EXEcutivE Summary

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool (Figure 1).

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage has been engaged by GHD on behalf of Roads and Maritime to conduct statutory consultation and a cultural heritage assessment report (CHAR) prepared in accordance with Stage 3 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI).

This report has also been prepared in accordance with the OEH Guide to Investigating and Reporting on Aboriginal Cultural Heritage in NSW 2010 (herein referred to as the Guide) and the OEH Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010 (herein referred to as the Code of Practice).

overview of findings

- There are 6 Aboriginal sites located within the study area.
- The proposal will impact all 6 Aboriginal sites (BRP-IF-16 #45-5-3886/TNRU14 #45-5-4150, BRP-S-07 #45-5-3894, TNRU6 #45-5-4142, TNRU7 #45-5-4143 and TNRB AS01 #Pending).
  - Sites BRP-S-07 and TNRU7 have been assessed as demonstrating low archaeological significance. The proposal would directly impact these sites.
  - Sites BRP-IF-16/TNRU14, TNRU6 and TNRB AS01 have been assessed as demonstrating moderate archaeological significance. The proposal would directly impact TNRB AS01 and partially impact BRP-IF-16/TNRU14 and TNRU6.
- AHIMS site BRP-S-07 is currently subject to AHIP C0000436 (Bringelly Road Upgrade Stage 2 between Camden Valley Way and the Northern Road). A condition of that AHIP is that community collection of artefacts occurs before the site is impacted.
- AHIMS sites BRP-IF-16/TRNU14 are currently subject to AHIP C0000436 (Bringelly Road Upgrade Stage 2 between Camden Valley Way and the Northern Road). A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
- AHIMS site TNRU6 is subject to AHIP C0001407 for The Northern Road Stage 2. A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
- The Northern Road Stage 2 and Bringelly Road Stage 2 AHIP areas include portions of the study area.
- AHIMS site TNRU7 and newly identified site TNRB AS01 are not currently subject to an existing AHIP.
Recommendations

• Roads and Maritime to confirm whether the conditions of AHIP C0000436 have been met prior to impacts to BRP-IF-16/TNRU14 and BRP-S-07 by the proposal. These include:
  − Community collection of artefacts at BRP-S-07 and
  − Archaeological salvage excavation at BRP-IF-16/TNRU14.
• Roads and Maritime to confirm whether the conditions of The Northern Road Upgrade Stage 2 AHIP C0001407 have been met prior to impacts to TNRU6 by the proposal. This includes:
  − Salvage excavation at TNRU6.
• Targeted salvage excavation would occur at TNRB AS01 around the dense concentration of artefacts.
• Following the completion of the excavation programs at BRP-IF-16/TNRU14 and TNRU6 Roads and Maritime would make these results available to be incorporated into the TNRB AS01 PACHCI Stage 4 Salvage Excavation Report.
• No further investigation is recommended for site TNRU7. An AHIP will be required prior to impacts.
• Inadvertent impacts to sites outside of the impact area should be avoided by including information on the location of these sites in the CEMP.
• Long term arrangements for the management of excavated artefacts, such as reburial, should be determined in accordance with the recommendations of registered Aboriginal stakeholders and OEH guidelines.
• A CEMP and accompanying unexpected finds procedure will provide a method to manage potential heritage constraints and unexpected finds during construction works. Aspects of site and cultural area protection that should be included in the CEMP include:
  − Establishing no-harm areas where appropriate. Depending on the nature and timing of works in the vicinity of identified Aboriginal sites or cultural areas that will not be impacted by the proposed works, it may be appropriate to establish visual markers around no-harm areas with appropriate signage to avoid inadvertent impacts.
  − Nature of the visual markers around no-harm areas. The CEMP should document what type of visual marker will be put in place, such as temporary fencing, high visibility tape, and temporary signage.
  − Provide clear guidance to all site workers on access restrictions to no-harm areas including site inductions and tool box talks.
  − Unexpected finds procedure in accordance with the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.
• If any suspected human remains are located during any stage of the proposed works, work should stop immediately procedures outlined in the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.
• Should any changes be made to the proposed works that would involve additional impacts to Aboriginal heritage, these changes should be assessed by an archaeologist in consultation with the registered Aboriginal stakeholder groups and further investigation may be necessary.
The final version of this CHAR and accompanying documentation should be forwarded to registered Aboriginal stakeholders and OEH.
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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located on the boundary of the Western Sydney Priority Growth Area and the South West Priority Land Release Area, about 45 km south-west of the Sydney central business district and 12 km west of Liverpool (Figure 1).

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage has been engaged by GHD on behalf of Roads and Maritime to prepare an Aboriginal cultural heritage assessment report (CHAR) in accordance with Stage 3 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI).

