Newell Highway
Heavy Duty
Pavements, North
Moree

Aboriginal and historic archaeological survey report

Roads and Maritime Services | May 2018
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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.
EXECUTIVE SUMMARY

OzArk Environmental & Heritage Management has been engaged by Roads and Maritime Services (Roads and Maritime) to complete an Aboriginal archaeological survey report and historic heritage assessment of three sections of the Newell Highway including 30.8 kilometres of highway between Moree and Boggabilla in the Moree Plains Shire Local Government Area, NSW. These areas have the potential to be impacted by the construction of heavy duty pavement upgrades.

A Stage 1 investigation has been carried out under the Roads and Maritime (2011) Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) and found sufficient evidence to elevate investigations to Stage 2 of the PACHCI. The Aboriginal archaeological assessment follows the Code of Practice for the Investigation of Aboriginal Objects in New South Wales (Code of Practice; DECCW 2010) and Stage 2 of the PACHCI. The historic heritage assessment follows the Historical Archaeology Code of Practice (Heritage Council 2006).

Background research on Aboriginal and historic heritage was undertaken and a predictive model of Aboriginal sites was developed for the area. The fieldwork component of the proposed alignment assessment was undertaken by OzArk and five representatives from three Aboriginal groups (Gomeroi People Native Title Claim Group, Narrabri Local Aboriginal Land Council [LALC] and Moree LALC) on Thursday 1 June 2017. This assessment was restricted to the existing road corridor.

The field assessment utilised vehicle traverses for reconnaissance observation of the proposal area in order to identify areas to be sampled. Pedestrian transects were then used to sample and assess undisturbed areas with good ground surface visibility containing landforms possessing Aboriginal and historic archaeological potential. Two Aboriginal sites, both scarred trees, were recorded during the survey:

- BR-HW17-ST1
- BR-HW17-ST2.

Following this initial assessment, further fieldwork was required to assess the proposed alignment where it deviated from the existing road corridor. It was undertaken by OzArk on Tuesday 16 to Wednesday 17 January 2018.

No new items of Aboriginal Heritage were recorded during the 2018 assessment.

No new items of historic heritage sites were recorded and no previously recorded historic heritage sites were located.

Recommendations concerning the management of Aboriginal cultural heritage within the proposal areas are presented in Section 9.1 of this report and recommendations concerning historic heritage are presented in Section 9.2.
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1 INTRODUCTION

1.1 BRIEF DESCRIPTION OF THE PROPOSAL

OzArk Environmental & Heritage Management (OzArk) has been engaged by Roads and Maritime (the Proponent) to complete an Aboriginal archaeological survey report and historic heritage assessment of three sections of the Newell Highway (A39) totalling 30.8 kilometres north of Moree within the Moree Shire Plains Local Government Area (LGA), NSW (Figure 1-1).

1.2 BACKGROUND

The Newell Highway is the longest highway in NSW traversing 1058 kilometres and providing an essential road connection for central western NSW. The highway is a vital transport corridor between Victoria, NSW and Queensland and is a major interstate freight corridor, being the third largest in NSW. The Newell Highway provides access to key regional primary industries and export markets and supports regional tourism with caravans being a major road user. Portions of Newell Highway between Moree and Boggabilla have been identified as nearing their end of life with regular failures occurring within the structural pavement and large sections not meeting the desired cross section dimensions. As such, significant pavement upgrades are required to 30.8 kilometres of the highway.

A Stage 1 Aboriginal cultural heritage investigation has been carried out under the Roads and Maritime Services (2011) Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). Sufficient evidence was found to elevate investigations to Stage 2 of the PACHCI. Stage 2 requires that an archaeologist carry out an archaeological survey to fulfil the specified requirements.

1.3 PROPOSED WORK AND PROPOSAL AREAS

The proposal forms part of the Newell Highway Corridor Strategy (2015) to provide an efficient and sustainable corridor that caters for increasing growth and improves safety along the Newell Highway. The Newell Highway carries substantial freight volumes, large volumes of inter-regional and local freight traffic, and is increasingly catering for substantial volumes of tourist traffic.
Key features of the proposal include:

- Upgrade and resurface three segments of the existing highway north of Moree to a heavy duty (HD) pavement
- Road widening to provide 3.5 metre wide lanes and two metre shoulders
- Provision of a one metre wide painted median
- Upgrade of the existing intersections along the Newell Highway to channelised right hand turn, with an axillary left hand turn intersection treatments
- Provision of three metre wide shoulders for 30 metres on either side of property accesses
- Improve the Newell Highway flood immunity to a minimum of five year average recurrence interval (ARI) where feasible and reasonable
- Property acquisitions as required
- Temporary construction of ancillary facilities, including construction compounds, stockpile sites and erosion and sedimentation measures as required.

The proposal would be delivered in three segments with a combined length of 30.8 kilometres of upgrades along the Newell Highway, north of Moree (Figure 1-1 to 1-4). The three segments and indicative work locations are described in Table 1-1. The width of the study area assessed has been based on the worst case i.e. the recommended and/or alternate alignment with a 10 metre buffer. The proposal area will be the recommended or alternate alignment with a four meter buffer as per Table 1-1 below.

Table 1-1: Proposal areas and proposed work

<table>
<thead>
<tr>
<th>Proposal area</th>
<th>Segment</th>
<th>Proposed alignment</th>
<th>Location</th>
<th>Proposed work</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NMS1</td>
<td>Recommended</td>
<td>4.2 kilometres to 9.2 kilometres north of Moree</td>
<td>Upgrading 5.0 kilometres of the Newell Highway (HD pavement)</td>
</tr>
<tr>
<td>2</td>
<td>NMS2</td>
<td>Alternate</td>
<td>17.2 kilometres to 26.9 kilometres north of Moree</td>
<td>Upgrading of 9.7 kilometres of the Newell Highway (HD pavement)</td>
</tr>
<tr>
<td>3</td>
<td>NMS3</td>
<td>Alternate</td>
<td>36.9 kilometres to 53.0 kilometres north of Moree</td>
<td>Upgrading 16.1 kilometres of the Newell Highway (HD pavement)</td>
</tr>
</tbody>
</table>
Figure 1-1: Map showing the location of the three proposed areas of construction: proposal areas 1 to 3.
Figure 1-2: Map showing the area of proposed works on the Newell Highway: proposal area 1.
Figure 1-3: Map showing the area of proposed works on the Newell Highway: proposal area 2.
Figure 1-4: Map showing the area of proposed works on the Newell Highway: proposal area 3.
1.4 Relevant Legislation

Cultural heritage is managed by a number of state and national Acts. Baseline principles for the conservation of heritage places and relics can be found in the *Burra Charter* (Australia ICOMOS 2013). The *Burra Charter* has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The *Burra Charter* generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a state level.

A number of acts of parliament provide for the protection of heritage at various levels of government.

1.4.1 State legislation

*Environmental Planning and Assessment Act 1979* (EP&A Act)

This act, as amended in 2017 by the *Environmental Planning and Assessment Amendment Act 2017*, establishes requirements relating to land use and planning.

The proposal is to be carried out by Roads and Maritime, a self-determining authority, under Part 5, Division 5.1, of the EP&A Act.

*State Environmental Planning Policy (Infrastructure) 2007* (ISEPP)

The proposed activity falls within the scope of the Infrastructure SEPP as being permissible without development consent, thereby permitting assessment of the proposal under Part 5, Division 5.1, of the EP&A Act.

*National Parks and Wildlife Act 1974* (NPW Act)

Amended during 2010, the NPW Act provides for the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places. Under the Act (Part 6), an Aboriginal object is defined as: any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains.

An Aboriginal place is defined under the NPW Act as an area which has been declared by the Minister administering the Act as a place of special significance for Aboriginal culture. It may or may not contain physical Aboriginal objects.

As of 1 October 2010, it is an offence under Section 86 of the NPW Act to ‘harm or desecrate an object the person knows is an Aboriginal object’. It is also a strict liability offence to ‘harm an Aboriginal object’ or to ‘harm or desecrate an Aboriginal place’, whether knowingly or
unknowingly. Section 87 of the Act provides a series of defences against the offences listed in Section 86, such as:

- The harm was authorised by and conducted in accordance with the requirements of an Aboriginal Heritage Impact Permit (AHIP) under Section 90 of the Act;
- The defendant exercised ‘due diligence’ to determine whether the action would harm an Aboriginal object; or
- The harm to the Aboriginal object occurred during the undertaking of a ‘low impact activity’ (as defined in the regulations).

Under Section 89A of the Act, it is a requirement to notify the Office of Environment and Heritage (OEH) Director-General of the location of an Aboriginal object. Identified Aboriginal items and sites are registered on Aboriginal Heritage Information Management System (AHIMS).

**Heritage Act 1977**

The Heritage Act 1977 (Heritage Act) established the Heritage Council of NSW. The Heritage Council’s role is to advise the government on the protection of heritage assets, make State Heritage Register listing recommendations to the Minister, and assess/approve/decline proposals involving modification to heritage items or places listed on the Register. Most proposals involving modification are assessed under Section 60 of the Heritage Act.

Section 139 of the Heritage Act provides protection to all known and unknown archaeological relics not listed on the State Heritage Register or subject to an Interim Heritage Order. An excavation permit issued under Section 140 of the Heritage Act is required if it is anticipated that relics may be discovered, exposed, moved, damaged or destroyed during an activity.

‘Relics’ are defined as an archaeological deposit, artefact, object or material evidence that relates to the settlement of NSW and has heritage significance at a local or State level. A person must not disturb or excavate land if they know or have reasonable cause to suspect they might discover, expose, move or damage a ‘relic’, unless they have an excavation permit.

**1.4.2 Commonwealth legislation**

**Environment Protection and Biodiversity Conservation Act 1999** (EPBC Act)

Matters of National Environmental Significance listed under the EPBC Act include the National Heritage List and the Commonwealth Heritage List, both administered by the Commonwealth Department of the Environment and Energy. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to National/Commonwealth heritage places.

**1.4.3 Applicability to the proposal**

The current proposal will be assessed under Part 5, Division 5.1, of the EP&A Act.
Any Aboriginal sites within the proposal area are afforded legislative protection under the NPW Act.

Any items of local or state historical heritage significance within the proposal area are afforded legislative protection under the Heritage Act. Relics of local heritage significance are protected under Section 139 of the Heritage Act. If it is anticipated that a relic will be discovered, exposed, moved, damaged or destroyed during an activity, an application must be made to the Heritage Council for an excavation permit under Section 140 of the Heritage Act.

It is noted there are no Commonwealth or National heritage listed places within the proposal area, and as such, the heritage provisions of the EPBC Act do not apply.

1.5 ASSESSMENT APPROACH

The Aboriginal archaeological assessment follows the Code of Practice for the Investigation of Aboriginal Objects in New South Wales (Code of Practice; DECCW 2010), Stage 2 of the PACHCI (RMS 2011) and the Cultural Heritage Guidelines (RMS 2015).

The historic archaeological assessment follows the Historical Archaeology Code of Practice (Historical Code of Practice; Heritage Council of NSW 2006).

The Aboriginal archaeological assessment is presented in Sections 2 to 6 and the historic heritage assessment is presented in Sections 7 to 10. Recommendations regarding Aboriginal cultural heritage and historic heritage are provided in Section 11.
2. THE ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

2.1 PURPOSE AND OBJECTIVES

The purpose of the current study is to identify and assess Aboriginal cultural heritage constraints relevant to the proposed works.

2.1.1 Aboriginal archaeological assessment objectives

The current assessment will apply the Code of Practice to complete an Aboriginal archaeological assessment to meet the following objectives:

**Objective one:** Undertake background research on the study area to formulate a predacative model for site location within the proposal area

**Objective two:** Identify and record objects or sites of Aboriginal heritage significance within the proposal area, as well as any landforms likely to contain further archaeological deposits

**Objective three:** Assess the likely impacts of the proposed work to Aboriginal cultural heritage and provide management recommendations.

2.2 DATE OF ARCHAEOLOGICAL ASSESSMENT

The fieldwork component of the alternative alignment assessment was undertaken by OzArk on Wednesday 31 May 2017.

The fieldwork component of the recommended and alternate alignment assessment was undertaken by OzArk on Tuesday 16 and Wednesday 17 January 2018.

