that it was impossible for non-Aboriginal settlers to understand the population sizes of Aboriginal people prior to European arrival (Gunson 1974; Thomas 2008). The first epidemic was reported to have reduced the Aboriginal population by half, between Botany Bay and the Hawkesbury (Lovell Chen 2016).

Due to the loss of traditional hunting grounds, and the modification of the landscape, food resources such as kangaroo, wallaby, emu and possum became scarce (Wilson cited in Graeme Butler & Associates 2007). Normal hunting processes were also restricted, due to the clearance of vegetation and draining of lagoons (Graeme Butler & Associates 2007). However, Wooldridge (2016) argued that European settlement was not a major factor in Aboriginal population decline; rather, it was violence of non-Aboriginal men against Aboriginal women. Threlkeld (cited in Gunson 1974) and Dawson (cited in Thomas 2008) both report on the violence committed against Aboriginal women – including young girls – with rape resulting in the possible transmission of diseases which could lead to infertility, and the practice of infanticide reported by Reverend Middleton (Dillion 1989; Graeme Butler & Associates 2007). While violence against women would have certainly had an effect on populations, the culmination of general violence, landscape alteration and diseases would have all contributed to the massive reduction in Aboriginal populations in the region. The population loss affected traditional practices, such as kinship systems, marriage, subsistence strategies and more (Thomas 2008).

By the 1840s, Aboriginal people were reliant on settlers for clothing, food and money (Graeme Butler & Associates 2007; Thomas 2008) and were employed in a variety of functions, such as timber cutters, water drawers, farm assistants, and errand runners, among others (Graeme Butler & Associates 2007; Murphy and Morris 2013). Near the end of the 19th century, concern over the Aboriginal peoples' plight took root, with the Aborigines Protection Association formed in 1881. In 1883, a Board for the Protection of Aborigines was established by the government, and rural stations were developed to allow Aboriginal people to stay on traditional lands (Thomas 2008). Yet by the mid-20th century, Aboriginal people had begun to move to Newcastle and Lake Macquarie to escape the oppression of the Aborigines Protection Board and to gain employment (Thomas 2008). Between 1909 and 1967, 5,300 Aboriginal children had been removed from their families and placed in institutions (Thomas 2008). The main sources of employment during this time were Broken Hill Propriety Limited and the Department of Railways, with Aboriginal people living in shanty settlements or in tent villages near the railway lines (Dillion 1989; Thomas 2008).

In the 1930s, the new policy of assimilation was created, to try and absorb Aboriginal people into the wider community, and by the 1940s, the concept of re-settlement was established. By the 1960s, Aboriginal people were once again occupying Newcastle (at the university) (Dillion 1989). Those living at the university were 'removed' from the premises (Dillion 1989). Kuskie also documented significant and widespread traditional, historical and contemporary cultural values identified by registered Aboriginal parties and ethno-historical evidence. Associations and cultural values included a number of gender related sites, the association of Mount Sugarloaf with the supreme being 'Koe-in', burial locations, and pathways throughout the landscape, such as through Black Hill Spur, Hexham Swamp and along Sugarloaf Ridge (Kuskie 1997).

4.2.7 Summary

Difficulties exist in determining tribal boundaries within the proposal area, largely due to 200 years of dislocation caused by European settlement. The proposal, however, is thought to traverse the boundaries of three tribal

groups: the Awabakal, Worimi and Wonnarua. Commentators describe the fluidity of social organisation amongst the local tribal groups and commonalities in belief systems, language and modes of subsistence. Kinship relationships were likewise an integral and shared component of traditional Aboriginal society and governed the individuals and groups interaction with the environment and each other. Trade was another social phenomenon that bound local groups together and involved access routes throughout the landscape traversed by many and varied groups. Similarly, common behaviour was observable in the choices of campsite location, requiring common access to water and seasonal resources.

Aboriginal people of the Lower Hunter region traditionally used a wide variety of natural resources present within this fertile landscape. Ethno-historical accounts list some of the methods through which Aboriginal people harvested these resources. While there are gaps in the accounts, such as the lack of descriptions regarding stone artefact manufacture and use, it does provide a basis that can be used to understand how Aboriginal people used the landscape prior to European colonisation.

Modification of the landscape by Aboriginal people took place through the use of fire farming and reed planting/weir development, but little evidence of such activities has been preserved in the archaeological record due to the perishable nature of the materials used and historical disturbance to the landscape. Evidence of campsites, with deposits of stone artefacts, hearths or middens, in contrast, are likely to be found where the landscape has not suffered severe ground disturbance. Ethno-historical accounts aid in developing a predictive model for the location of Aboriginal sites.

Similarities existed amongst regional tribal groups in their use of traditional material culture. Wood, stone, shell and bone comprised the raw materials of this world, most of which have little chance of being preserved in the archaeological record. Scarred trees, which were used in the production of items such as canoes, containers, shelters and bowls have the potential to be present within the region as do carved trees associated with ceremonial sites, although much rarer. However, the prevalence of logging in the Hunter region has severely reduced remaining scarred and carved tree numbers. Other sites, such as grinding grooves, stone quarries, burials and ceremonial grounds (bora rings, stone arrangements) are rare but are discussed in the ethno historical records.

The spiritual world of the Wonnarua, Awabakal and Worimi was, and is, rich and diverse. Many important cultural sites are the central components of their traditions, and a number exist as focal points in the landscape. The impacts of settlement have had widespread and there have been lasting impacts on Aboriginal society and traditional culture.

5. Aboriginal cultural values assessment

This chapter summarises the results of the Aboriginal cultural values assessment.

5.1 Introduction

The cultural values assessment includes cultural information collected during consultation, field survey and during the test excavation program.

5.2 Methodology

The assessment involved a number of methods of consultation with knowledge holders as identified by the registered Aboriginal parties for the proposal (refer to **Chapter 3** for further details on consultation). The cultural assessment was based on:

- Reviewing literature relevant to the proposal and the surrounding landscape (refer to **Section 4.2**)
- Consultation with knowledge holders for the region during the AFGs (refer to **Section 3**)
- Consultation with knowledge holders at arranged meetings (for example, oral history recording) (refer to **Chapter 3**)
- Consultation with Aboriginal site officers during field work regarding Aboriginal objects and cultural values (refer to **Chapter 3**).

The information provided has contributed to an understanding of the cultural value of the broader landscape within which the proposal is located. Knowledge holders have provided information about the traditional presence of Aboriginal people in the landscape, ceremonial sites and the impact of European land management practices on their traditional land, and subsequently their culture. The cultural assessment identified locations of Aboriginal cultural value relevant to the proposal.

5.3 Cultural significance

Cultural significance can be associated with or attached to any place, places, and objects by any individual, group or groups of people. Cultural significance is embodied in the place itself; its fabric, setting, use, associations, meanings, records, connected places and objects. Place is a geographically defined area, and may include tangible features that embody the physically identifiable landscape; as well as intangible features such as conceptual ideas or spiritual beliefs held over places or landscapes irrespective of observable physical evidence (Australia ICOMOS 2013).

Australia ICOMOS (2013) defines cultural significance as:

'Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.'

5.4 Cultural landscape

The understanding and perception of the landscape expressed by the knowledge holders and the community is an area traversed by an interconnecting network of physical, social and spiritual places. The World Heritage Convention of United Nations Educational, Scientific and Cultural Organization (UNESCO) define an associative cultural landscape as one which has 'powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent' (UNESCO 1991). The relationship between Aboriginal Australians and the land can often be conceived in spiritual terms rather than primarily in material terms (Andrews *et al.* 2006).