This report has also been prepared in accordance with the OEH Guide to Investigating and Reporting on Aboriginal Cultural Heritage in NSW 2010 (herein referred to as the Guide) and the OEH Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010 (herein referred to as the Code of Practice).

1.2 Background to this Assessment

Artefact Heritage was engaged by Roads and Maritime in 2015 to prepare an archaeological survey report (ASR) as part of Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) for the project.

This assessment found that five registered AHIMS sites are located within the proposal boundary. Two areas of potential archaeological deposit (PAD) were also recorded within the proposal boundary (TNRB PAD01 and TNRB PAD02).

At the time of the original assessment 10 properties within the proposal boundary were not accessible for survey. These properties were later assessed by the addendum ASR prepared by Artefact Heritage (2015b). This addendum assessment extended the original area of TNRB PAD02 to the south. Both assessments recommended test excavations under the PACHCI Stage 3 and OEH Code of Practice be conducted within the portions of the PADs to be impacted by the proposal.

A test excavation methodology was prepared as part of the PACHCI Stage 2 investigations (Artefact 2015a). The excavation methodology was presented at an Aboriginal Focus Group (AFG) for Aboriginal stakeholder comment on 7 December 2015. The test excavation program was then conducted over five days between 1 February and 5 February 2016. A number of representatives from the registered Aboriginal stakeholder groups and three archaeologists from Artefact Heritage took part in the program.

The test excavation found that no Aboriginal objects were located at TNRB PAD01 and a dispersed artefact scatter was identified at TNRB AS01 (previously TNRB PAD02). A total of 61 artefacts were excavated from this site with over half retrieved from an area measuring 1m by 1.5m. Stone artefact scatters are considered to be common on the Cumberland Plain however, the high concentration of artefacts within a small area of the site presents the opportunity to further investigate the nature of land use at the site by Aboriginal people in the past. Therefore, targeted salvage excavation under PACHCI Stage 4 is recommended for the site.
1.3 Study Area

The proposal site boundary supplied by GHD is shown in Figure 1. It is understood that the proposal site boundary represents the likely maximum extent of the road design and associated stockpile compound areas. For the purpose of this report, the proposal site boundary is referred to as the ‘study area’.

The study area is located within the suburb of Bringelly. The area north of Bringelly Road is located within the Liverpool LGA and the area south of Bringelly Road is located within the Camden LGA. The study area is located within the Parish of Bringelly and the county of Cumberland. The study area includes the following lots and DPs as listed in Table 1.

Table 1: Lot/Section and DPs of properties located within the study area

1.4 The Proposal

The grade separated interchange, which would involve The Northern Road passing under Bringelly Road, would be located about 300 m east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The proposal also involves modifications to the existing intersection. The key features of the proposal are shown in Figure 1 and include:

- Widening and upgrading about 400 m of Bringelly Road, between Kelvin Park Drive and Greendale Road, to provide:
  - Two 3.5 m wide traffic lanes in each direction between Kelvin Park Drive and The Northern Road/Bringelly Road interchange, with wide central medians to allow for a future third traffic lane in each direction
  - Two 3.5 m wide traffic lanes in each direction on the western side of the interchange, transitioning to one lane in each direction to tie in to the existing intersection and Greendale Road
- Two metre wide shoulders in each direction

• Constructing a new section of The Northern Road, to the east of the existing alignment, between about 200 m south of Robinson Road and the southern abutment of the bridge over Thompsons Creek. The new section, which would pass beneath Bringelly Road, would be about one kilometre long and about 50 m wide (including embankments), and would include:
  - Two 3.5 m wide traffic lanes in each direction
  - Four metre wide shoulders connecting to the on and off ramps of the interchange, allowing for the future provision of bus lanes
  - An underpass about 60 m long beneath the upgraded section of Bringelly Road
  - 2.5 m wide shoulders along The Northern Road under the interchange for a length of about one kilometre
  - A wide central median to allow construction of a future third traffic lane in each direction

• Providing a new signalised intersection on Bringelly Road over The Northern Road, with turning movements provided in all directions

• Providing dual right turn movements in all directions to and from The Northern Road and Bringelly Road, and dedicated left turn lanes in all directions

• Providing bus service facilities by:
  - Retaining the bus stops on the existing The Northern Road
  - Relocating bus stops on Bringelly Road to suit the interchange
  - Providing two new bus stops on The Northern Road northbound and southbound interchange on ramps
  - Providing a bus only lane for buses travelling north and south along The Northern Road at the traffic lights on Bringelly Road

• Providing three metre wide shared paths for pedestrians and cyclists

• Providing a new road connection between Robinson Road and The Northern Road via an extension of the realigned Belmore Road intersection, and building a cul-de-sac at the western end of Robinson Road

• Converting the existing section of The Northern Road (to the west of the new section) to a ‘no through road’, by providing cul-de-sacs at both the northern (at Thames Road) and southern ends (near Robinson Road).