2.3 ABORIGINAL COMMUNITY INVOLVEMENT

Aboriginal representatives from the following Aboriginal organisations participated in the survey (Appendix 1):

- Gomeroi People Native Title Claim Group (Gomeroi NTCG; Tribunal file no. NC2011/006; Federal Court file no. NSD2308/2011)
- Moree Local Aboriginal Land Council (Moree LALC)

2.4 OZARK INVOLVEMENT

2.4.1 Field assessment

The fieldwork component of the archaeological assessment was undertaken by:

- Fieldwork Director: Dr Chris Lovell (PhD, BA [Hons], BSc, University of Queensland)

The fieldwork component of the recommended and alternate alignment assessment was undertaken by:
• Archaeologist: Stephanie Rusden (BSc University of Wollongong and BA (Archaeology) University of New England)
• Archaeologist: Philippa Sokol (BA (Archaeology) University of New England).

2.4.2 Reporting

The reporting component of the archaeological assessment was undertaken by:

• Report Author: Dr Chris Lovell
• Contributor: Stephanie Rusden
• Reviewer: Ben Churcher (OzArk Principal Archaeologist; BA[Hons], Dip Ed).
3 LANDSCAPE CONTEXT

An understanding of the environmental contexts of a proposal area is requisite in any Aboriginal archaeological investigation (DECCW 2010). It is a particularly important consideration in the development and implementation of survey strategies for the detection of archaeological sites. In addition, natural geomorphic processes of erosion and/or deposition, as well as man-made landscape processes, influence the degree to which these material culture remains are retained in the landscape as archaeological sites; and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

3.1 TOPOGRAPHY

The proposal areas are located within the Brigalow Belt South bioregion (NPWS 2003: 131–137), Northern Outwash subregion (Figure 3-1), and three Mitchell (2002) landscape units: Gwydir Alluvial Plains; Gwydir Channels; and Floodplains and Croppa Clay Plains (Figure 3-2). Plates 1 to 14 contain photographs showing the topography of the proposal areas. The topography of the Northern Outwash subregion is characterised by sloping plains with alluvial fans that are coarser and steeper than the Gwydir Fans located downstream (NPWS 2003: 136).

Proposal areas 1 and 2 include the Gwydir Alluvial Plains and Gwydir Channels and Floodplains landscape units. The Gwydir Alluvial Plains landscape unit comprises channelized gently undulating plains with local relief between two and five metres. The Gwydir Channels and Floodplains landscape unit includes the channel and meander plain facies of the Gwydir River alluvial fan and distributary stream system, with local relief in the channels of between five and ten metres (Mitchell 2002).

Proposal area 3 also includes the Gwydir Alluvial Plains and Gwydir Channels and Floodplains landscape units, as well as the Croppa Clay Plains landscape unit. The Croppa Clay Plains landscape unit includes extensive alluvial fans and rolling downs on either side of Croppa and Gil Gil Creeks draining from the Yallaroi Basalts Ecosystem with general elevation between 275 and 230 metres and local relief to five metres (Mitchell 2002).
Figure 3-1: Map showing the Brigalow Belt South bioregion subregions in relation to the proposal areas.
Figure 3-2: Map showing Mitchell (2002) landscape units in relation to the proposal areas.
3.2 GEOLOGY AND SOILS

The geology of the Northern Outwash subregion comprises Tertiary and Quaternary alluvial fans and stream terraces. Soils are composed of red loams and heavy brown clays (NPWS 2003: 136).

The geology of the Gwydir Alluvial Plains landscape unit comprises Holocene fluvial sediments of backplain and channelized backplain facies on the Gwydir River alluvial fan. Soils are composed of grey and brown silty clay deposited from suspended sediments in floodwater, often with gilgai. The elevated floodplain margins are composed of red-brown texture-contrast soils (Mitchell 2002).

The geology of the Gwydir Channels and Floodplains landscape unit comprises Holocene fluvial sediments of channel and meander plain facies of the Gwydir River alluvial fan and distributary system. Sinuous channels are entrenched in the meander plain and contain a silt and clay suspended load and some fine sand bed load. Soils on the banks and plains are composed of brown to grey silt and cracking grey or brown clay with minor areas of red-brown texture-contrast soils on low levees (Mitchell 2002).

The geology of the Croppa Clay Plains landscape unit includes alluvial fans and rolling downs on Quaternary sediments and planar surfaces of Cretaceous calcareous silty sandstones and shales. Soils are composed of moderately fertile deep grey to black uniform cracking clay (Mitchell 2002).

3.3 HYDROLOGY

Proposal area 1 does not traverse any hydrological features (Figure 3-3). Proposal area 2 traverses two major intermittent watercourses—Marshalls Ponds Creek and Wallon Creek—and one minor ephemeral watercourse (Figure 3-4). Proposal area 3 traverses two major intermittent watercourses—Gil Gil Creek and Nee Nee Creek—and two minor ephemeral tributaries of these creeks (Figure 3-5).
Figure 3-3: Map showing the location of watercourses in relation to proposal area 1.
Figure 3-4: Map showing the location of watercourses in relation to proposal area 2.
Figure 3-5: Map showing the location of watercourses in relation to proposal area 3.
3.4 Vegetation

At the time of European colonisation, vegetation within the Gwydir Alluvial Plains landscape unit (Mitchell 2002) likely comprised open woodland and shrubland that contained wattle, sheoak, eucalypt, rosewood, wilga, whitewood, leopardwood, saltbush, wild orange and other shrubs and various grasses on the lower claypans and along drainage lines. Eucalypt, wattle, eurah and flowering lignum likely occurred in depressions and channels. Dense to moderate white cypress pine, eucalypt, sheoak, wilga, wattle, budda, quinine bush, sandhill riceflower and various grasses likely occurred on sandy rises.

Vegetation within the Gwydir Channels and Floodplains landscape unit (Mitchell 2002) likely comprised eucalypt and paperbark along the deeper main channels. Floodplains likely comprised scattered to moderate patches of eucalypts and whitewood with patches of rosewood, sheoak, wattle, eurah, chenopods, grasses and forbs. Bimble box likely occurred on the western plains and yellow box and rough-barked apple on the distal fan and higher red brown soils on terraces. Vegetation within the Croppa Clay Plains landscape unit (Mitchell 2002) likely comprised eucalypt (e.g. bimble box) and sheoak woodlands with patches of wattle on black earths.

3.5 Climate

Climate statistics from Moree at the southern limit of the proposal areas show that the region experiences long, warm to hot summers, with moderate and variable rainfall and cool clear days during winter, with cold frosty nights. There is often a rapid transition from summer to winter occurring over several weeks. Average maximum temperatures range from 17°C to 19°C in the winter to 33°C in the summer months. Average minimum temperatures range from between 4°C and 5°C in winter to between 18°C and 20°C in summer. In winter, the minimum is below zero on an average of 10.4 days. In summer, on average, more than 25 days reach 35°C or higher. The annual average rainfall for Moree is 585 millimetres. Summer months usually provide the best falls, with the remaining months providing generally even falls. Summer rain tends to be more variable than winter rain due to the incidence of thunderstorms in summer. The highest daily rainfall recorded in Moree was 161.8 millimetres on 9 February 1888 and the highest monthly rainfall recorded was 461.3 millimetres in March 1894. The highest annual rainfall recorded in Moree was 1107mm in 1894 and the lowest annual rainfall was 202.7 millimetres in 1902 (BOM 2017).

3.6 Land–Use History and Existing Levels of Disturbance

Aboriginal people have sustainably managed and harvested resources in the Brigalow Belt South bioregion in the vicinity of Moree for tens of thousands of years. The area began to be occupied by pastoralists shortly after Mitchell passed through the area in 1831 and Coxen in 1835, each reporting good pastoral land. Around this time, Europeans began to displace Aboriginal traditional
custodians with locally contingent Aboriginal responses including: fierce resistance, disease epidemics, economic hardship, resilience and opportunism (NSW HO and DUAP 1996: 80–81).

In the interim, the bioregion has been subjected to a variety of landscape disturbances due to pastoralism, mining, vegetation clearance, forestry, cropping and water management. Other sources of disturbance include the construction of an urban centre at Moree, smaller towns and subdivisions, the associated houses, commercial precincts, roads, highways, railways and electricity transmission and telecommunications infrastructure. Large scale irrigation schemes have been developed to support the cultivation of cotton and other crops and include vast areas that have been laser levelled.

The major source of disturbance within the proposal areas has been the construction, use and maintenance of Newell Highway. Disturbances include: earthworks associated with the construction, use and maintenance of the road formation and seal; culverts; cut batters and associated drainage features; and several bridges. The footprint of previous disturbances is generally larger than the currently visible road formation as the road formation has been shifted over time, machinery has turned around beside the road, site compounds have been established, borrow pits created and rest areas constructed.

3.7 CONCLUSION

The proposal areas include a variety of landforms, geological features, soil types, hydrological conditions and vegetation types. Parts of the proposal area once had the potential to provide Aboriginal people with suitable locations for occupation (e.g. camp sites), particularly those close to water with flat or gently sloping topographies. Occupation was particularly likely along named creeks, stream corridors and on raised landforms near seasonally inundated floodplains. Areas with suitable vegetation and fauna had the potential to provide Aboriginal people with areas for resource extraction.

However, post depositional processes of erosion and sedimentation, and possibly the accumulation of later historical deposits, could impede the detection of archaeological sites. In addition, a range of land use disturbances, principally the construction, use and maintenance of the Newell Highway, has affected the proposal area and these disturbances may have removed or dispersed evidence of past Aboriginal occupation.
4 ABORIGINAL ARCHAEOLOGY BACKGROUND

4.1 ETHNO-HISTORIC SOURCES OF REGIONAL ABORIGINAL CULTURE

According to Horton's (1994) map of ‘tribal’ boundaries, the proposal areas are located within the boundaries of Kamilaroi (also Gamilaraay) ethno-linguistic group. Maps produced by Tindale (1974) and Austin et al (1980) show the proposal areas traversing Kamilaroi and Weraerai (also Wiriyaraay) country (Figure 4-1 and Figure 4-2). It is acknowledged that use of the term ‘tribe’ and the delineation of ‘tribal boundaries’ on maps is problematic, although distinctive ethno-linguistic groups are known to exist.

Figure 4-1: A portion of Tindale’s (1974) map showing the location of ethno-linguistic groups in relation to the proposal areas.

The surveyor-general Sir Thomas Livingstone Mitchell (1839) described two Aboriginal villages on the Moree plains. The first was located on the Gwydir River:

Each hut was semi-circular, or circular; the roof conical, and from one side a flat roof stood forward like a portico, supported by two sticks. Most of them were close to the trunk of a tree, and they were covered, not as in other parts, by sheets of bark, but with a variety of materials, such as reeds, grass, and boughs. (Mitchell 1839: 77)

The second village was located on a lagoon between Collarenbri and Bellata and comprised seven huts of substantial construction, neatly thatched with dry grass and reeds (Michell 1839: 121). By the late 1830s, many prime grazing sites along the Namoi River and Gwydir River had
been taken up by European settlers, including James Cox at Moree, Thomas Simpson Hall at Wee Bella Bolla and John Fleming at Mundi Bundie (Elder 2003: 75).

Balme (1986) compiled a list of objects that likely comprised the toolkit used by Aboriginal people in the region from reports by Mitchell (1839), Oxley (1820) and Sturt (1834). Based on this list, the toolkit used by Kamiloroi people is likely to have included: bark containers for holding water and gathering food; throwing sticks for hunting; cloaks of kangaroo skin; wooden clubs for fighting; hafted stone axes; nets for catching fish and birds; spears and spear throwers; and fish traps constructed in major creeks and rivers.

Figure 4-2: Map produced by Austin et al (1980) showing tentative linguistic boundaries in north central NSW in relation to the proposal areas.

The explorer and natural scientist Alfred William Howitt was an early pioneer authority on Aboriginal cultures. In *Native Tribes of South-East Australia*, Howitt (1996 [1904]) discusses Kamilaroi social and political organisation, kinship, ritual practices, long distance trade and communication (see also Fison and Howitt 1880). Presbyterian minister Reverend William Ridley (1875) and surveyor and amateur anthropologist Robert Hamilton Mathews (1903) provided early linguistic descriptions of the Kamilaroi language. More recently, Austin and Tindale (1985) provided a translation of the Kamilaroi Dreaming story of the Emu and the Brolga, as recorded by Tindale in 1938; and Austin (1993) produced a Kamilaroi reference dictionary.