Aboriginal cultural knowledge has been defined as:

‘Accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment and the sustainable use of natural resources, and, relationships between people, which are reflected in language, narratives social organisation, values, beliefs and cultural laws and customs.’
(Andrews et al. 2006).

Aboriginal cultural knowledge was traditionally bequeathed through oral traditions from generation to generation. Within all Aboriginal communities there was a time of dislocation and upheaval associated with the arrival of European settlers. This widespread disruption resulted in the loss of varying degrees of detailed knowledge and understanding of many of the elements of the cultural landscape from Aboriginal communities. A recognition and concern regarding this loss of knowledge of the cultural landscape and the meanings embedded in the landscape was expressed by several of the stakeholders during consultation for the proposal.

It should be noted that Indigenous communities across Australia are extremely diverse, and generally defy generalisation. The above descriptions are common conceptions of Aboriginal cultural landscapes and values, however, a large range of beliefs and practices are evident across Australia and uniformity should not be assumed.

5.5 Native Title

At the time of writing there was a single native title claim before the National Native Title Tribunal in the proposal area. This being the following:

- Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People (NSD39/2019).

The location of this claim area is detailed in **Figure 5.1**. The claimant group were identified and approached for this assessment and have declined to be interviewed. Documents detailing site-specific stories and ‘connections to country’ are before the courts ‘in confidence’ and are currently not available at the time of preparing the Aboriginal cultural values assessment.

5.6 Identified Aboriginal cultural heritage values

On-site discussions with Aboriginal knowledge holders during the archaeological investigation in February 2019, interviews with knowledge holders and a review of previous assessments in the Lower Hunter have identified a number of general cultural heritage values within the local landscape (refer to **Table 5.1**).

Table 5.1: Cultural heritage values identified by registered cultural knowledge holders in this and previous assessments

Cultural heritage value	Description
Resource gathering locations and techniques	Knowledge holders noted that fish, plants and other foods are still collected throughout the region. The primary resource gathering locations, and the techniques used, are known and passed down through the generations.
Campsites	Knowledge holders identified campsites as culturally significant as they provide a link to the ancestral past identify significant resource zones, pathways taken by their ancestors through the landscape and communication between other groups. Identified site locations containing hearths and/or stone artefact scatters were noted as having these types of cultural significance.
Scarred trees	Scarred trees are of great importance to knowledge holders as they are of sacred and ceremonial importance. European land use and agricultural practices has resulted in scarred trees can often be the only remaining markers for ceremonial sites and burials in the landscape. None were specifically noted during the CVA or archaeological assessment however they are known by knowledge holders to be common throughout the Hunter Valley in places where older stands of trees are extant (usually near permanent water sources). They also noted that scarred trees may be located at junctions, ceremonial sites or other significant points in the landscape.
Transit routes/pathways through the landscape	Aboriginal knowledge holders identified pathways/transit routes that bordered the larger area and in particular, to the east on ridges near Black Mountain and Mount Sugarloaf. These pathways link spiritual and ceremonial sites, as well as travel corridors throughout the landscape between the coast and higher ground. During the

Cultural heritage value	Description
	assessment the importance of waterways and creek junctions was remarked upon. Additionally, ridgelines were mentioned for their association with dreaming routes. These routes link spiritual and ceremonial sites. Artefact scatters often occur along transit routes, as well as scarred trees which may be located at tribal boundaries, ceremonial sites or other significant points in the landscape.
Water courses, water holes or springs	Permanent water bodies are culturally significant as a central location for gathering of people, resource collection and camping. Wallis Creek was notable in this respect
Plants and animals	During discussions the fauna and flora were often mentioned in context of spiritual importance. Throughout consultation, plants and animals were sometimes mentioned in discussion with resource collection. No specific species were mentioned however.
Burial sites	Burial sites are of great importance and are generally of high concern to Aboriginal people as the locations of burials are rarely documented. Knowledge holders identified the landscape features chosen for burial sites as being areas near campsites and on sandy rises however none were specifically identified for the proposal area.
Songlines	Aboriginal knowledge holders identified songlines that traversed or intersected wider landscape. These pathways link spiritual and ceremonial sites, as well as travel corridors throughout the landscape between the coast and higher ground. The specific details of these songlines were however not shared in this assessment.
Post-contact sites	Post-contact sites are those that have gained significance to Aboriginal people since the arrival of European settlers. No sites of this type were mentioned as having any particular significance in the proposal area.
Massacre sites	These sites are highly significant to the traditional owners and are often difficult to discuss. Knowledge holders have previously indicated that an early 19 th century massacre on the Hunter River near Singleton still resonates with people in the area today. The event was not confined to one locality as the killings were known to have been widespread.
Cultural knowledge	Knowledge holders have, in many contexts, indicated grave concern for the loss of cultural knowledge and the meanings embedded in the landscape of the region. It is felt that the loss that began with early colonisation has been exasperated by significant development in the region. The sense of loss and belonging instils a feeling of guilt that the country is not being protected for the future generations; that there is poor cultural heritage management, and that archaeologists have been instrumental in facilitating the destruction of cultural sites.

5.7 The Aboriginal cultural landscape

Five Aboriginal cultural places have been identified adjacent to the proposal area. These are not gazetted Aboriginal Places under S86(4) of the NPW Act, but rather are places identified as having significance to the RAPs. Details of each of these cultural places and their general locations are listed in **Table 5.2**.

Table 5.2: Aboriginal cultural places adjacent to the proposal area

Place name	Within or adjacent to proposal area	Description
Mount Tumblebee	Adjacent to the south-west	- Mount Tumblebee was identified as being a place of cultural significance - Story place - Compared to Mt Yengo a well know cultural centre in the Wollemi
Mount Sugarloaf	Adjacent to the south-east	- Part of a songline between Black Hill and Mount Yengo - Traditional pathway - Resource area
Black Hill	Adjacent to the south east	- Part of a songline through Mount Sugarloaf and Mount Yengo - Traditional pathway - Resource area near Hexham Swamp
Fishery Creek	Adjacent to the east of the proposal area to the east of Hexham Swamp	- Known as cultural centre - Resource area stone fish traps (now destroyed)
Gillieston	Adjacent to the north of	Known as traditional campsite

Place name	Within or adjacent to proposal area	Description
Heights	the proposal area	• Location of fossil beds of cultural interest

5.8 Conclusions

It is noted that some of the comments from the Aboriginal knowledge holders, regarding cultural values expressed above relate to the lower Hunter Valley region and less specifically to the proposal area. There was limited information gathered in this process which related specifically to the proposal area. The cultural values expressed by the participants in this and previous assessments, however, have been consistent in voicing an over-arching concern for the wider cultural landscape and concern about the negative cumulative impacts of development on that landscape.

Within the context of the current assessment, there are strong ongoing connections to the proposal area as well as strong interests in the manner in which it is managed. Knowledge holders expressed a strong on-going cultural knowledge of cultural sites in the landscape surrounding the proposal area. These places within the Aboriginal cultural landscape have been documented to provide a context for future studies.