### 4.2 Regional Archaeological Context

According to O’Connell and Allen (2004), Aboriginal people have inhabited the Australian continent for at least the last 50,000 years. Hamm et al (2016) report dates of between 46,000 and 49,000 years for the occupation of the arid interior. Aboriginal occupation of the NSW Darling
Basin has been dated to over 42,000 years at Willandra Lakes (Bowler et al 2003). At Cuddie Springs, southwest of the proposal areas near the Macquarie River, flaked and ground stone tools have been found associated with the remains of several megafauna species in horizons dating to between 30,000 and 40,000 years ago (Field and Dodson 1999; Dodson et al 1993). These dates are subject to continued revision as further evidence of Aboriginal cultural heritage is discovered and as more research is conducted.

Prior to 1980 little or no systematic archaeological studies had been undertaken in the Moree region (Haglund 1984). In the interim, a number of archaeological studies have since been conducted, providing baseline data for placing past Aboriginal sites within a regional landscape context (e.g. Balme 1986; Pearson 1981; Purcell 2000).

Pearson (1981) worked primarily in the Upper Macquarie region; nevertheless, the proximity of the Upper Macquarie to the current proposal areas and general topographic similarities render the findings relevant. Pearson divided the recorded archaeological sites into two main categories: occupation sites and non-occupation sites (including grinding grooves, scarred or carved trees, ceremonial and burial sites). Analysis of site locations produced a site prediction model with occupation occurring in areas with: access to water, good drainage, level ground, adequate fuel and appropriate localised weather patterns for summer or winter occupation. Occupation sites were most frequently located on low ridge tops, creek banks, gently undulating hills and river flats and usually in open woodland vegetation (Pearson 1981: 101). The location of non-occupation sites was dependent upon a variety of factors relating to site function. For instance, grinding grooves were found where appropriate outcropping sandstone occurred close to occupation sites. The location of scarred trees displayed no obvious patterning, other than proximity to watercourses. Pearson suggested that these patterns would differ on the drier plains to the west, towards Dubbo and beyond, where dependence upon larger, more permanent water supplies was greater.

The North-Central Rivers study undertaken by Balme (1986) examined site location in terms of site preservation. Balme (1986: 182) found that, other than historic impacts, site distribution was most affected by geomorphic processes affecting site preservation and leading to site exposure. There was little scope for the assessment of site chronologies as few datable contexts had been located. Balme concluded that sites recorded on AHIMS from ethnographic accounts were unlikely to be relocated. Balme (1986) reported that, of the 200 carved trees reported in the area, only five remained in situ at the time of the study; 50 are known to be in museum and private collections, and the whereabouts of the remainder are unknown, with many suspected to be in private collections.

Balme (1985) undertook a study focused on the Moree plains area, including surveys of the four major landforms identified in the area: major river channels, minor channels, floodplain areas not frequently inundated and frequently inundated floodplains. Aboriginal scarred trees and open
camp sites were the most commonly recorded site types. Most were located close to water or on elevated areas more distant from water. Erosion had exposed many of the sites. Balme noted that open camp sites were poorly represented, probably due to sediment deposition during flood events, rather than reflecting a true absence of sites.

High levels of land use disturbance in the Moree region have also been implicated for the apparent lack of Aboriginal sites in the region. Witter (2004: 139) describes the Barwon Basin Region, which includes the Moree plains, as one of the major regions of archaeological disaster in NSW. Extensive areas of black alluvial cracking clays occur throughout the region. The self-mulching action of these soils is likely to have disrupted evidence of Aboriginal camps sites and vast areas have been laser levelled for irrigation, obliterating the remaining archaeology.

In an assessment of the Pilliga and Goonoo State Forests, Purcell (2000) recorded 47 and 106 Aboriginal sites respectively. Purcell (2000: 31) found that sites were more frequently located within alluvial landforms including creeks, swamps and chains of ponds surrounded by floodplains and terraces, and that 91.5 per cent of sites were recorded within 200 to 300 meters of water. Purcell (2002) found that sites located in the Moree area were often on floodplain and alluvial landforms within a few hundred metres of water. In the Northern Outwash subregion, sites were found up to 750 metres from water sources, with an average distance of 101 metres.

In addition, a number of development driven studies have been conducted in the region. Haglund’s (1983, 1984) studies investigated an approximately eight kilometre portion of the Gwydir River, west of Moree, but did not locate any Aboriginal archaeological sites.

Haglund (1984: 6–11) suggests that habitation sites are likely to occur close to water; however, in the Moree region, Haglund suggested that sites were more likely located on slightly elevated, well drained landforms adjacent to floodplains above the normal flood level, where habitation conditions would have been more comfortable.

Silcox and Bowdler (1982) surveyed a proposed electricity transmission line easement between Walgett and Narrabri and recorded 25 Aboriginal sites, mostly located within eroded areas, vehicle tracks and small elevated areas.

Appleton (1997) conducted an assessment of three options for the proposed Newell Highway Moree bypass. Appleton identified an archaeologically sensitive area adjacent to Skinners Creek and four previously recorded Aboriginal fringe camps. Kelton (1999) conducted subsequent investigations of the proposed bypass and identified several archaeologically sensitive areas and sites. Both Kelton and Appleton assessed the banks of the Mehi River to be archaeologically sensitive.

Ozark (2004a) conducted subsurface test excavations within the potential archaeological deposits (PADs) identified on the banks of the Mehi River and Skinners Creek along the preferred Moree bypass alignment. The results indicated that no artefacts were present at the Skinners
Creek PAD; and that the two artefacts recovered at the Mehi River PAD were not *in situ*, but likely transported and deposited there by flood waters.

Appleton also conducted a number of assessments of proposed bridge sites on watercourses in the Moree Shire, but recorded no Aboriginal sites at the seven of the bridge sites reviewed by Heritage Concepts (2009: 46). A survey undertaken for a proposed new bridge along Newell Highway at Tycannah Creek did not locate any sites, and a subsequent reassessment of the creek banks found that they had been subjected to high levels of geomorphic and anthropogenic disturbance (OzArk 2004b).

Heritage Concepts (2009: 61–68) undertook a comprehensive review of Aboriginal cultural heritage sites within the Moree Plains Shire LGA. They found that Aboriginal culturally modified trees are the most common site type in the region. Scarred trees used to make canoes tend to be located close to major watercourses, whereas those used to extract building materials and to make containers tend to be distributed across the landscape. Carved trees can also be located anywhere in the landscape, and can be associated with ceremonial sites. Artefact scatters and isolated finds are the second most common site type in the region, with silcrete, quartzite and quartz being the most commonly used raw materials. Artefact scatters tend to be located on eroded parts of the floodplain in areas not frequently inundated. As such, both proximity to water and dry surface conditions appear to have been important factors determining the location of occupational sites. Several burial sites have been recorded in the region, including both contact and pre-contact period sites. Burials tend to be located along the banks and adjacent source bordering dune formations of rivers and their tributaries. Carved trees were commonly used to mark graves. Grinding grooves are rare in the region due to a general lack of outcropping stone, but do occur where suitable outcropping stone exists. Nine ceremonial sites or bora rings were recorded in the region; but none are extant today having been destroyed by erosion, aggradation and agricultural disturbance. Several Dreaming sites have been identified in the region, relating to both the contact and pre-contact period. Contact period sites include: fringe camps, commonly located along the edges of European settlements, and often identified by the presence of flaked glass; massacre sites; burial sites; and mission sites.

Heritage Concepts (2009: 70) note that river channels in the Northern Outwash subregion often display evidence of stream channel migration and shifting with numerous palaeochannels present. As such, today’s permanent water sources were likely in different locations during the Pleistocene. Predictive models must therefore take account of both modern and ancient water sources. Purcell (2002) surveyed palaeochannels in the Northern Outwash subregion, but did not locate any sites within these landforms. Balme (1986) notes that palaeochannel landforms have been subjected to extensive sand mining in the region, perhaps destroying Pleistocene aged sites within these landforms (Heritage Concepts 2009: 70).
4.3 LOCAL ARCHAEOLOGICAL CONTEXT

4.3.1 Desktop database searches conducted

Desktop database searches were conducted to identify any potential previously-recorded heritage within the proposal areas. The results of these searches are summarised in Table 4-1 and presented in detail in Appendix 2.

Table 4-1: Aboriginal heritage: desktop-database search results.

<table>
<thead>
<tr>
<th>Name of Database Searched</th>
<th>Date of Search</th>
<th>Type of Search</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Heritage Database</td>
<td>9 January 2018</td>
<td>Narrabri, Edgeroi, Bellata, Gurley and Moree</td>
<td>No places listed are located within the proposal areas</td>
</tr>
<tr>
<td>NSW Heritage Office State Heritage Register (SHR) and State Heritage Inventory (SHI)</td>
<td>9 January 2018</td>
<td>Narrabri, Edgeroi, Bellata, Gurley and Moree</td>
<td>No Aboriginal places listed on the SHR or SHI are located within the proposal areas</td>
</tr>
<tr>
<td>National Native Title Claims Search</td>
<td>9 January 2018</td>
<td>Narrabri LGA, Moree LGA</td>
<td>Gomeroi People (Tribunal file no. NC2011/006; Federal Court file no. NSD2308/2011); accepted for registration</td>
</tr>
<tr>
<td>OEH AHIMS</td>
<td>22 May 2017</td>
<td>27 km (east-west) by 98 km (north-south) and 14 km (east-west) by 36 km (north-south) centred on the study areas</td>
<td>100 sites are located within the search areas. No sites are located within any of the proposal areas.</td>
</tr>
<tr>
<td>Local Environment Plan (LEP)</td>
<td>9 January 2018</td>
<td>Narrabri LEP of 2012; Moree LEP of 2011</td>
<td>None of the Aboriginal places listed are near the proposal areas</td>
</tr>
</tbody>
</table>

A search of the OEH administered AHIMS database returned 100 records for Aboriginal heritage sites within the designated search areas (Table 4-2 and Figure 4-3). One site has a restriction applied with no information about the location or site features provided\(^1\). Two sites are located near proposal area 1 at Skinners Creek (AHIMS #10-3-0040 and #10-3-0041), located 615 and 680 metres southwest of proposal area 1, respectively. No other sites are located within or close to the proposal areas.

AHIMS #10-3-0040 is an isolated find that was destroyed during the construction of the Moree bypass (OzArk 2004a) and the site is listed as ‘destroyed’ on AHIMS. AHIMS #10-3-0041 is a PAD that was subjected to archaeological test excavations (OzArk 2004a). Two stone artefacts were recovered, but both were assessed as being deposited by alluvial processes. As such, no in situ archaeological deposits were recorded and OzArk (2004a) removed the portion of the site tested from the AHIMS database.

\(^1\) A smaller scale search of the proposal areas shows that the restricted site is not located within any of the proposal areas.
Culturally modified trees are the most commonly represented site type in the area (76 per cent) followed by artefact scatters (12 per cent) and isolated finds (12 per cent). Only two PADs have been identified. One is associated with an artefact near the Mehi River and the other is located near Skinners Creek. Four burials have been recorded, including two associated with culturally modified trees, mostly located close to major watercourses. A broad range of other site types exist at low frequencies, including two resource and gathering sites, a stone quarry near Halls Creek, a habitation structure, a ceremonial ring and a conflict site (the Waterloo Creek massacre site).

As per Table 4-1, it is noted that the proposal areas include land currently subject to Native Title Claim by the Gomeroi People (Tribunal file no. NC2011/006; Federal Court file no. NSD2308/2011). The proponent will need to obtain legal advice as to whether land tenure will require Native Title consultation.

### Table 4-2: AHIMS site types and frequencies.

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Number</th>
<th>% Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modified tree</td>
<td>75</td>
<td>76</td>
</tr>
<tr>
<td>Artefact/s</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Burial</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Modified tree, burial</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Resource and gathering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Artefact, PAD</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PAD</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Stone quarry</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Habitation structure</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ceremonial ring</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Conflict</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Restricted</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Figure 4-3: Map showing AHIMS site locations and types in relation to the proposal areas.
4.4 **PREDICTIVE MODEL FOR SITE LOCATION**

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape, it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials like stone artefacts, stone hearths, shell, and some bones that remain preserved in the current landscape. Even these, however, may not be found in their original depositional context since they may have been subject to either (a) the effects of wind and water erosion/transport over short and long time scales or (b) historical impacts associated with the introduction of European farming practices including: grazing and cropping; land degradation associated with exotic pests such as goats and rabbits and the installation of farm related infrastructure including water-storage, utilities, roads, fences, stockyards and residential buildings. Scarred trees may survive for up to several hundred years but rarely beyond.