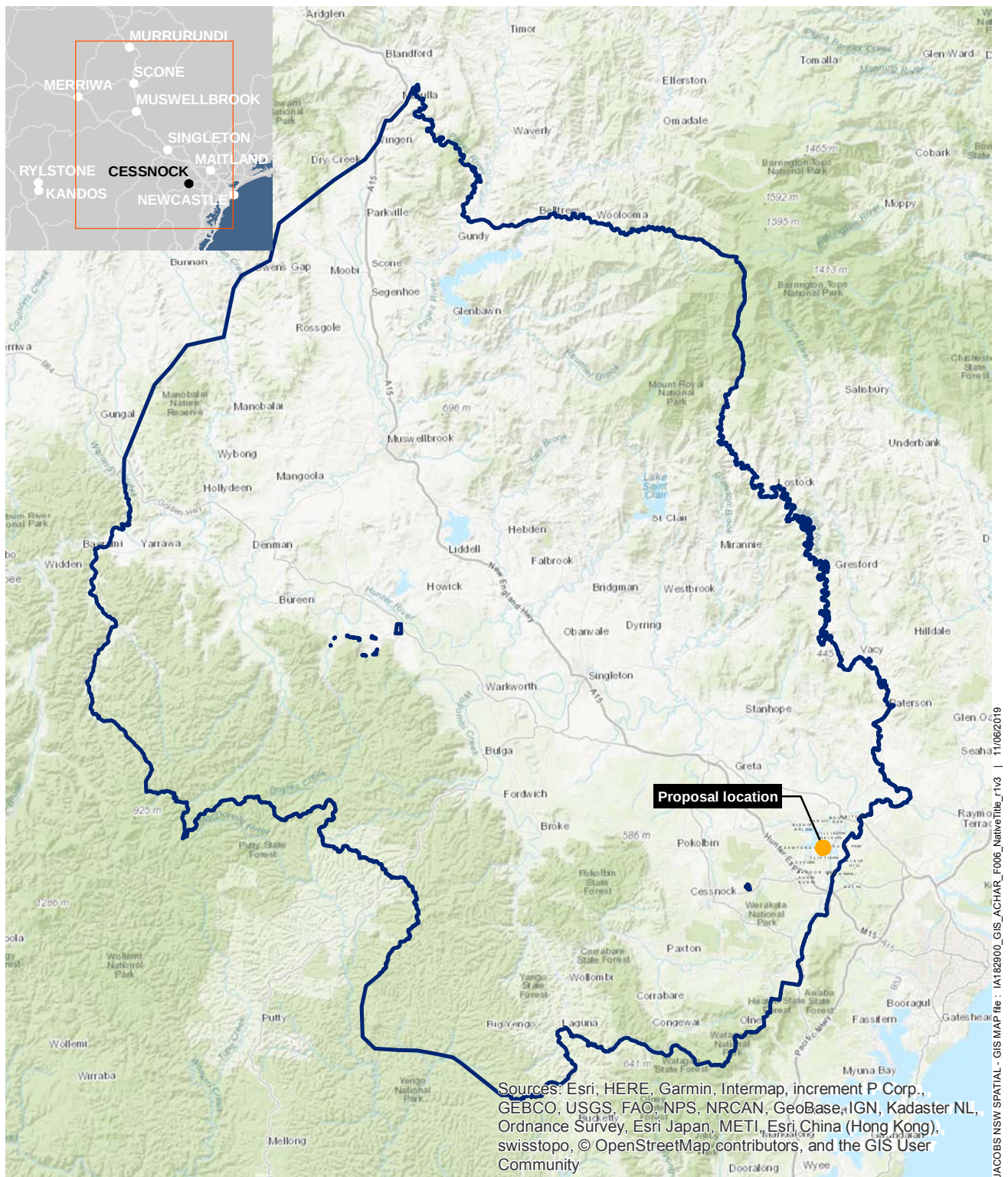


Figure 5.1 | Native Title claims in the study area

6. Summary of archaeological assessment

This section summarises the archaeological assessment carried out to inform the cultural heritage assessment.

6.1 Assessment methodology

The archaeological assessment was conducted in accordance with the Code of Practice (DECCW 2010c) and the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (DECCW 2011). The assessment broadly consisted of the following tasks:

- 1) Desktop assessment to develop a predictive model
- 2) Archaeological survey
- 3) Test excavation program
- 4) Consultation with RAPs
- 5) Significance assessment.

Tasks 2 and 3 of the archaeological assessment included consultation and involvement with the RAPs as detailed in **Chapter 3**.

6.2 Results

6.2.1 Desktop assessment

The desktop assessment included a search of the AHIMS and a review of existing data (including any previous archaeological investigations specific to the proposal and register searches) to identify any gaps in the assessments. Information compiled as part of the background review provided the framework for the development of a predictive model for site location.

A review of previous archaeological assessments within the vicinity of the proposal area confirmed that the Wallis Creek and Wentworth Swamp precinct contains varying amounts of Aboriginal archaeological material. This material was mostly concentrated where access to larger bodies of reliable water and sufficient food resources was available. This enabled the gathering of relatively large groups of people that could occupy these areas for relatively long periods of time. The general landscape in the Wallis Creek and Wentworth Swamp precinct has high archaeological sensitivity and cultural significance (Reeves 2006: 12).

Raw materials for stone tool manufacture were derived from both the coast and inland sources, indicating that Awabakal people had access to these areas or at the very least traded raw materials such as Nobby's tuff as did the Wonnarua who accessed the cobble beds of the Hunter River. Both raw material types are found in the catchment area, yet the size of core reduction and residual cortex indicates that they were unable to replenish their supplies locally. A variety of stone tool types are found in the area from backed blades to grinding stones and pounders indicating a full range of activities occurred in the region.

The principal study for the region indicates Wallis Creek contained the greatest concentration of backed blades (Umwelt 2018b:172) and confirmed their use both as hafted projectiles and food processing tools. As such, although environmental factors appear to be a dominating factor to occupation and duration of stay there are many social aspects that need to be recognised. These assessments suggest a nearly continuous distribution of artefacts across the elevated areas within the precinct, with higher densities likely to occur closer to the swamp margin, at the break of slope. Thus, slightly elevated areas near the margins of the swamp may be of slightly higher potential.

A search of the AHIMS database was carried out by KAS on 19 April 2018. In order to capture all registered Aboriginal heritage values in the wider area, the search encompassed an area of 6 km centred on the proposal area. An updated AHIMS database search of an area extending about 2 km around the proposal area was carried out by Jacobs on 11 February 2019.

The results of the AHIMS searches are presented **Table 6.1**. The search results confirmed that one registered Aboriginal site (AHIMS #38-4-0898) is located in close proximity to the proposal area.

In summary, 94 registered Aboriginal sites were identified within the search areas. These sites include:

- Fifty-seven artefacts scatters/open camp sites, two with a PAD component
- Twenty isolated artefacts
- Thirteen untested or partially tested PADs
- One modified tree (carved or scarred)
- One restricted site (destroyed)
- Two open campsites registered as Aboriginal Resource sites
- One PAD that was found not to be a site.

Of the 94 registered Aboriginal sites identified (refer to **Table 6.1**), 13 have been destroyed.

Table 6.1: Summary of AHIMS search results

Site type	Frequency	Percentage (%)
Open Camp Site/artefact scatters	55	52%
Open Camp Site with PAD	2	2%
Isolated Find	20	19%
Potential Archaeological Deposit	13	12%
Aboriginal Resource and Gathering	2	2%
Restricted Site (destroyed)	1	1%
Scarred Tree	1	1%
Total	94	100%

6.2.2 Predictive model

Predictive modelling was used in conjunction with existing data sets to determine the archaeological sensitivity for Aboriginal cultural heritage of particular landforms. The predictive model developed for the region indicates that certain site types are more likely to be prevalent in the landscape. The degree of preservation and intactness will vary dependent on historical and current land use and the nature of the site.