Heritage Concepts (2009: 69–72) developed a predictive model for the Northern Outwash subregion of the Brigalow Belt South bioregion. Flood mapping indicates that the alluvial plains of the Northern Outwash subregion are not frequently inundated, with flooding generally confined to the immediate overbank areas. As such, occupational sites are more likely to be located within 100 metres of major watercourses, since they are infrequently covered by alluvial deposits, than on the frequently flooded plains located to the west. Erosion acting on high points on the alluvial plains is likely to create lag deposits due to the flat topography. On the shallow soils of the higher slopes, deposits are likely to be translocated downslope by sheetwash, rill and gully erosion and downslope creep. Sites are predicted to occur within palaeochannel landforms, although sand quarrying is likely to have destroyed many of these sites.

In general, alluvial landforms are more likely to preserve archaeological evidence due to aggradation. However, a general under-representation of archaeological deposits is expected on alluvial landforms in the region due to intensive agricultural practices. Those objects that are preserved *in situ* are likely to represent episodic small-scale events that have subsequently been covered. Alternatively, objects are likely to have been transported and deposited in secondary contexts via fluvial processes. Preservation of large open camp sites is likely to occur only on
stable relatively dry land surfaces: e.g. on raised landforms like river terraces and source bordering dunes, situated away from the immediate river bank and adjacent to the active floodplain (Heritage Concepts 2007: 71–72).

OEH (2014) have produced a series of ‘pre-1750’ predictive models termed the Aboriginal Sites Decision Support Tool (ASDST) that combine data derived from AHIMS with a series of spatial variables that describe the landscape. The ASDST outputs GIS raster layers composed of one hectare cells that predict the likelihood of Aboriginal sites (e.g. mounds, artefacts, modified trees, grinding grooves, burials and hearths) occurring in the landscape prior to European settlement. These models do not account for land use disturbance in the intervening period, or natural conditions leading to differential preservation of features. However, the ASDST includes an ‘accumulated impacts’ model that indicates the extent to which post-settlement land-use history has impacted upon Aboriginal site features in the landscape. In combination, these models are used to predict the likelihood of encountering different Aboriginal site types prior to European settlement, and how the distribution of Aboriginal sites are likely to have been affected in the interim. According to the pre-1750 models:

- Stone quarries are possible in the proposal areas
- Modified trees are likely throughout the proposal areas, particularly near major watercourses
- Rock art is highly unlikely throughout the proposal areas
- Grinding grooves are unlikely in the proposal areas, with slightly increased likelihood around Skinners Creek in proposal area 1
- Cultural mounds are not predicted to occur anywhere in the proposal areas
- Hearths are unlikely throughout the proposal areas
- Burials are possible in the proposal areas, near major watercourses
- Artefacts are possible in the proposal areas, with increased likelihood around major watercourses
- The ASDST accumulated impacts model indicates disturbance throughout the proposal area, probably reflecting the construction, use and maintenance of Newell Highway and intensive agricultural modification, with some patches of less disturbed land, particularly in proposal area 3.

Based on knowledge of the environmental contexts of the proposal area and a desktop review of the known geomorphological and physiographic context; and the local and regional archaeological record, the following predictions are made concerning the probability of particular site types being recorded within the proposal areas:

- **Isolated finds** may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured
or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.

- As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the proposal areas.

- **Open artefact scatters** are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 metres away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain larger sites, evidenced by open artefact scatters.

- On the alluvial plain and floodplain landforms comprising proposal areas 1 to 3, artefact scatters are predicted to occur within a few hundred metres of major watercourses, particularly on raised landforms (e.g. river terraces or source bordering dunes) adjacent to watercourses, where erosion is likely to have created lag deposits. Small in situ deposits or secondary deposits are possible within active floodplains, but will be generally difficult to detect due to aggradation within the floodplain and the self-mulching character of black earth floodplain soils. Archaeological deposits on alluvial landforms are likely to have been destroyed by intensive agricultural practices. Artefact scatters are possible on palaeochannel landforms, although these sediments have, in general, been destroyed by sand mining.

- **Aboriginal scarred trees** contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting or bark removal. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can
be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

- This site type is relatively common in the area and is likely to occur wherever trees of suitable age and species for cultural modification occur, with increased likelihood near major watercourses.

- **Quarry sites and stone procurement sites** typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine-grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.

  - This site type is unlikely due to a lack of outcropping stone in the proposal areas, but could be recorded where suitable rock outcrops exist.

- **Burials** are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

  - Although it is possible that this site type could be found within the proposal areas particularly near major watercourses, burials are a rare site type, particularly considering the high levels of disturbance within the proposal areas.

- **Grinding grooves** are oval-shaped indentations in sandstone outcrops made by Aboriginal people shaping and sharpening edge-ground stone axes. Flat, low outcrops of fine-grained sandstone were preferred, and Aboriginal people sometime carried small pieces of sandstone with them for sharpening axes. Axe-grinding grooves are usually located on the edges of rivers, creeks, lakes and swamps or near dry or drained water bodies.

  - This site type is unlikely to be recorded due to a lack of suitable outcropping sandstone.
5 RESULTS OF ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

5.1 SAMPLING STRATEGY AND FIELD METHODS
The archaeological methods utilised in the Aboriginal archaeological assessment followed the Code of Practice. Standard archaeological field survey and recording methods were employed in this study (Burke and Smith 2004). A sampling strategy was developed in accordance with the predictive model developed in Section 4.4. OzArk staff identified, recorded and evaluated physical (i.e. archaeological) evidence. Aboriginal representatives participated in the archaeological survey, identifying archaeological sites, determining the cultural significance of Aboriginal objects, advising whether cultural places and non-physical site types exist within the proposal areas, and providing input into management recommendations for the recorded sites. Aboriginal representatives and OzArk staff discussed whether impacts to sites could be avoided and, where impacts could not be avoided, specific management recommendations were discussed.

Vehicle traverses were utilised during the field assessment for reconnaissance observation of the proposal areas in order to identify areas to be sampled via pedestrian transect. Pedestrian transects were used to sample and assess undisturbed parts of the proposal areas with good ground surface visibility containing landforms possessing Aboriginal archaeological potential. Survey priority was afforded to; areas within several hundred metres of the major watercourses; areas containing mature trees, particularly eucalypts; and relatively undisturbed areas outside of the Newell Highway road formation.

The alternative alignment survey was primarily undertaken by one person (the author), with occasional participation by Aboriginal representatives, particularly in areas where sites were identified. The recommended alignment was completed by two archaeologists, surveying separate sections at a time. All landforms with potential to be impacted by the proposal were sampled during the assessment. Figure 5-1 to Figure 5-3 show GPS track data for vehicle traverses and pedestrian transects for one person (the author) during the survey. Only data from pedestrian transects was used to calculate effective survey coverage.

5.2 PROJECT CONSTRAINTS
There were no significant constraints affecting the completion of the Aboriginal heritage assessment.

5.3 EFFECTIVE SURVEY COVERAGE
Two of the key factors influencing the effectiveness of archaeological survey are ground surface visibility (GSV) and ground surface exposure (GSE). These factors are quantified in order to ensure that the survey data provides adequate evidence for the evaluation of the archaeological
materials across the landscape. For the purposes of the current assessment, these terms are used in accordance with the definitions provided in the Code of Practice (DECCW 2010).

GSV is defined as:

… the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stone ground or introduced materials will affect the visibility. Put another way, visibility refers to ‘what conceals’ (DECCW 2010: 39).

GSE is defined as:

… different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to ‘what reveals’ (DECCW 2010: 37).

Plates 1 to 14 illustrate the GSV and GSE conditions in different parts of the proposal areas. Locational data for all pedestrian transects (i.e. survey units) was captured via non-differential GPS receiver, including track and point data used to quantify the effective survey coverage. Figure 5-1 to Figure 5-3 show the location of each survey unit. Effective survey coverage within each survey unit is detailed in Table 5-1. Where more than one observation of GSV and GSE was recorded per transect, the average of all observational data (to the nearest five per cent) is reported. Table 5-2 provides a summary of the effective survey coverage in the proposal areas, detailing the number of sites recorded within the landforms encountered.

GSV was low throughout the proposal areas due to dense vegetation cover. GSE was high due to the high levels of disturbance of most of the landforms assessed, particularly due to the construction and maintenance of Newell Highway and high levels of agricultural disturbance. GSV averaged 15 per cent and GSE averaged 65 per cent, facilitating the assessment of the areas sampled. In many areas, the assessment of archaeological potential relied largely on assessments of archaeological potential of landforms due to poor GSV. Nevertheless, between 3 per cent and 7 per cent of each landform was effectively surveyed, which is considered low but sufficient survey coverage to complete the assessment.
Figure 5-1: Map showing the pedestrian transects and survey coverage undertaken by one person in proposal area 1.
Figure 5-2: Map showing the pedestrian transects and survey coverage undertaken by one person in proposal area 2.
Figure 5-3: Map showing the pedestrian transects and survey coverage undertaken by one person in proposal area 3.
Table 5-1: Survey coverage data.

<table>
<thead>
<tr>
<th>Survey Unit</th>
<th>Landform</th>
<th>Survey Unit Area (sq m)</th>
<th>Visibility %</th>
<th>Exposure %</th>
<th>Effective Coverage Area (sq m) (= Survey Unit Area x Visibility % x Exposure %)</th>
<th>Effective Coverage % (= Effective Coverage Area / Survey Unit Area x 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stream bank</td>
<td>40,200</td>
<td>5</td>
<td>60</td>
<td>1206</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Plain</td>
<td>129,200</td>
<td>10</td>
<td>70</td>
<td>9044</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 5-2: Landform summary—sampled areas.

<table>
<thead>
<tr>
<th>Landform</th>
<th>Landform area (sq m)</th>
<th>Area Effectively Surveyed (sq m) (= Effective Coverage Area)</th>
<th>% of Landform Effectively Surveyed (= Area Effectively Surveyed / Landform x 100)</th>
<th>Number of Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream bank</td>
<td>40,200</td>
<td>1206</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Plain</td>
<td>129,200</td>
<td>9044</td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>

5.4 Aboriginal Sites Recorded

Two Aboriginal sites were recorded during the survey (Table 5-3 and Figure 5-4). Details of these sites are outlined below.

Table 5-3: Summary of newly recorded Aboriginal sites in the proposal areas.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>AHIMS ID</th>
<th>Feature(s)</th>
<th>Survey Unit</th>
<th>Landform</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-HW17-ST1</td>
<td>#10-3-0071</td>
<td>Modified tree</td>
<td>8</td>
<td>Plain</td>
</tr>
<tr>
<td>BR-HW17-ST2</td>
<td>#10-3-0072</td>
<td>Modified tree</td>
<td>9</td>
<td>Stream bank</td>
</tr>
</tbody>
</table>

Boolooroo-HW17-ST1 (BR-HW17-ST1)

AHIMS ID: #10-3-0071

Site Type: Modified tree

GPS Coordinates: [Insert GPS coordinates here]

Location of Site: Within the Newell Highway Crown Land road reserve in the suburb of Moree, about 18.8 kilometres northeast of Moree, 5.9 kilometres southwest of the Newell Highway Wallon Creek crossing, 5.2 kilometres north-northeast of the Newell Highway Marshall Ponds Creek crossing, [insert direction] southeast of the intersection of Newell Highway and Milo Road, [insert direction] southeast of the Newell Highway road edge (Figure 5-4).

Description of Site: BR-HW17-ST1 is an Aboriginal culturally modified tree on an undulating alluvial plain, within a highly-modified woodland environment (Table 5-4, Figure 5-5 and Figure 5-6. The tree contains an oval shaped, curved (preform) scar that Aboriginal representative [insert name] suggested was used to make a shield. A fully enclosed northwest facing scar extending from the ground to about 1.5 metres high exists on the opposite side of the tree. [Insert any relevant directions] suggested that this could be a carved panel.
that has been completely obscured by overgrowth. Unfortunately, there is no currently known method for confirming this idea without damaging the tree. The archaeological potential of the landform was assessed as low.