- **Open camp sites (stone artefact scatters):** These are the most likely sites to have survived in the archaeological record. They are scatters of stone artefacts with little associated food residue such as shell and bone. Since larger camp sites would have been associated with permanent water sources, the most likely places for these camp sites would be on terraces or low, flat spurs adjacent to and above swamps or permanent creeks. The majority of artefact scatters found within the Lower Hunter contain less than five artefacts occurring at low density and are located close to drainage lines (Kuskie 2002). The majority of stone artefacts identified in the proposal area are manufactured from silcrete or silicified volcanic tuff, which are both locally available materials (Kuskie and Kamminga 2000). Silcrete was readily available in the form of river cobbles from the Hunter River (Kuskie and Kamminga 2000; Silcox and Ruig 1995). Indurated rhyolitic tuff was primarily procured from exposed bedrock at Nobbys Beach in Newcastle (Kuskie and Kamminga 2000)
- **Scarred and carved trees:** Scarred trees are identified by the purposeful removal of bark for use in the manufacture of artefacts such as containers, shields and canoes. The bark was also used for the construction of shelters. Carved trees also exhibit evidence of purposeful removal of bark (and wood), but differ from scarred trees in that geometric patterns and figures are cut into the tree. Although scarred/carved tree sites have been noted in the region, clearance of old growth timber has resulted in a low potential for this site type to be located, however where mature eucalyptus trees occur there is the potential for this site type to occur
- **Grinding grooves:** Within the Lower Hunter, sandstone exposures in watercourses were often used for shaping or sharpening groundstone axes (Kuskie 1997). This activity would often result in clearly observable grooves in the sandstone. Grinding grooves are unlikely to be found within the proposal area as they are a distinctive site type, would be prominent in the landscape and would therefore be previously identified
- **Bora/Ceremonial sites:** These sites are usually identified as mounded earth rings which were used for ceremonial activities. The nature of these sites makes them particularly susceptible to impact. These sites are often known only from the oral traditions of local Aboriginal groups and are found in the Lower Hunter. It is unlikely these site types would be identified during the survey other than through consultation with the Aboriginal stakeholders. To date, no information relating to ceremonial sites has been passed on by the traditional knowledge holders during the detailed cultural assessment process
- **Natural/mythological/ritual sites:** These sites may not exhibit any physical or archaeological evidence, but their identification is derived from local Aboriginal tradition and oral history. These sites often have mythological associations and are associated with ceremonial activity in the past. These sites are sometimes associated with prominent landmarks, such as mountains, rocky outcrops, headlands or water features and can occur within any landform. It is unlikely these site types would be identified the survey other than through consultation with the Aboriginal stakeholders. To date, no information relating to mythological/ritual sites has been passed on by the traditional knowledge holders during the detailed cultural assessment process
- **Midden sites:** Middens are common along the coast and in estuarine and creek areas. The term midden is a Danish word meaning a mound of kitchen refuse. In archaeological terms, a midden refers to an accumulation of shell deposited after people had collected and eaten shellfish. Middens may also contain other faunal remains (e.g. bone), stone artefacts and charcoal from cooking fires. In many areas, burials have also been recorded in direct association with midden deposits. Midden sites vary widely in size, preservation and content. The most likely locations for middens in the region are in the vicinity of river and creek banks and swamps such as those found in immediate proposal area

- **Stone arrangements:** Stone arrangements consisting of a circle of stones up to two metres in diameter and one metre high have been identified on a range of hills near Lake Macquarie (Maynard 1999). According to ethno historical accounts, Awabakal people believe that the Eaglehawk dropped stones of ceremonial significance on mountains around Lake Macquarie. The most likely locations for these sites would be in the ranges to the east and south and outside of the proposal area
- **Burial sites:** Burials are most commonly found in soft sandy, alluvial deposits. This tends to be the case because such conditions facilitate interment (i.e. the soil is lighter and more easily dug). There are currently no known burials located within the proposal area, but these may be present where sandy soils on elevated areas occur within the proposal area.

6.2.3 Archaeological survey

The aim of the archaeological survey was to comprehensively survey the proposal area to identify any Aboriginal archaeological objects, or areas with the potential for archaeological objects (PAD). This included the inspection of the registered Aboriginal heritage site (AHIMS #38-4-0898) located to the south west of the proposal area. Onsite consultation with nominated site officers from the RAPs enabled the development of recommendations for any further assessment.

A site inspection of the proposal area was carried out by KAS and Jacobs in May. A site inspection was carried out in June 2018 with nominated site officers from Mindaribba LALC and representatives of the native title claimant.

In accordance with requirement 5 of the Code of Practice the archaeological survey adopted a sampling strategy which targeted 100 per cent of the proposal area. A total of 3,633.23 square metres was subject to survey, although effective survey coverage equated to 18 per cent due to dense grass cover.

The proposal area was divided into three survey units for ease of recording and includes Survey Unit 1 (SU1), Survey Unit 2 (SU2) and Survey Unit 3 (SU3). The survey units were assessed on foot (transects). The boundaries of the survey units were identified by property boundaries.

GSV was very low throughout most of the proposal area, due to the fact that large proportions were either covered in thick pasture, emplaced fill and/or covered in asphalt. Areas of ground surface exposure within the proposal area had <30 per cent visibility.

One new Aboriginal artefact scatter and an additional area of PAD were identified. These sites were numbered TH-AS-001 (AHIMS #38-4-1998) and TH-PAD-001 (AHIMS #38-4-1997) respectively.

Table 6.2: Survey coverage data

Survey Units	Landform	Survey Unit Area (sqm)	Visibility %	Exposure	Effective Coverage Area (sqm)	Effective Coverage %
SU1	Simple Slope and Alluvial Plain	23355.5	5 %	10 %	116.7775	1 %
SU2	Alluvial Plain	21159.3	40 %	40 %	3385.488	16 %
SU3	Mid and lower-slope	26193.6	10 %	5 %	130.968	1 %

Table 6.3: Landform summary

Landform	Landform Area (sqm)	Area Effectively Surveyed (sqm)	% of Landform Effectively Surveyed	Number of Sites	Number of Artefacts or Features
Simple Slope and Alluvial Plain	23355.5	116.7775	1 %	0	0
Alluvial Plain	21159.3	3385.488	16 %	1	18
Mid and lower-slope	26193.6	130.968	1 %	1	1

6.2.4 Test excavation

Archaeological surveys identified an open artefact scatter with PAD on the south side of Testers Hollow (TH-AS-001) and a separate PAD (TH-PAD-001) on the north side.

The aims of archaeological test excavation of TH-PAD-001 and TH-AS-001 were to:

- Determine the presence or absence of sub-surface archaeological deposits
- Identify the nature, depth, extent and indicative significance of archaeological deposits (if any) within the boundary of the proposal
- Consult with RAPs with regards to the cultural values of the proposal area
- Develop recommendations to minimise or mitigate potential impacts to any Aboriginal cultural heritage objects identified via test excavation.

In accordance with Stage 3 of PACHCI and the requirements of the Code of Practice (DECCW 2010a), the archaeological methodology for both the north and south side was provided along with an archaeological survey report to all proposal RAPs and OEH for review and comment. The methodology was subsequently revised in accordance with the comments provided. The revised methodology was then sent to all RAP groups and OEH for additional review prior to finalisation.

The archaeological test excavation for TH-PAD-001 was carried out between 11 and 22 February 2019 and TH-AS-001 between the 13 and 16 May 2019. Both phases of test excavation were conducted with the nominated site officers from Mindarriba LALC and RAPs.

Forty-five (35) 50 centimetre x 50 centimetre test pits were manually excavated comprising a total of 11.25 square metres. In two instances test pits were combined, one (TP19) being 0.5 square metres and the other (TP08) one square metres. Aboriginal cultural material was identified in 26 of these test pits. A summary of the test pit locations and results is provided in **Table 6.4**.