Figure 5-4: Map showing the location of BR-Newell Highway-ST1 and BR-Newell Highway-ST2 within proposal area 2 in relation to the proposal.
Table 5-4: Attributes of BR-HW17-ST1.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Scar dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree species</td>
<td>Bimble box (<em>Eucalyptus populnea</em>)</td>
<td></td>
</tr>
<tr>
<td>Tree condition</td>
<td>Alive - the tree appears to be in good overall health</td>
<td></td>
</tr>
<tr>
<td>Scar orientation</td>
<td>Southeast</td>
<td></td>
</tr>
<tr>
<td>Type of scar</td>
<td>Curved (preform) e.g. shield</td>
<td></td>
</tr>
<tr>
<td>Scar preservation (original attributes)</td>
<td>The dryface is well preserved</td>
<td></td>
</tr>
<tr>
<td>Scarc preservation (physical decay)</td>
<td>Overgrowth obscures the original shape and extent of scarring</td>
<td></td>
</tr>
<tr>
<td>Toe holds</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tool marks</td>
<td>Possible axe marks</td>
<td></td>
</tr>
<tr>
<td>Epicormic stem present?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Tree dimensions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Length of dry face (cm)**: 50
- **Width of dry face (cm)**: 30
- **Height of base of scar above ground (cm)**: 100
- **Thickness of overgrowth (radial, from centre of tree) (cm)**: 10
- **Width of overgrowth (outer edge to inner edge over dry face)**:
  - **Top (cm)**: 20
  - **Left (cm)**: 20
  - **Bottom (cm)**: 5
  - **Right (cm)**: 20
- **Diameter at breast height (cm)**: 90
- **Height (m)**: 12

1. Overview of BR-Newell Highway-ST1 showing the context of the tree, facing southeast.
2. Overview of the BR-Newell Highway-ST1 curved (preform) scar, facing northwest.
3. Top of the BR-Newell Highway-ST1 curved (preform) scar.
4. Bottom of the BR-Newell Highway-ST1 curved (preform) scar.
3. Possible axe marks on the of the BR-HW17-ST1 curved (preform) scar.

4. Overview of the fully enclosed northwest facing scar on the same tree.

Figure 5-5: Photographs showing an overview and details of BR-HW17-ST1.

Figure has been removed for confidentiality

Figure 5-6: Map showing BR-HW17-ST1 in relation to proposal area 2.
Boolooroo-HW17-ST2 (BR-HW17-ST2)

**AHIMS ID:** #10-3-0072

**Site Type:** Modified tree

**GPS Coordinates:**

**Location of Site:** Within the Newell Highway Crown Land road reserve in the suburb of Moree, about 19.3 kilometres northeast of Moree, 5.9 kilometres north-northeast of the Newell Highway Marshall Ponds Creek crossing, 5.4 kilometres southwest of the Newell Highway Wallon Creek crossing, northeast of the intersection of Newell Highway and Milo Road, 30 metres southeast of the Newell Highway road edge (Figure 5-4).

**Description of Site:** BR-HW17-ST2 is an Aboriginal culturally modified tree on an undulating alluvial plain, on the bank of an ephemeral minor watercourse, within a highly-modified woodland environment (Table 5-5, Figure 5-7 and Figure 5-8). The tree contains a single south-facing bark slab (sheet) removal scar. The archaeological potential of the landform was assessed as low-moderate due to the proximity to a minor watercourse.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Scar dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree species</td>
<td>Bimble box (<em>Eucalyptus populnea</em>)</td>
<td>Length of dry face (cm) 120</td>
</tr>
<tr>
<td>Tree condition</td>
<td>Alive - the tree appears to be in good overall health</td>
<td>Width of dry face (cm) 50</td>
</tr>
<tr>
<td>Scar orientation</td>
<td>South</td>
<td>Height of base of scar above ground (cm) 170</td>
</tr>
<tr>
<td>Type of scar</td>
<td>Bark slab (sheet) removal scar</td>
<td>Thickness of overgrowth (radial, from centre of tree) (cm) 5</td>
</tr>
<tr>
<td>Scar preservation (original attributes)</td>
<td>The dryface is well preserved</td>
<td>Width of overgrowth (outer edge to inner edge over dry face)</td>
</tr>
<tr>
<td>Scar preservation (physical decay)</td>
<td>Overgrowth obscures the original shape and extent of scarring</td>
<td>Top (cm) 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Left (cm) 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottom (cm) 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Right (cm) 10</td>
</tr>
<tr>
<td>Toe holds</td>
<td>No</td>
<td>Tree dimensions</td>
</tr>
<tr>
<td>Tool marks</td>
<td>No</td>
<td>Diameter at breast height (cm) 80</td>
</tr>
<tr>
<td>Epicormic stem present?</td>
<td>Yes</td>
<td>Height (m) 15</td>
</tr>
</tbody>
</table>
1. Overview of BR-HW17-ST2 showing the context of the tree, facing west.

2. Overview of the BR-HW17-ST2 bark slab (sheet) removal scar, facing west.

3. Top of the BR-HW17-ST2 bark slab (sheet) removal scar

4. Bottom of the BR-HW17-ST2 bark slab (sheet) removal scar, showing the epicormic stem.

Figure 5-7: Photographs showing an overview and details of BR-HW17-ST2.

Figure has been removed for confidentiality

Figure 5-8: Map showing BR-HW17-ST2 in relation to proposal area 2.

5.5 PREVIOUSLY RECORDED ABORIGINAL SITES LOCATED

No previously recorded Aboriginal sites were assessed as none were located close to the proposal areas.
5.6 ABORIGINAL COMMUNITY INPUT

The Aboriginal stakeholder cultural heritage survey report provided by the Gomeroi People Native Title Claimants (Appendix 1) noted that the proposal areas have been subject to high levels of disturbance, which has affected the natural landscape proposal areas. The report concluded that the surveyed area is unlikely to affect any significant known or potential Aboriginal cultural heritage features.

5.7 DISCUSSION

The results of the survey are consistent with the predictive model, which suggests a general paucity of Aboriginal archaeological sites in the region. The recording of BR-HW17-ST1 on a plain landform away from water is consistent with the prediction that this site type can occur anywhere that trees of suitable age and species are found. The recording of BR-HW17-ST2 close to an ephemeral minor watercourse is consistent the prediction that culturally modified trees are more likely located close to water.

Very few Aboriginal PADs have been identified in the region and even fewer have been subjected to subsurface archaeological investigation (Heritage Concepts 2007: 45–46). As such, the careful identification of PADs, including PADs identified entirely on the basis of landform potential, is vital to the ongoing characterisation of the region’s Aboriginal archaeological record. Nevertheless, the assessment that SC PAD does not contain a PAD is consistent with the prediction that in situ archaeological deposits are unlikely to be preserved in hydrologically active floodplain environments.

5.8 ASSESSMENT OF SIGNIFICANCE

5.8.1 Introduction

The appropriate management of cultural heritage items is usually determined on the basis of their assessed significance as well as the likely impacts of any proposed developments. Scientific, cultural and public significance are identified as baseline elements of significance assessment, and it is through the combination of these elements that the overall cultural heritage values of a site, place or area are resolved.

Social or cultural value

This area of assessment concerns the importance of a site or features to the relevant cultural group: in this case, the Aboriginal community. Aspects of social value include assessment of sites, items, and landscapes that are traditionally significant or that have contemporary importance to the Aboriginal community. This importance involves both traditional links with specific areas, as well as an overall concern by Aboriginal people for their sites generally and the continued protection of these. This type of value may not be in accord with interpretations made...
by the archaeologist: a site may have low archaeological value but high social value, or vice versa.

Archaeological/scientific value

Assessing a site in this context involves placing it into a broader regional framework, as well as assessing the site's individual merits in view of current archaeological discourse. This type of value relates to the ability of a site to answer current research questions and is also based on a site’s condition (integrity), content and representativeness.

The overriding aim of cultural heritage management is to preserve a representative sample of the archaeological resource. This will ensure that future research within the discipline can be based on a valid sample of the past. Establishing whether or not a site can contribute to current research also involves defining ‘research potential’ and ‘representativeness’. Questions regularly asked when determining significance are; can this site contribute information that no other site can? Is this site representative of other sites in the region?

Aesthetic value

This refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Australia ICOMOS 2013).

Historic value

Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have ‘shared’ historic values with other (non-Aboriginal) communities.

Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage. Consequently, the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives. This means it is often necessary to collect oral histories along with archival or documentary research to gain a sufficient understanding of historic values.

5.8.2 Assessed significance of the recorded sites

Social or cultural value

The social value of Aboriginal sites is generally determined through consultation with Aboriginal people. Sites BR-HW17-ST1 and BR-HW17-ST2 which were recorded within the survey area are accorded high social and cultural value because they provide a tangible link to Aboriginal
ancestors and cultural practices in accordance with the views of Aboriginal community representatives

Archaeological/scientific value

The archaeological or scientific significance assessment of the two newly recoded sites is evaluated and summarised in Table 5-6.
### Table 5-6: The archaeological or scientific significance of the Aboriginal sites.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Research potential</th>
<th>Representativeness</th>
<th>Rarity</th>
<th>Scientific significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-HW17-ST1</td>
<td>Low-Moderate</td>
<td>Moderate</td>
<td>Low-Moderate</td>
<td>Low-Moderate: the scar is well preserved, and some potential exists for research. The scar is a good representation of an Aboriginal curved (preform) scar, which are fairly common in the region.</td>
</tr>
<tr>
<td>BR-HW17-ST2</td>
<td>Low-Moderate</td>
<td>Moderate</td>
<td>Low-Moderate</td>
<td>Low-Moderate: the scar is well preserved, and some potential exists for research. The scar is a good representation of an Aboriginal bark slab (sheet) removal scar, which are fairly common in the region.</td>
</tr>
</tbody>
</table>

**Aesthetic value**

The sensory, scenic and creative aspects of BR-HW17-ST1 and BR-HW17-ST2 have been diminished by vegetation clearance and the construction and use of the nearby highway. Nevertheless, the trees retain significant sensory, scenic and creative qualities due to the Aboriginal scarring they contain as well as the form, colour and texture of the trees themselves. BR-HW17-ST1 and BR-HW17-ST2 are therefore both attributed moderate aesthetic value.

**Historic value**

None of the Aboriginal sites recorded in the proposal areas have an apparent relationship to known historic Aboriginal or non-Aboriginal sites. None of the sites display clear evidence consistent with ‘contact’ or ‘post-contact’ Aboriginal sites. As such, both of the newly recorded Aboriginal sites are assessed as having nil historic value.

Table 5-7 presents a summary of the heritage significance of each site.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Social or Cultural Value</th>
<th>Archaeological / Scientific Value</th>
<th>Aesthetic Value</th>
<th>Historic Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-HW17-ST1</td>
<td>High</td>
<td>Low-Moderate</td>
<td>Moderate</td>
<td>Nil</td>
</tr>
<tr>
<td>BR-HW17-ST2</td>
<td>High</td>
<td>Low-Moderate</td>
<td>Moderate</td>
<td>Nil</td>
</tr>
</tbody>
</table>

### 5.9 Likely Impacts to Aboriginal Heritage from the Proposal

The assessment has found that harm to BR-HW17-ST1 and BR-HW17-ST1 can be avoided via the implementation of management strategies, as outlined in Table 5-8 and Section 6.2.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Type of Harm (Direct/Indirect / None)</th>
<th>Degree of Harm (Total/Partial / None)</th>
<th>Consequence of Harm (Total/Partial/No Loss of Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR-HW17-ST1</td>
<td>None</td>
<td>None (with management)</td>
<td>No loss of value: HD pavement construction is proposed nearby. Specific management recommendations apply to this site to ensure no direct or indirect harm arises from the proposal.</td>
</tr>
<tr>
<td>BR-HW17-ST2</td>
<td>None</td>
<td>None (with management)</td>
<td>No loss of value: HD pavement construction is proposed nearby. Specific management recommendations apply to this site to ensure no direct or indirect harm arises from the proposal.</td>
</tr>
</tbody>
</table>
6 MANAGEMENT AND MITIGATION: ABORIGINAL HERITAGE

6.1 GENERAL PRINCIPLES FOR THE MANAGEMENT OF ABORIGINAL SITES

Appropriate management of cultural heritage items is primarily determined on the basis of their assessed significance as well as the likely impacts of the proposed development. Section 5.8.2 and Section 5.9 describe, respectively, the significance/potential of the recorded sites and the likely impacts of the development. The following management options are general principles, in terms of best practice and desired outcomes, rather than mitigation measures against individual site disturbance.