Table 6.4: Summary of the test pit program locations and results for TH- PAD-001 and TH-AS-001

Identified Aboriginal site	Control test pit	Predicted archaeological sensitivity	Landform	Test pit dimensions (mm)	Aboriginal objects
TH-PAD-001	TP-01a	Low - moderate	Upper slope	500 x 500	1
	TP-01b	Low - moderate	Upper slope	500 x 500	1
	TP-02	Low - moderate	Upper slope	500 x 500	1
	TP-03	Low - moderate	Upper slope	500 x 500	3
	TP-04	Low - moderate	Upper slope	500 x 500	0
	TP-05	Low - moderate	Upper slope	500 x 500	0
	TP-06	Moderate to high	Mid slope	500 x 500	2
	TP-07	Moderate to high	Mid slope	500 x 500	2
	TP-08a	Moderate to high	Mid slope	500 x 500	37
	TP-08b	Moderate to high	Mid slope	500 x 500	22
	TP-08c	Moderate to high	Mid slope	500 x 500	31
	TP-08d	Moderate to high	Mid slope	500 x 500	34
	TP-09	Moderate to high	Mid slope	500 x 500	8
	TP-10	Moderate to high	Lower slope	500 x 500	4
	TP-11	Moderate to high	Lower slope	500 x 500	7
	TP-12	Moderate to high	Lower slope	500 x 500	4

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Identified Aboriginal site	Control test pit	Predicted archaeological sensitivity	Landform	Test pit dimensions (mm)	Aboriginal objects
	TP-13	Moderate to high	Lower slope	500 x 500	2
	TP-14	Moderate to high	Lower slope	500 x 500	0
	TP-15	Moderate to high	Lower slope	500 x 500	0
	TP-16	Moderate to high	Lower slope	500 x 500	0
	TP-17	Moderate to high	Lower slope	500 x 500	0
	TP-18	Low - moderate	Upper slope	500 x 500	0
	TP-19a	Moderate to high	Mid slope	500 x 500	8
	TP-19b	Moderate to high	Mid slope	500 x 500	10
	TP-20	Moderate to high	Mid slope	500 x 500	7
	TP-21	Moderate to high	Mid slope	500 x 500	8
	TP-22	Moderate to high	Mid slope	500 x 500	18
	TP-23	Moderate to high	Mid slope	500 x 500	8
	TP-24	Low - moderate	Upper slope	500 x 500	0
	TP-25	Low - moderate	Upper slope	500 x 500	0
	TP-26	Low - moderate	Upper slope	500 x 500	0
	TP-27	Low - moderate	Upper slope	500 x 500	0
	TP-28	Low - moderate	Upper slope	500 x 500	3
	TP-29	Low - moderate	Upper slope	500 x 500	0
	TP-30	Low - moderate	Mid slope	500 x 500	0
TH-AS-001	THS1	Low - moderate	Lower slope	500 x 500	0
	THS2	Low - moderate	Lower slope	500 x 500	7
	THS3	Low - moderate	Mid slope	500 x 500	1
	THS4	Low - moderate	Mid slope	500 x 500	3
	THS5	Low - moderate	Mid slope	500 x 500	0
	THS6	Low - moderate	Mid slope	500 x 500	0
	THS7	Low - moderate	Mid slope	500 x 500	0
	THS8	Low - moderate	Upper slope	500 x 500	0
	THS9	Low - moderate	Upper slope	500 x 500	1
	THS10	Low - moderate	Upper slope	500 x 500	1
					238

The general stratigraphy observed at TH-PAD-001 on the north side of Testers Hollow confirms that the soil profile in this location can be differentiated into two separate soil units. Grey (10YR 5/2) Silty loams of the Bolwarra Heights soil unit transition into a clayey substrate at a depth of between 25 and 60 centimetres. On the upper slope this transition occurs at 25 centimetres but is interspersed with a number of quartzite inclusions up to 25 centimetres across.

On mid slope areas the alkaline silty loam is more compact with ironstone inclusions, charcoal fragments, fine gravels and occasional coffee rock. These inclusions are more frequent at a depth of between 15 and 50 centimetres where they transition into the underlying clays. **Figure 6.1** is a typical stratigraphic profile of soils in the mid slope at TH-PAD-001.

Testers Hollow IA182900 PACHI 2
Test Pit: 08a
361774E 6372014N (UTM)
Stratigraphic Profile: South face
Drawn by: Andrew Roberts
Excavation Date: 13/02/2019

Legend

Key	Description
1	Humic silty loam
2	Humic light grey silty loam Ph 6.0. 10YR 5/2
3	Silty light brown loam with charcoal and fine gravel. Ph= 6.5. 10YR 6/2
	Charcoal
	Root penetration
	Silcrete core tool- depth at 25cm

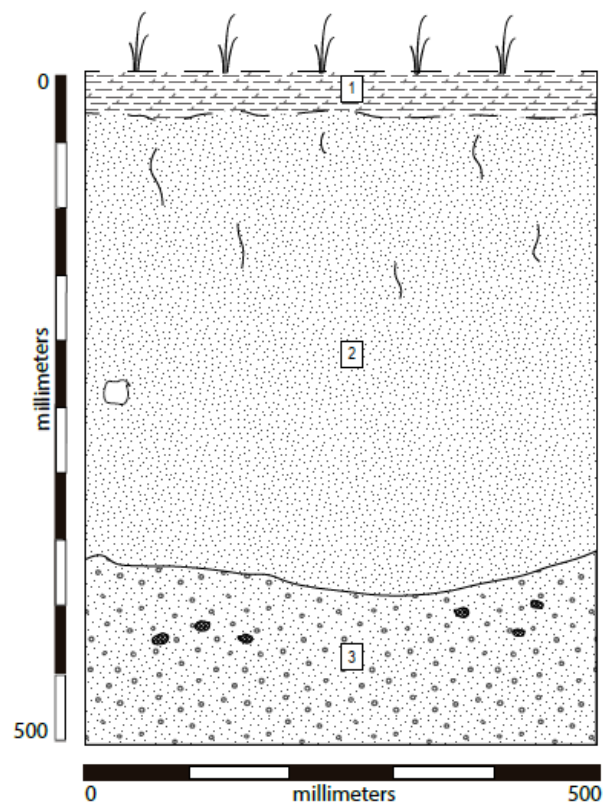


Figure 6.1: Typical stratigraphy on the north side of Testers Hollow (TH-PAD-001 – 08a)

In contrast, the general stratigraphy observed at TH-AS-001 confirms that the southern end of the proposal area is disturbed as a result of earthmoving activities. In all of the test pits excavated on the south side of Testers Hollow, more than 25 centimetres of introduced fill or redeposited B horizon soils was identified. Due to the extent of disturbance and depth of fill, intact A2 horizon soil was only identified in two of the 10 test pits – Testers Hollow South (THS) 4 and THS2. As seen in THS4 (**Figure 6.2**) 30 centimetres of introduced compact yellow brown clay fill has been deposited above fine-grained compact pale grey silty clay with occasional charcoal flecks. This A2 horizon soil becomes increasingly lighter in colour with depth until it reaches a sudden change on to the natural B horizon clay, which is a dark yellow brown undulating surface. The very few Aboriginal objects that were identified during the test excavation of TH-AS-001 were recovered from both the redeposited B horizon soils and more intact A2 horizon soils. Based on the stratigraphy in this area, the soils and the associated artefact assemblage were found to be significantly disturbed.