- **Avoid impact** by altering the development proposal or in this case by avoiding impact to a recorded Aboriginal site. If this can be done, then a suitable curtilage around the site must be provided to ensure its protection both during the short-term construction phase of development and in the long-term use of the area. If plans are altered, care must be taken to ensure that impacts do not occur to areas not previously assessed.

- **If impact is unavoidable** then approval to disturb sites under the authority of an AHIP must be sought from OEH and will depend on many factors including the site’s assessed significance. Aboriginal community consultation will also need to occur following the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCRs). If an AHIP is granted, the local Aboriginal communities may wish to collect or relocate any evidence of past Aboriginal occupation (Aboriginal objects), whether temporarily or permanently. The fate of all artefacts remains within the statutory control of the OEH. A care and control permit may be issued to local Aboriginal groups or, with Aboriginal community consent, to other parties, for educational or display purposes.

6.2 MANAGEMENT AND MITIGATION OF THE RECORDED ABORIGINAL SITES

The management and mitigation of Aboriginal sites involves consideration of the principles of ecologically sustainable development (ESD) including cumulative impacts, the precautionary principle and the principle of intergenerational equity (OEH 2011: 12–13).

6.2.1 Management of BR-HW17-ST1

BR-HW17-ST1 is located within the Newell Highway Crown Land road reserve, 50 metres east of the recommended alignment. The design must be updated to avoid harming the site. During construction, BR-HW17-ST1 must be demarcated using high visibility ground markers to delineate the site perimeter (i.e. staking and flagging) encompassing the tree canopy as shown in Figure 5-5: Photographs showing an overview and details of BR-HW17-ST1.

. The ground markers used must be visible to any person in the vicinity of the site, whether on foot or in a vehicle. BR-HW17-ST1 must be mapped on the Construction Environmental
Management Plan (CEMP) and detailed design plans and the canopy extent demarcated as a ‘no-go’ and ‘no-harm’ area. Vehicles must not be driven on, or in the immediate vicinity of, the BR-HW17-ST1 site extent. If required, appropriate sediment control measures must be installed, operated and maintained to prevent sediment moving onto the site extent during the proposed work.

6.2.2 Management of BR-HW17-ST2

BR-HW17-ST2 is located within the Newell Highway Crown Land road reserve, 47 metres east of the recommended alignment. During construction, BR-HW17-ST2 must be demarcated using high visibility ground markers to delineate the site perimeter (i.e. staking and flagging) encompassing the tree canopy as shown in Figure 5-7: Photographs showing an overview and details of BR-HW17-ST2. The ground markers used must be visible to any person in the vicinity of the site, whether on foot or in a vehicle. BR-HW17-ST2 must be mapped on the CEMP and detailed design plans and the canopy extent demarcated as a ‘no-go’ and ‘no-harm’ area. Vehicles must not be driven on, or in the immediate vicinity of, the BR-HW17-ST2 site extent. If required, appropriate sediment control measures must be installed, operated and maintained to prevent sediment moving onto the site extent during the proposed work.
7 HISTORIC HERITAGE ASSESSMENT: INTRODUCTION

7.1 BRIEF DESCRIPTION OF THE PROPOSAL
Please refer to Sections 1.1 to 1.3 for a description of the proposal and the proposal areas.

7.2 HISTORIC HERITAGE ASSESSMENT OBJECTIVES
The current assessment will follow the RMS (2015) guidelines and will apply the Historical Archaeology Code of Practice (Historic Code of Practice; Heritage Council 2006) in the completion of a historical heritage assessment, including field investigations, in order to meet the following objectives:

Objective one: To identify whether or not historical heritage items or areas are, or are likely to be, present within the study areas

Objective two: To assess the significance of any recorded historical heritage items or areas

Objective three: Determine whether the activities of the proponent are likely to cause harm to recorded historical heritage items or areas

Objective four: Provide management recommendations and options for mitigating impacts.

7.3 DATE OF HISTORIC HERITAGE ASSESSMENT
The fieldwork component of this assessment was undertaken by OzArk on Thursday 1 June 2017.

The fieldwork component of the recommended and alternate alignment assessment was undertaken by OzArk on Tuesday 16 and Wednesday 17 January 2018.

7.4 OzARK INVOLVEMENT

7.4.1 Field assessment
The fieldwork component of the historic heritage assessment was undertaken by:

- Dr Chris Lovell
- Stephanie Rusden
- Philippa Sokol.

7.4.2 Reporting
The reporting component of the historic heritage assessment was undertaken by:

- Report Author: Dr Chris Lovell
- Contributor: Stephanie Rusden
• Reviewer: Ben Churcher (OzArk Principal Archaeologist; BA[Hons], Dip Ed).

7.5 LANDSCAPE CONTEXT

Please refer to Sections 3.1 to 3.5 for a description of the landscape context of the proposal areas.
8 HISTORIC HERITAGE ASSESSMENT

8.1 BRIEF HISTORY OF NORTH-CENTRAL NSW

Aboriginal people have occupied north central NSW for tens of thousands of years. European colonisation of north-central NSW occurred relatively late, as the expansion had halted at Wellington Valley during the 1820s. Land was taken up around Dubbo in the early 1830s and subsequent colonisation beyond Wellington was rapid, tending to follow the major river courses (Heritage Concepts 2009: 49). The Moree plains area began to be occupied by pastoralists shortly after Mitchell passed through the area in 1831 and Coxen in 1835, each reporting good pastoral land (NSW HO and DUAP 1996: 80–81). Mitchell's route passed through country around Narrabri, crossing the Gwydir River near Moree and continuing as far north as Mungindi (Heritage Concepts 2009: 49).

By the late 1830s, many prime grazing sites along the Namoi River and Gwydir River had been taken up by European pastoralists, including James Cox at Moree, Thomas Simpson Hall at Wee Bella Bolla and John Fleming at Mundi Bundie (Elder 2003: 75). Many more cattle runs were established than sheep stations in the Namoi and Gwydir pastoral districts. Runs tended to be owned by absentee landholders living in the Hunter Valley, Cumberland or Bathurst areas, and were attended to by ex-convict or convict stock keepers and shepherds living in huts. As a result, few early substantial houses built. More owners came to live in the region with the security of land tenure that emerged after 1847 when more substantial houses were built.

Conflict between Aboriginal people and European pastoralists probably occurred initially over competition for food and water resources. Access to creeks and rivers was often denied to Aboriginal people, which lead to the poaching of sheep and cattle, with subsequent reprisals and attacks from both sites. Conflict between Aboriginal people and European colonists was particularly violent in the Gwydir and Macintyre Valleys, with reports made by the Commissioner of Crown Lands, Alexander Paterson, as early as 1837 (Heritage Concepts 2009: 50–51). This report lead to the Waterloo Creek Massacre and subsequent rampages perpetrated by Mounted Police under Commander Major James Nunn in 1838 (Elder 2003: 79–82). A number of massacres occurred throughout the region, including the Myall Creek Massacre of 1838 perpetrated by 12 stockmen who massacred 28 Aboriginal men, women and children. Eleven of the 12 were tried for their crimes and seven were eventually found guilty of murder and hung in December 1838 at Sydney Goal (Elder 2003: 83–94). Throughout the 1840s the conflict between Aboriginal people and European colonists continued unabated as the Kamilaroi resisted European incursions (Heritage Concepts 2009: 54–56). It was not until 1850 that the region was eventually ‘pacified’ under violence from the Native Police Force (Heritage Concepts 2009: 49).

By 1861, most of north central NSW was occupied by Europeans (Heritage Concepts 2009: 49). Urban development prior to 1850 was very limited. Traveller's accounts indicate that isolated inns...
were scattered across the landscape, catering to travellers and local recreation. Some of these inns developed into towns like Narrabri, while others were eventually abandoned or burned (NSW HO and DUAP 1996: 81).

An early pastoral centre was established at Warialda, which was home of the Commissioner of Crown Lands. In 1850 Warialda included a courthouse and lockup that served the region. The town of Moree was laid out in 1860 and an additional court was established there in 1862, although a courthouse building was not built until 1874. Moree soon eclipsed Warialda with the establishment of two inns, two stores, a post office, a pound and a population of 43 in 1861. By 1871, Moree had a population of 107, three hotels, a butcher, a saddler and a school. Major growth occurred during the 1880s with accelerated European occupation and the establishment of a Land Office to administer it. Moree became a municipality in 1891. The first of many bores was sunk into the Great Artesian Basin at Moree in 1895 and bores have continued to provide pastoral water supplies to the region, despite the depletion and westward retreat of the artesian basin. Moree’s hot artesian water initially sustained a wool-scouring industry and continues to be exploited as a tourist attraction today (NSW HO and DUAP 1996: 83–84).

8.2 LOCAL CONTEXT

8.2.1 Desktop database searches conducted

Desktop searches were conducted to identify any potential previously recorded heritage within the proposal area. The results are summarised in Table 8-1. Database searches included the Heritage Council of NSW administered State Heritage Register (SHR) and State Heritage Inventory (SHI), the Australian Heritage Database, Australia’s National Heritage List and the Moree LEP.

<table>
<thead>
<tr>
<th>Name of Database Searched</th>
<th>Date of Search</th>
<th>Type of Search</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia’s National Heritage List</td>
<td>9 January 2018</td>
<td>NSW</td>
<td>No items listed are located within the proposal areas</td>
</tr>
<tr>
<td>Australian Heritage Database</td>
<td>9 January 2018</td>
<td>Moree (suburb)</td>
<td>No items listed are located within the proposal areas</td>
</tr>
<tr>
<td>NSW Heritage Office State Heritage Register (SHR) and State Heritage Inventory (SHI)</td>
<td>9 January 2018</td>
<td>Moree (suburb)</td>
<td>No items listed on the SHR or SHI are located within or close to the proposal areas</td>
</tr>
<tr>
<td>Local Environment Plan</td>
<td>9 January 2018</td>
<td>Moree LEP 2011</td>
<td>No items listed on the Moree LEP are located close to the proposal areas One item listed on the Moree LEP is located near proposal area 3: Dwelling house – “Terlings” (I026)</td>
</tr>
</tbody>
</table>

One item listed on the Moree LEP is located approximately 500 metres east of proposal area 3: Dwelling house – “Terlings” (I026) (Appendix 3). The curtilages of the item, as shown on the Moree LEP Heritage Map (Appendix 3), is shown in Figure 8-1.
Figure 8-1: Map showing the curtilage of the historic item shown on the Moree LEP Heritage Map in relation to proposal area 3 (Appendix 3).

8.3 SURVEY METHODOLOGY

The archaeological methods used in the historic archaeological assessment followed the Historic Code of Practice. Standard archaeological field survey and recording methods were employed
(Burke and Smith 2004) to ground-truth existing levels of disturbance, confirm the location and curtilage of previously recorded heritage items, and to assess whether any other historic heritage items exist, or are likely to exist, in the proposal areas. A combination of pedestrian transects and vehicle traverses were used to inspect the proposal areas. Survey coverage for the historic assessment was the same as that reported in Section 5.3.

8.4 PROJECT CONSTRAINTS

There were no significant constraints affecting the completion of the historic heritage assessment.

8.5 RESULTS OF THE HISTORIC HERITAGE ASSESSMENT

No new historic heritage sites were recorded during the assessment and no previously recorded historic heritage items were assessed.

8.6 LIKELY IMPACTS TO HISTORIC HERITAGE FROM THE PROPOSAL

There are no likely impacts to historic heritage from the proposal.
9 RECOMMENDATIONS

9.1 ABORIGINAL HERITAGE

Under Section 89A of the NPW Act it is mandatory that all newly-recorded Aboriginal sites be registered with OEH AHIMS. As a professional in the field of cultural heritage management it is the responsibility of OzArk to ensure this process is undertaken.

To this end it is noted that two Aboriginal sites were recorded during the assessment.

The following recommendations are made on the basis of the identified impacts and with regard to:

- Legal requirements under the terms of the NPW Act whereby it is illegal to damage, deface or destroy an Aboriginal place or object without the prior written consent of OEH;
- The findings of the current investigations undertaken within the proposal area; and
- The interests of the Aboriginal community.

Recommendations concerning the proposal are as follows:

1. To avoid harm to BR-HW17-ST1 the design must be updated to avoid the site. During construction, BR-HW17-ST1 must be demarcated using high visibility ground markers to delineate the site perimeter (i.e. staking and flagging) encompassing the tree canopy as shown in Figure 5-6. The ground markers used must be visible to any person in the vicinity of the site, whether on foot or in a vehicle. BR-HW17-ST1 must be mapped on the CEMP and detailed design plans and the canopy extent demarcated as a ‘no-go’ and ‘no-harm’ area. Vehicles must not be driven on, or in the immediate vicinity of, the BR-HW17-ST1 site extent. If required, appropriate sediment control measures must be installed, operated and maintained to prevent sediment moving onto the site extent during the proposed work.

2. To avoid harm to BR-HW17-ST2 the design must be updated to avoid the site. During construction, BR-HW17-ST2 must be demarcated using high visibility ground markers to delineate the site perimeter (i.e. staking and flagging) encompassing the tree canopy as shown in Figure 5-8. The ground markers used must be visible to any person in the vicinity of the site, whether on foot or in a vehicle. BR-HW17-ST2 must be mapped on the CEMP and detailed design plans and the canopy extent demarcated as a ‘no-go’ and ‘no-harm’ area. Vehicles must not be driven on, or in the immediate vicinity of, the BR-HW17-ST2 site extent. If required, appropriate sediment control measures must be installed, operated and maintained to prevent sediment moving onto the site extent during the proposed work.

3. If these recommendations are followed, then harm to Aboriginal cultural heritage in the proposal areas from the proposal is considered unlikely, and progression to Stage 3 of the PACHCI is not required.
4. All mapping and demarcation of Aboriginal site extents and ‘no-go’ and ‘no-harm’ areas must be done in accordance with the geospatial vector data provided.

5. Any further changes to the impact footprint of the proposal should be assessed by a suitably qualified heritage professional.

6. All ground-disturbing work must be confined to the assessed proposal areas, but outside of the identified Aboriginal site extents and ‘no-go’ and ‘no-harm’ areas.

7. To avoid the potential for harm to Aboriginal objects on unassessed adjacent landforms, all construction vehicles, machinery, equipment and materials used for the proposed work must remain within the proposal areas, excluding the Aboriginal site extents and ‘no-go’ and ‘no-harm’ areas identified.

8. Inductions for staff undertaking the proposed work must explain the legislative protection requirements for all Aboriginal sites and objects in NSW and the relevant fines for non-compliance. Staff should be briefed on the identification of Aboriginal objects within the Moree plains region, with particular emphasis placed upon stone artefact identification.

9. All staff undertaking the proposed work must have access to the CEMP and be provided with an A3 map of each proposal area showing the detailed design plans and locations of all Aboriginal sites that specific management recommendations apply to. Notes must be attached to each map explaining the general and site-specific mitigation measures to be taken to avoid harm to sites.

10. If objects are encountered that are suspected to be of Aboriginal origin (including skeletal material) the Accordingly, the Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) (Appendix 4) must be followed, except in the case of objects that are the subject of an approved AHIP, in which case the AHIP conditions must be followed.

11. The proponent should obtain legal advice as to whether land tenure will require Native Title consultation.

9.2 HISTORIC HERITAGE

The following recommendations are made on the basis of these impacts and with regard to:

- The legal requirements under the terms of the Heritage Act;
- The guidelines presented in the Burra Charter (Australia ICOMOS 2013);
- The RMS (2015) guidelines;
- The findings of the current assessment; and
- The interests of the local community.

Recommendations concerning the proposal are as follows.
1. No historic heritage sites or items are recorded within the proposal areas and no landforms are assessed as having historic archaeological potential; therefore, no further archaeological assessment is required.

2. There is a low probability of ground disturbing work impacting upon historic heritage within the proposal areas, therefore there are no historic heritage constraints for the proposed work to proceed.

3. Any further changes to the impact footprint of the proposal should be assessed by a suitably qualified heritage professional.

4. All ground-disturbing work must be confined to the assessed proposal areas.

5. Inductions for staff undertaking the proposed work must explain the legislative protection requirements for historic sites and items in NSW and the relevant fines for non-compliance.

6. If objects are encountered that are suspected to be historic heritage items, the Accordingly, the Standard Management Procedure - Unexpected Heritage Items (Roads and Maritime, 2015) (Appendix 4) must be followed.
REFERENCES


Dodson at al. 1993 Dodson, John, Richard Fullagar, Judith Furby, Robert Jones and Ian Prosser 1993. Humans and Megafauna in a Late Pleistocene

**DP&E 2016**

Department of Planning and Environment 2016. Guidelines for the Economic Assessment of Mining and Coal Seam Gas proposals.

**Elder 2003**


**Field and Dodson 1999**


**Fison and Howitt 1880**


**Haglund 1983**


**Haglund 1984**


**Hamm et al 2016**


**Heritage Concepts 2009**


**Heritage Council 2006**


**Horton 1994**

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Title</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathews, R. H.</td>
<td>1903</td>
<td>Languages of the Kamilaroi and Other Aboriginal Tribes of New South Wales</td>
<td>Mathews 1903. Languages of the Kamilaroi and Other Aboriginal Tribes of New South Wales. The Journal of the Anthropological Institute of Great Britain and Ireland 33:259–283.</td>
</tr>
<tr>
<td>NSW Heritage Office and Department of Urban Affairs and Planning</td>
<td>1996</td>
<td>Regional Histories: Regional Histories of New South Wales</td>
<td>NSW HO and DUAP 1996. Regional Histories: Regional Histories of New South Wales. NSW Heritage Office and Department of Urban Affairs and Planning, Sydney.</td>
</tr>
</tbody>
</table>


OzArk 2004b  OzArk Environmental & Heritage Management 2004. *Supplementary archaeological assessment for the proposed construction of a new bridge along the Newell Hwy at Tycannah Creek, c. 80 kms north of Narrabri*. Report to: NSW Roads and Traffic Authority.


<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
</tr>
</thead>
</table>
PLATES

Plate 1: Proposal area 1 showing ground surface disturbance due to Newell Highway Moree bypass construction, facing north.

Plate 2: Proposal area 1 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing southwest.
Plate 3: Proposal area 1 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing southwest.

Plate 4: Proposal area 1 showing high levels ground surface disturbance due to Newell Highway construction and low GSV, facing southwest.
Plate 5: Proposal area 2 showing high levels ground surface disturbance due to Newell Highway construction and limited GSV, facing southwest.

Plate 6: Proposal area 2 showing ground surface disturbance due to Newell Highway road and bridge construction and low GSV at Marshalls Ponds Creek, facing north.
Plate 7: Proposal area 2 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing north.

Plate 8: Proposal area 2 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing south.
Plate 9: Proposal area 2 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing north.

Plate 10: Proposal area 2 showing ground surface disturbance due to Newell Highway construction and rest area construction and limited GSV, facing west.
Plate 11: Proposal area 3 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing northeast.

Plate 12: Proposal area 3 showing ground surface disturbance due to Newell Highway construction and limited GSV around Gil Gil Creek, facing south.
Plate 13: Proposal area 3 showing ground surface disturbance due to Newell Highway road and bridge construction and limited GSV at Gil Gil Creek, facing south.

Plate 14: Proposal area 3 showing ground surface disturbance due to Newell Highway construction and limited GSV, facing south.
APPENDIX 1: ABORIGINAL REPRESENTATIVE DOCUMENTS

Documents have been removed for confidentiality
APPENDIX 2: ABORIGINAL HERITAGE DESKTOP DATABASE SEARCH RESULTS

Documents have been removed for confidentiality
## APPENDIX 3: HISTORIC HERITAGE DESKTOP DATABASE SEARCH RESULTS

### Moree Plains Local Environmental Plan 2011

Current version for 5 August 2016 to date (accessed 22 May 2017 at 18:37)

Schedule 5

#### Schedule 5 Environmental heritage

**(Clause 5.10)**

### Part 1 Heritage items

<table>
<thead>
<tr>
<th>Locality</th>
<th>Item name</th>
<th>Address</th>
<th>Property description</th>
<th>Significance Item no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier</td>
<td>Regan Family Burials</td>
<td>&quot;Myall Ament&quot;</td>
<td>Lot 21, DP 751796, Parish Local of Pringle</td>
<td>1001</td>
</tr>
<tr>
<td>Boomi</td>
<td>Old Toomelah Cemetery</td>
<td>c.1735 and 1806, Purga and Barkers Road (21 km east of Boomi)</td>
<td>Lot 44, DP 756030, Parish Local of Wilmal</td>
<td>1002</td>
</tr>
<tr>
<td>Mailwa</td>
<td>&quot;Cumbabolic&quot; Homestead</td>
<td>Colleenbahi Road, Moree</td>
<td>Lot 3, DP 534055, Parish of Cumbabolic</td>
<td>1003</td>
</tr>
<tr>
<td>Medugan (via Ashley)</td>
<td>&quot;Meditin&quot; Homestead</td>
<td>Cameron Highway (23 km north of Moree)</td>
<td>Lot 15, DP 751775, Local</td>
<td>1004</td>
</tr>
<tr>
<td>Moree</td>
<td>All Saints Church</td>
<td>53 Albert Street</td>
<td>Lot 12, Section 46, DP 759706, Local</td>
<td>1005</td>
</tr>
<tr>
<td>Moree</td>
<td>Dwelling house—&quot;Melior&quot; House</td>
<td>47 Auburn Street</td>
<td>Lot 9, DP 657849, Local</td>
<td>1006</td>
</tr>
<tr>
<td>Moree</td>
<td>AU Reid and Co. Building</td>
<td>103 Balo Street (Pennarree Shore)</td>
<td>Lot 1, DP 625339, Local</td>
<td>1007</td>
</tr>
<tr>
<td>Moree</td>
<td>Memorial Hall</td>
<td>36 Balo Street</td>
<td>Lot 2, Section 52, DP 758706, Local</td>
<td>1008</td>
</tr>
<tr>
<td>Moree</td>
<td>Imperial Hotel</td>
<td>113 Balo Street</td>
<td>Lot 1–18, SP 14534, Local</td>
<td>1009</td>
</tr>
<tr>
<td>Moree</td>
<td>All Saints Rectory</td>
<td>99 Boston Street</td>
<td>Lot 31, Section 46, DP 758706, Local</td>
<td>1010</td>
</tr>
<tr>
<td>Moree</td>
<td>Dwelling</td>
<td>7 Charter Street</td>
<td>Lot 2, DP 629049, Local</td>
<td>1011</td>
</tr>
<tr>
<td>Moree</td>
<td>Dwelling—&quot;Lyon House&quot;</td>
<td>13 Charter Street</td>
<td>Lot 30, Section 46, DP 758706, Local</td>
<td>1012</td>
</tr>
<tr>
<td>Moree</td>
<td>Kirby Park Bandstand</td>
<td>Princes Street</td>
<td>Reserve 702014 Dedicated For Public Recreation, Lot 1, DP 119843, Local</td>
<td>1013</td>
</tr>
<tr>
<td>Moree</td>
<td>Moree Plains Gallery (former bank)</td>
<td>25 Princes Street</td>
<td>Lot 1, DP 744710, Local</td>
<td>1014</td>
</tr>
<tr>
<td>Moree</td>
<td>Wepra Bank</td>
<td>29 Princes Street</td>
<td>Lot 1, DP 710559, Local</td>
<td>1015</td>
</tr>
<tr>
<td>Moree</td>
<td>Moree Technical College</td>
<td>30–30 Princes Street</td>
<td>Lot 1 and 2, DP 652746, Local</td>
<td>1016</td>
</tr>
<tr>
<td>Moree</td>
<td>Hoolihan and Young (former Moira Chase and Co. Ltd Building)</td>
<td>37 Princes Street</td>
<td>Lot 1, DP 710643, Local</td>
<td>1017</td>
</tr>
<tr>
<td>Moree</td>
<td>Department of Lands Building</td>
<td>49 Princes Street</td>
<td>Lot 4, Section 42, DP 758706, Local</td>
<td>1018</td>
</tr>
<tr>
<td>Moree</td>
<td>3 joined shops</td>
<td>43–47 Princes Street</td>
<td>Lot 10, DP 653810, Local</td>
<td>1019</td>
</tr>
<tr>
<td>Moree</td>
<td>Courthouse</td>
<td>49 Princes Street</td>
<td>Lot 2, Section 42, DP 758706, Local</td>
<td>1020</td>
</tr>
<tr>
<td>Moree</td>
<td>Moree Club</td>
<td>57 Princes Street</td>
<td>Lot 1, DP 3404, Lot 1, DP 119847, Local</td>
<td>1021</td>
</tr>
<tr>
<td>Moree</td>
<td>Victoria Hotel</td>
<td>339 Charing Cross Street</td>
<td>Lot 12, DP 758706, Local</td>
<td>1022</td>
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</tbody>
</table>
### Part 2 Heritage conservation areas