Testers Hollow IA182900 PACHCI 3
 Test Pit: THS4
 E0361715 6371656N (UTM)
 Stratigraphic Profile: North face
 Drawn by: Fiona Leslie
 Excavation Date: 15/5/2019

Legend

Key	Description
1	Compact yellow brown clay fill
2	Pale grey brown silty clay loam
3	A2 Horizon: ZFine grained compact pale grey, silty clay w/ occasional charcoal. Lighter in colour w/ depth
4	Dark yellow brown clay at base- undulating surface

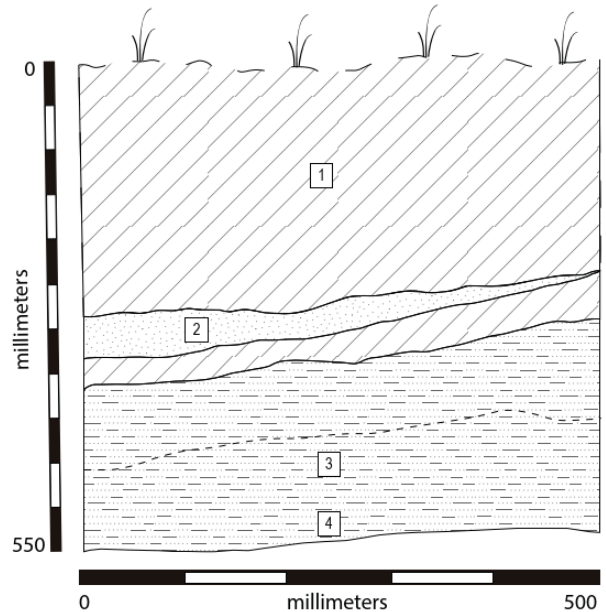


Figure 6.2: Typical stratigraphy on the south side of Testers Hollow (TH-AS-001 – THS4)

6.2.5 Artefact analysis

The following summary analysis is based on a relatively small artefact sample size (n=238). Consequently, only broad inferences are made here. The known contents of this site include 238 artefacts, predominantly silcrete 42 per cent, and IMTC 42 per cent and smaller quantities of quartz and quartzite. A very small proportion of artefacts exhibited cortex. This indicates the source of raw material was likely to have been some distance from the site and raw materials were fully utilised and had been reduced significantly before reaching the site. One depleted core in TP08 supports this contention and that the occupation of the site was for longer periods of time than is indicated elsewhere in the catchment (i.e. Umwelt 2018b: 75).

Flakes (n=127) make up the majority of the technological types, followed by angular fragments (n=102), cores (n=4), backed blades (n= 4) and a pounder (n=1). The presence of the cores further suggests that knapping was occurring on site. Based on these findings it is likely that this site was either used as a camp site or is in proximity to a camping area, although greater densities of artefacts would generally be expected for a camp site.

Eight tools were present at the site including four backed blades, two of which were broken and one of which was heat treated, as well as a pounder with significant use wear. The pounder indicates that plant processing was likely to have been undertaken at the site. Four cores, all of which were significantly depleted and containing multiple platforms, were located on site. Three of these (one silcrete and two IMTC) were located in a single one by one metre test pit (TP08).

Due to the small size of the assemblage limited inferences can be made regarding the site's representativeness and rarity. However, raw material and artefact typology and technology are consistent with other sites in the Hunter region.

6.2.6 Radiometric dating

During the test excavation program, four charcoal samples associated with archaeological material (stone artefacts) were collected for the purpose of radiometric dating. Upon review of their context, all of these samples were deemed suitable for radiometric dating.

When identified, charcoal samples were collected and wrapped in aluminium foil, in order to provide samples for radiometric dating and stored in polyethylene bags. Upon completion of the excavations at the site, samples from the four excavation contexts were prepared for analysis. This involved removing possible contaminants and washing the samples in distilled water. The samples were sent to the Radiocarbon Dating Laboratory University of Waikato, via the radiometric dating technique. At the laboratory the samples had further possible contaminants removed and were then washed in 10 per cent hydrochloric acid, rinsed and treated with hot 1 per cent sodium hydroxide. The sodium hydroxide insoluble fraction was treated with hot 10 per cent hydrochloric acid, rinsed and treated with hot one per cent NaOH. The NaOH insoluble fraction was treated with hot 10% HCl filtered, rinsed and dried. The charcoal used for dating derived from varying depths of four different manually excavated squares (refer to **Table 6.5**). Results are expressed as years BP and one standard deviation).

Table 6.5: Radiocarbon age determinations from Testers Hollow

Sample Number	Laboratory Sample ID	Site Name	Test Excavation Unit	Depth of Sample (mm)	Sample Weight (g)	Result in Years BP
TH-TP 03/5	WK49084	TH-PAD-001	03/5	450	12	5,589+/-37
TH-TP 19a/4	WK49085	TH-PAD-001	09/4	350	3	8,644+/-118
TH-TP 10/3	WK49086	TH-PAD-001	10/3	250	11	745+/-31
TH-TP 8b/5	WK49087	TH-PAD-001	8b/5	450	19	4, 561 +/-41

From an analysis of the deposits encountered at Testers Hollow including artefact typology, lack of bioturbation, the association of charcoal and artefacts there are grounds for suggesting that these dates have some validity. Due to time constraints in the presentation of this reporting however a full and proper analysis of the contextual evidence has not been definitively completed. Detailed conclusions in line with positive evidence discrimination criteria for the identification of hearths (i.e. McNiven et.al. 2018) is premature at this stage of the analysis. There are however two lines of inquiry that support the Testers Hollow sites being at least mid-Holocene in age.

The first line of inquiry is in connection with artefact typological analysis. From the artefact data presented in **Section 6.2.4** it is apparent that there is minimal variation in artefact character in the excavated deposits. For example, backed blade manufacture for the Hunter Valley and Sydney region is reported to proliferate in the mid Holocene period. This coincided with a period of a cooler, drier climate from that which occurred before this period and after until the present day (i.e. Attenbrow 2009). The dates obtained from TP08 of mid Holocene age in association with three significantly reduced core tools (two which have very small dimensions consistent with having been used as blade cores) and associated backed blades would support this general theme in Australian Prehistory. All artefacts are clearly attributable to the Australian Small Tool Tradition and are likely to be at least mid-Holocene in age given the two dates from this period in TP08 and TP03.

Secondly, three of the four dates obtained from the investigation of the site exceed 4,000 years BP. One is dated at 8,644 BP in the early Holocene period. Preliminary analysis of the context of this early date (TP19) assigns the following characteristics to it as being a possible hearth:

- General combustion feature attributes in terms of being an in-situ feature with thermally altered deposits
- A basin shaped cross section
- Moderately deep, thermally altered deposits
- Stone artefacts in association
- Non-root wood charcoal (staining).

At the same time other attributes point to it having a natural origin, such as the presence of root wood charcoal. Although charcoal samples were retrieved from four of the test pits investigated, suitable multiple samples from individual test pits are yet to be retrieved.

6.3 Synthesis and discussion

The nature of the archaeological sites recorded within the proposal area allows for several possible insights into occupation of the proposal area in prehistory. The distribution of the artefacts recorded in the proposal area reinforces the pattern suggested in the predictive model. Elevated, well-drained areas adjacent to swamps show a higher archaeological sensitivity. They would have provided access to water sources and associated surrounding resource-rich zones. Elevated landforms would have also provided areas of good vantage and during wetter seasons, they would have provided well-drained, drier areas above the lower-lying waterlogged, flooded, or flood prone areas.

The artefact analysis suggests that people utilised and modified a range of stone material, predominantly IMTC and silcrete. There is an obvious lack of cortex on the majority of artefacts, the cores were fully utilised and rotated and there was a large number of small flakes indicating debitage from core reduction even further. This suggests that raw material underwent primary reduction elsewhere and continued on site.

There is little intra site variability in raw material types between this site and others in the Wallis Creek catchment (Umwelt 2018a) suggesting the same raw material sources were being accessed throughout the region.

There was a good representative sample of tool types consistent with other sites recorded in the region. Tool typology was representative of the Australian small tool tradition and expected late Holocene assemblages. There is evidence of blade manufacture and stone tool manufacture with the range of tool types found (pounder and backed blade).

7. Significance assessment

7.1 Methodology

7.1.1 Basis for assessment

Significance assessments generally use a series of standard criteria to define why a site is important. The criteria used in this significance assessment are described in the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS 2000). They are:

- Social value
- Historical value
- Scientific value
- Aesthetic value.

Each of these values is assessed below for TH-PAD-001 and TH-AS-001, and an overall significance is assigned based on an average across the values. This is inherently a reductive process and oversimplifies what is important for different reasons to a range of different stakeholders but is a necessary process in being able to create comparative values between sites. The significance assessment ultimately informs the management of sites and places.

7.1.2 Social significance

The views of Aboriginal people, as the traditional custodians of all material and immaterial aspects of their culture, are the primary determinant of the social significance of Aboriginal cultural heritage. Aboriginal people's views on the significance of Aboriginal sites are usually related to traditional, cultural and educational values, although some Aboriginal people also value any scientific information a site may be able to provide.

Aboriginal cultural significance was assessed through consultation with the nominated site officers from the RAPs before, during and after the field work phase of the proposal. It should be noted that the information gained through this process may not reflect the views of all members of the local Aboriginal communities.

7.1.3 Historic significance

The historic value of a site is determined through its association with historically important people, events or activities.

7.1.4 Scientific significance

Attributes which contribute to scientific and research significance include:

- **Site integrity** – The integrity of a site refers to its state of preservation, or condition. A site can be disturbed through a number of factors including natural erosion processes, destructive land use practices or repeated use of a site in the past by both humans and animals
- **Site structure** – Structure refers to a site's physical dimensions, that is, size and stratigraphy. A large site or a site with stratified deposits has more research potential than small sites and/or surface scatters. Sometimes however, specific research questions may be aimed at smaller sites in which case they would be rated at a higher significance than normal. Site structure cannot be assessed for scarred trees or isolated artefacts
- **Site contents** – This category refers to the range and type of occupation debris found in a site. Generally, complex art sites, extensive quarries with associated debris and surface sites that contain a large and varied amount of organic and non-organic materials are considered to have greater research potential than those sites with small, uniform artefacts, single motif art sites and small quarries with little or no debris. For scarred trees, contents may refer to the size and type of scar and/or how many scars there are on the one tree

- **Representativeness and rarity** – Representativeness refers to how much variability exists between the subject site and others inside or outside the subject area. It also considers the types of sites already conserved in the area and how much connectivity between sites exists. Rarity considers how often a particular site type occurs in an area. Assessment of representativeness and rarity requires some knowledge of the background archaeology of the area or region in which a study is being undertaken. Rarity also relates to whether the subject site or area is important in demonstrating a distinctive way of life, custom, process, land use, function or design which is no longer practiced (OEH 2011).

7.1.5 Aesthetic significance

Aesthetic significance refers to the sensory value of a place, and can include aspects such as form, texture, and colour, and can also include the smell and sound elements associated with use or experience of a site. Aesthetic significance is often closely linked to the social value of a site.

7.1.6 Scale of significance

Significance of sites and places is assigned to different geographic scales, such as local, regional, State and National, appropriate to the scale of importance. For example, Uluru is significant at a National (and World) scale, whereas a local historic building may only be significant on a local scale. This is reflected in the variety of heritage lists held by local councils, up to State and Federal government. In scale of significance, the criteria presented above as well as educational or research potential, representativeness and rarity (Australia ICOMOS 2000) have been considered in determinations of significance.

TH-PAD-001 and TH-AS-001 have been assessed and a statement of significance for each Aboriginal site is provided below. Each site has been given a grading of its significance overall based on the grading of each of their individual values. The grading of low, moderate and high has been assigned comparatively across the sites investigated in the region.

7.2 Statement of significance – TH-PAD-001

Social significance

Consultation with RAPs both in the field and during AFG meetings has identified that all Aboriginal cultural heritage values are considered to be of high cultural (social) significance. This is particularly the case for Testers Hollow (which is within the Wallis Creek catchment area), which has been described as being of very high cultural significance. This area has been identified by RAPs during the proposal and prior to fieldwork (i.e. Umwelt 2018) and throughout the course of the cultural values assessment for the proposal as having historical and contemporary cultural value. This site is therefore considered to have high social significance at the local level as it provides tangible evidence of the use of the area by Aboriginal people.

Historical significance

The site does not meet this criterion. There are no known written or oral historical references to the site.

Scientific significance

The site has moderate to high scientific significance at the local level as it is ranked as having high integrity, high structure, moderate contents and moderate representativeness and low rarity. The integrity and structure of the site is ranked as high as it is a representative sub-surface artefact scatter (ca. 226 artefacts) located on a mid-slope overlooking a floodplain and distant waterways. There is *in situ* deposit of high integrity in the mid-slope of the site, so TH-PAD-001 ranks high for structure as a site with deep stratified deposits and dateable charcoal, although the charcoal appears to have been of natural origin.

The site is representative of others in the surrounding region. It comprised 226 artefacts of raw material which are common to the area and can be sourced in the wider landscape.

TH-PAD-001 has an excellent representative sample of tool types, including, blades, cores and a pounder consistent with other recorded sites in the area and in the Australia Small Tool Tradition (ASTT). Charcoal dates recovered from surrounding deposits also support interpretation of the artefact assemblage of being of mid-Holocene age.

Aesthetic significance

The site has moderate aesthetic significance at the local level as it is on a mid-slope overlooking a creek and floodplain, providing a vantage point to Wentworth Swamp and the Wallis Creek.

Summary statement of significance

Overall, TH-PAD-001 is of moderate significance at the local level. It is of high social significance at the local level as it provides tangible evidence of the use of the area by Aboriginal people. It has low historical significance. It has moderate to high scientific significance with rankings of high integrity, high structure, moderate contents and moderate representativeness/rarity. The site has research and educational potential with high potential to educate about the way local Aboriginal populations used this type of landform. As the site abuts the floodplain and creek system, it has potential to divulge information on how Aboriginal people used the surrounding aquatic resources.

7.3 Statement of significance – TH-AS-001

Social significance

As indicated above, consultation with RAPs both in the field and during AFG meetings has identified that all Aboriginal cultural heritage values are considered to be of high cultural (social) significance. This is particularly the case for Testers Hollow (which is within the Wallis Creek catchment area), which has been described as being of very high cultural significance. This area has been identified by RAPs during the proposal and prior to fieldwork (i.e. Umwelt 2018) and throughout the course of the cultural values assessment for the proposal as having widespread historical and contemporary cultural values. This site is therefore considered to have high social significance at the local level as it provides tangible evidence of the use of the area by Aboriginal people.

Historical significance

The site does not meet this criterion. There are no known written or oral historical references to the site.