<table>
<thead>
<tr>
<th>Suburb</th>
<th>Description</th>
<th>Identification on heritage map</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moree</td>
<td>Moree Town Centre Conservation Area</td>
<td>Shown by a red outline with red hatching and Local labelled &lt;C000 Moree Town Centre Conservation Area—Generic&gt;</td>
<td></td>
</tr>
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</table>

### Part 3 Archaeological sites

<table>
<thead>
<tr>
<th>Locality</th>
<th>Item name</th>
<th>Address</th>
<th>Property description</th>
<th>Significance</th>
<th>Item no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berrigal</td>
<td>Berrigal Creek Area</td>
<td>Berrigal State Forest Lot 14 and 28, DP 751749</td>
<td>Local</td>
<td>A007</td>
<td></td>
</tr>
<tr>
<td>Bingay</td>
<td>Marapama Site</td>
<td>Creek bed known as (Bingayhouse Creek (east of Bingay))</td>
<td>Property of Bingay</td>
<td>Local</td>
<td>A001</td>
</tr>
<tr>
<td>Boggabilla</td>
<td>Boolura Lagoon</td>
<td>Marangala-Bundgadgad Road (approximately 30 km from Boggabilla)</td>
<td>Lagoon surrounded by</td>
<td>Local</td>
<td>A002</td>
</tr>
<tr>
<td>Boomi</td>
<td>Bumba Mission Area and Cemetery</td>
<td>Moree-Boonangar Road (9 Lot 6, DP 750431)</td>
<td>Lot 29, DP 750445, Parish Local of Collingrool</td>
<td>Local</td>
<td>A003</td>
</tr>
<tr>
<td>Collarenevari</td>
<td>Roared Tree of Collingrool</td>
<td>Barwon River Road Lot 29, DP 750445, Parish Local of Collingrool</td>
<td></td>
<td>Local</td>
<td>A004</td>
</tr>
<tr>
<td>Collarenevari</td>
<td>Baraaway Curved Tree</td>
<td>Barwon River Road, 9 km Lot 30, DP 750445, Parish Local of Collingrool</td>
<td></td>
<td>Local</td>
<td>A005</td>
</tr>
<tr>
<td>Moree</td>
<td>Ngaru Balbali Tabbakari</td>
<td>Greenoh Road Lot 7313, DP 1163137</td>
<td></td>
<td>Local</td>
<td>A006</td>
</tr>
<tr>
<td>Moree</td>
<td>Worrowring Curved Tree</td>
<td>Watercourse Road (35 km, north-west of Moree)</td>
<td></td>
<td>Local</td>
<td>A007</td>
</tr>
<tr>
<td>Terry Hie Hie</td>
<td>Terry Hie Hie Mission Area and Cemetery</td>
<td>Mission State Forest, Moree-Terry Hie Hie Road (north west of Terry Hie Hie)</td>
<td>Lot 2, 11, 33 and 33, DP 751990, Lot 1, DP 116613, Lot 33, DP 237051</td>
<td>Local</td>
<td>A0010</td>
</tr>
<tr>
<td>Thonial (Boggabilla)</td>
<td>Mission and Cemetery</td>
<td>Bannoor Road (10 km east of Boggabilla)</td>
<td>Lot 135, DP 750689</td>
<td>Local</td>
<td>A0011</td>
</tr>
<tr>
<td>Waterloo Creek</td>
<td>Marapama Site, Waterloo Creek</td>
<td>Lot 59, DP 753957, Parish of Booloomin</td>
<td></td>
<td>Local</td>
<td>A009</td>
</tr>
</tbody>
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**APPENDIX 4: UNEXPECTED HERITAGE ITEMS PROCEDURE**

### 7. Unexpected heritage items procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stop work, protect item and inform Roads and Maritime environment staff</td>
<td>All</td>
<td>Appendix A (Identifying Unexpected Heritage Items)</td>
</tr>
<tr>
<td>1.1</td>
<td>Stop all work in the immediate area of the item and notify the Project Manager or Team Leader-RM. (For maintenance activities, the Team Leader is to also notify the Works Supervisor-RMD)</td>
<td>PM or TL-RMD</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Establish a ‘no-go zone’ around the item. Use high visibility fencing, where practical.</td>
<td>PM or TL-RMD</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Inform all site personnel about the no-go zone. No further interference, including works, ground disturbance, moving or removing the item must occur within the no-go zone.</td>
<td>PM or TL-RMD</td>
<td>Appendix B (Unexpected Heritage Item Recording Form 416) Appendix C (Photographing Unexpected Heritage Items)</td>
</tr>
<tr>
<td>1.4</td>
<td>Inspect, document and photograph the item using Unexpected Heritage Item Recording Form 416.</td>
<td>PM or TL-RMD</td>
<td></td>
</tr>
</tbody>
</table>

---

### Unexpected heritage items procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>Is the item likely to be bone?</td>
<td>PM or WS-RMD</td>
<td>Appendix E (Uncovering Bones)</td>
</tr>
<tr>
<td></td>
<td>If yes, follow the steps in Appendix E – ‘Uncovering bones’. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If no, proceed to next step.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Is the item likely to be:</td>
<td>PM or WS-RMD</td>
<td>Appendix A (Identifying heritage items)</td>
</tr>
<tr>
<td></td>
<td>a) A relic? (A relic is evidence of past human activity which has local or state heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machiney and domestic or industrial refuse) and/or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) An Aboriginal object? (An Aboriginal object may include a shell midden, stone tools, bones, rock art or a sacred tree).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If yes, proceed directly to Step 1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If no, proceed to next step.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Is the item likely to be a &quot;work&quot;, building or standing structure? (This may include tram tracks, kerbing, historic road pavement, fences, sheds or building foundations).</td>
<td>PM or WS-RMD</td>
<td>Appendix A (Identifying heritage items)</td>
</tr>
<tr>
<td></td>
<td>If yes, can works avoid further disturbance to the item? (E.g. if historic road base/tram tracks have been exposed, can they be left in place?) If yes, works may proceed without further disturbance to the item. Complete Step 1.8 within 24 hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If works cannot avoid further disturbance to the item, works must not recommence at this time. Complete the remaining steps in this procedure.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Step 3: Preliminary assessment and recording of the find

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>In a minority of cases, the archaeologist (and Aboriginal Sites Officer, if relevant) may determine from the photographs that no site inspection is required because no archaeological constraint exists for the project (e.g., the item is not a relic, a 'heritage item' or an Aboriginal object). Any such advice should be provided in writing (e.g., via email) and confirmed by the Project Manager or Works Supervisor - RMD.</td>
<td>A/PM/ASO/WS-RMD</td>
<td>Proceed to Step 8</td>
</tr>
<tr>
<td>3.2</td>
<td>Arrange site access for the archaeologist (and Aboriginal Sites Officer, if relevant) to inspect the item as soon as practicable. In the majority of cases, a site inspection is required to conduct a preliminary assessment.</td>
<td>PM or WS-RMD</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Subject to the archaeologist’s assessment (and the Aboriginal Sites Officer’s assessment, if relevant), work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which has not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to</td>
<td>A/PM/ASO/WS-RMD</td>
<td></td>
</tr>
</tbody>
</table>
### Prepare an archaeological or heritage management plan

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>The archaeologist must prepare an archaeological or heritage management plan (with input from the Aboriginal Sites Officer, where relevant) shortly after the site inspection. This plan should be submitted to the Project Manager as soon as practicable.</td>
<td>A/ASO</td>
<td>Appendix F (Archaeological/Heritage Advice Checklist)</td>
</tr>
<tr>
<td>4.2</td>
<td>In preparing the plan, the archaeologist with the assistance of regional environment staff must review the CEMP, any heritage sub-plans, any conditions of heritage approvals, conditions of project approval (and Minister’s Conditions of Approval) and heritage assessment documentation (eg Aboriginal Cultural Heritage Assessment Report). This will outline if the unexpected item is consistent with previous heritage/project approval(s).</td>
<td>A/RES/PM</td>
<td>Appendix F (Archaeological/Heritage Advice Checklist)</td>
</tr>
</tbody>
</table>

### Notify the regulator, if required.

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Review the archaeological or heritage management plan to confirm if regulator notification is required. Is notification required? If no, proceed directly to Step 6 If yes, proceed to next step.</td>
<td>PM/RES/SES(H)/WS-RMD</td>
<td>Appendix G (Template Notification Letter)</td>
</tr>
<tr>
<td>5.2</td>
<td>If notification is required, complete the template notification letter.</td>
<td>PM or WS-RMD</td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Forward the draft notification letter, archaeological or heritage management plan and the site recording form to regional environment staff and Senior Environmental Specialist (Heritage) for review, and consider any suggested amendments.</td>
<td>PM/RES/SES(H)/WS-RMD</td>
<td></td>
</tr>
</tbody>
</table>
### Implement archaeological or heritage management plan

<table>
<thead>
<tr>
<th>Step</th>
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<th>Responsibility</th>
<th>Guidance &amp; Tools</th>
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<td>5.4</td>
<td>Forward the signed notification letter to the relevant regulator (i.e notification of relics must be given to the Heritage Division, Office of Environment and Heritage (OEH), while notification for Aboriginal objects must be given to the relevant Aboriginal section of OEH). Informal notification (via a phone call or email) to the regulator prior to sending the letter is appropriate. The archaeological management plan and the completed site recording form must be submitted with the notification letter. For Part 3A and Part 5.1 projects, the Department of Planning and Environment must also be notified.</td>
<td>PM or WS-RMD</td>
<td>Appendix D (Key Environmental Contacts)</td>
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<td>5.5</td>
<td>A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form should be kept on file by the Project Manager or Works Supervisor - RMD and a copy sent to the Senior Environmental Specialist (Heritage).</td>
<td>PM or WS-RMD</td>
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### Review CEMPs and approval conditions

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<td>6.5</td>
<td>Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.</td>
<td>PM or WS-RMD</td>
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<td>6.6</td>
<td>Where statutory approval (or Part 3A/Part 5.1 project modification) is not required and where recording is recommended by the archaeologist, sufficient time must be allowed for this to occur.</td>
<td>PM or WS-RMD</td>
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<td>6.7</td>
<td>Ensure short term and permanent storage locations are identified for archaeological material or other heritage material is removed from site, where required. Interested third parties (eg museums or local councils) should be consulted on this issue. Contact regional environment staff and Senior Environmental Specialist (Heritage) for advice on this matter, if required.</td>
<td>PM or WS-RMD</td>
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### Resume work

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<td>8.1</td>
<td>Seek written clearance to resume project work from regional environment staff and the archaeologist (and regulator, if required). Clearance would only be given once all archaeological excavation and/or heritage recommendations (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.</td>
<td>RESA/PMWS-RMD</td>
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<td>8.2</td>
<td>If required, ensure archaeological excavation/heritage reporting and other heritage</td>
<td>PM/WS-RMD</td>
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### Step 83

**Task:** Forward all heritage/archaeological assessments, heritage location data and its ownership status to the Senior Environmental Specialist (SE(S)). They will ensure all heritage items in Roads and Maritime ownership and/or control are considered for the Roads and Maritime S170 Heritage and Conservation Register.

**Responsibility:** PM/SE(S)/HS/WG-RMD

### Step 84

**Task:** If additional unexpected items are discovered this procedure must begin again from Step 1.

**Responsibility:** PM/TL-RMD