Scientific significance

The site has low scientific significance at a local level. The site has low integrity, a low frequency of artefacts, the absence of tool types and minimal representativeness or value for its rarity. Archaeological test excavation of this site has demonstrated significant disturbance to the topsoil and subsoils due to excavation and the movement of soils, presumably during dam and road construction. A considerable depth (>30 centimetres) of fill has also been dumped across the site to level the surface. Given the degree of disturbance observed and the low-lying nature of the site, in situ deposits are unlikely to be stratified or contain high frequencies of artefacts. As such, TH-AS-001 has very limited research potential.

Aesthetic significance

The site has no aesthetic significance due to the disturbed nature of the landform directly surrounding the site.

Summary statement of significance

Overall, TH-AS-001 is of low significance at a local level. The site consists of surface artefacts and occasional subsurface artefacts identified in a highly disturbed context. Topsoil and subsoil at TH-AS-001 has been excavated and moved by historical land uses, including dam and road construction. A considerable depth of fill has also been dumped in places to level the surface. Given the low integrity, low frequency of artefacts,

absence of tool types or stratified deposits the site is has limited research potential to provide any further insights into how Aboriginal people used the Testers Hollow floodplain.

8. Impact assessment

8.1 Definitions

The use of the term 'harm' in relation to Aboriginal objects and sites in this report reflects the terminology in the current OEH *Aboriginal Heritage Impact Permit* (AHIP) application form. It is noted that these terms are not defined in OEH guidelines. A reasonable interpretation based on common usage is provided below, however they may be interpreted differently by OEH.

Types of harm are categorised as:

- 'Movement (collection) only', meaning surface artefacts may be moved within, but not moved from, a site
- 'Excavation', meaning that Aboriginal objects may be removed from a site by archaeological excavation
- 'Community collection', meaning that Aboriginal objects may be removed by members of the local Aboriginal community
- 'Directly harmed', meaning that Aboriginal objects may be removed or destroyed.

The 'degree of harm' is categorised as:

- 'Total', meaning the entire site would be harmed
- 'Partial', meaning part of the site would be harmed
- 'None', meaning there would be no movement of any Aboriginal object from a site or within a site, including covering sites by burial or inundation.

The 'consequence of harm' makes reference to the loss of heritage value and is defined here as the loss of cultural significance taking into account the four heritage values under the Burra Charter; social value, historical value, scientific value, and aesthetic value. Loss is categorised as:

- 'Total loss of value', meaning the site is destroyed to the extent that its embodiment of heritage value is irretrievably lost
- 'Partial loss of value', meaning the site is harmed to the extent that there is incomplete representation of its original fabric, retaining some potential for the site to be appreciated by present and future generation
- 'No loss of value', meaning that the site retains its full potential to be valued and enjoyed by present and future generations.

8.2 Impacts to identified sites

The construction of the proposal and temporary ancillary facilities would have a direct impact on TH-AS-001 and TH-PAD-001. The proposal would cause direct harm to Aboriginal objects and result in a loss of their associated scientific, social and cultural heritage significance within the proposal area.

However, it should be noted that the proposal area forms part of the much larger stream and wetland area of Testers Hollow and the broader Wallis Creek and Wentworth Swamp Precinct. This wider precinct was used by Aboriginal people for occupation and resource gathering and, as a broader landscape, is of cultural significance to the RAPs. As such, as a small part of Testers Hollow, the potential impact of the proposal on the wider landscape and associated Aboriginal sites and its cultural, scientific and aesthetic heritage values would be minimal.

Table 8.1 details the anticipated impacts and management/other recommendations for the two identified Aboriginal sites, should the proposal be constructed.

Table 8.1: Summary of potential impacts of the proposal on Aboriginal heritage within the proposal area

Aboriginal site	Type of harm	Degree of harm	Consequence of harm
TH-AS-001	Directly harmed	Total	Total loss of value
TH-PAD-001	Directly harmed	Partial	Partial loss of value

8.3 Cumulative impacts

Cumulative Aboriginal cultural heritage impacts may arise from the interaction of construction and operation activities of the proposal and other approved or proposed projects in the area. When considered in isolation, specific proposal impacts may be considered minor. These minor impacts may be more substantial, however, when the impact of multiple projects on the same receivers is considered.

Given the loss of 13 of the 94 registered Aboriginal sites on the AHIMS since their initial recording and the general transformation of a once rural area to a more densely populated urban area, there is the potential for residential development in the Gillieston Heights and Clifftleigh areas to have an increasingly substantial cumulative impact on Aboriginal heritage. This places a greater need to identify and assess Aboriginal sites early in the proposal environmental assessment stage and conduct detailed archaeological test and salvage excavations to understand their significance prior to the commencement of construction activities.

9. Management recommendations

9.1 Establishment of an Exclusion Zone

Following consultation with the RAPs it is recommended that Roads and Maritime establish an exclusion zone in the area of high archaeological sensitivity within TH-PAD-001. Roads and Maritime have confirmed that impact to this area can be avoided during construction. To ensure this result, it is recommended that the area be surveyed, and temporary fencing be established to delineate the area. All design plans and construction drawings should also be updated to show this exclusion zone.

9.2 Further archaeological investigation

Application for an AHIP

Based on the results of this assessment it is recommended that Roads and Maritime apply for an AHIP to disturb the proposal area, as defined in **Figure 1.1**. The AHIP application would apply to TH-PAD-001 and would propose further archaeological salvage excavation of all areas of TH-PAD-001 outside the exclusion zone. The AHIP application would also include destruction of TH-AS-001 after surface collection and would also propose surface collection of the artefact bearing area at the southern ancillary site before construction begins. A copy of this report should be provided with the AHIP application to the OEH in accordance with s.90 of the NPW Act.

9.2.1 Salvage excavation

In addition to this ACHAR, the AHIP application would need to include a methodology for further archaeological salvage excavation of TH-PAD-001, which would be developed in consultation with the RAPs as part of the proposal. To assist the development of this methodology, below are some possible research questions formulated as a result of archaeological survey and test excavation:

- *Can a sequence of dates be established with additional dating and investigation?*
- *Are there variations in stone tool typologies across time?*
- *Are there any variations in stone tool typologies between other sites in the Wentworth Swamp?*
- *How does this inform us of cultural changes in adaptations to the local environment?*
- *Can the evidence contribute information not available from any other source, location or environmental setting?*
- *Can the early date of 8,644+/-116 BP be confirmed with additional dating and investigation?*

A draft salvage methodology has been developed. This draft salvage methodology would be developed further with RAPs as part of the proposal.

Furthermore, further archaeological salvage excavation has the potential to mitigate some of the impact of the proposal on the scientific values of TH-PAD-001. Excavation to reveal the full extent of the charcoal feature at TP19 may provide further clarity on its function and origins and subsequently provide further certainty on the age of the surrounding artefact scatter. The potential identification of additional knapping floors and recovery of a larger artefact assemblage would also provide further insights into the range of activities conducted on the north side of Testers Hollow.

9.2.2 Care and control or reburial of salvage material

As part of the methodology for salvage excavation, the care and control of the recovered assemblage must be discussed with the RAPs and the decision documented as part of the AHIP application to OEH.

9.3 Cultural heritage awareness training

While no specific cultural value mitigation measures were suggested or recommended by Aboriginal knowledge holders regarding the proposal to upgrade Cessnock Road at Testers Hollow, the delivery of cultural awareness training for the development and delivery teams prior to the program of works is recommended. This would ensure that due respect is paid to this sensitive cultural landscape.

9.4 Report distribution

A copy of the final report should be sent to the RAPs for their records. One hard copy and one digital copy of the finalised report should be sent to:

Aboriginal Heritage Information Management System (AHIMS)

Office of Environment and Heritage,
PO Box 1967, Hurstville NSW 1481.

10. References

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