It is anticipated that construction of the proposal would commence in late 2016 / early 2017 and would be open to traffic by the end of 2019.

1.5 Objectives of this Aboriginal Cultural Heritage Assessment

The objectives of this report are to:

• Assess the Aboriginal cultural heritage values of the study area, including archaeological and community cultural values, and the significance of identified values.
Identify Aboriginal cultural heritage values that may be impacted by the proposed works, including consideration of cumulative impacts, and measures to avoid significant impacts.

Ensure appropriate Aboriginal community consultation in the assessment process.

Identify any recommended further investigations, mitigation and management measures required.

To detail the results of the physical test excavation which established the spatial extent of sites and areas of PAD and their archaeological content.

This CHAR has been prepared in accordance with:

- Roads and Maritime PACHCI
- Guide to Investigating and Reporting on Aboriginal Cultural Heritage in NSW 2010 (the Guide)
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (the Code of Practice)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (the Consultation Requirements).

This report includes:

- A description of the scope of the project and the extent of the study area
- A description of Aboriginal community involvement and Aboriginal consultation
- A significance assessment of the study area including cultural and archaeological values
- A description of the statutory requirements for the protection of Aboriginal heritage
- An impact assessment for recorded Aboriginal sites and areas of archaeological potential
- Provision of measures to avoid, minimise, and if necessary, offset the predicted impacts on Aboriginal heritage values.

1.6 Authorship

This CHAR was prepared by Claire Rayner and Veronica Norman (Heritage Consultants). Josh Symons (Principal) provided management input and the final review.

1.7 Statutory Requirements


The NPW Act, administered by the OEH provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.
The NPW Act was amended in 2010 and as a result the legislative structure for seeking permission to impact on heritage items has changed. A Section 90 permit is now the only AHIP available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

As part of the administration of Part 6 of the Act, OEH regulatory guidelines on Aboriginal consultation are in place, which are outlined in the Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010). Guidelines are also in place for the processes of due diligence as outlined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010) in accordance with the 2010 amendment to the Act.

There are no gazetted Aboriginal Places within the study area. All Aboriginal objects, whether recorded or not are protected under the Act.

1.7.2 Native Title Act (1994)

The NSW Native Title Act 1994 was introduced to work in conjunction with the Commonwealth Native Title Act 1993. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

A search of the National Native Tribunal applications register was conducted on 20 May 2015. There are no Native Title claims registered within the study area.

1.7.3 Aboriginal heritage investigation guidelines

The current investigation adheres to Stage 3 of the Roads and Maritime PACHCI and the OEH Code of practice. Stage 3 includes comprehensive Aboriginal stakeholder consultation, archaeological test excavation (where required), an AFG meeting, and preparation of a CHAR to support an AHIP. Stage 4 of the PACHCI involves any mitigation measures required following approvals, such as archaeological salvage excavation or surface collection prior to impacts.
Figure 1: Key Features of the proposal and study area boundary (map provided by GHD)
Figure 2: Study area location
2.0 CONSULTATION PROCESS

Aboriginal stakeholder consultation has been conducted by Roads and Maritime in accordance with the Roads and Maritime PACHCI and the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (herein referred to as the Consultation Requirements). The consultation log and all consultation documentation supplied by Roads and Maritime is provided in Appendices A to C.

An initial site survey was conducted of the original study area (see ASR in Appendix D) and was conducted on the 15 July and 24 July 2015 with representatives from TLALC and GLALC.

An addendum survey was conducted with representatives from TLALC on 30 September (see Addendum ASR – Appendix E). The second survey concerned properties that were not accessible during the first stage of survey. Analysis of survey coverage and results are included in the ASR and addendum.

In accordance with step 4.1.2 of the Consultation Requirements, RMS corresponded with the following organisations by letter requesting the details of Aboriginal people who may hold cultural knowledge relevant to determining the Aboriginal significance of Aboriginal objects and/or places within the local area:

- Aboriginal heritage department of the Metropolitan OEH
- Tharawal Local Aboriginal Land Council (TLALC)
- Gandangara Local Aboriginal Land Council (GLALC)
- The Registrar, Aboriginal Land Rights Act 1983
- National Native Title Tribunal
- NTSCORP
- Camden City Council
- Liverpool City Council
- Greater Sydney Catchment Management Authority

In accordance with Step 4.1.3 of the consultation requirements, an advertisement was placed in the Koori Mail and the Liverpool Champion on Wednesday 4 November 2015 (Appendix A). The advertisement invited all Aboriginal persons and organisations who hold cultural knowledge relevant to determining the significance of Aboriginal objects and places in the subject land to register their interest by Wednesday 18 November 2015.

In accordance with Step 4.1.3 of the consultation requirements, letters were sent to all Aboriginal persons or organisations identified through responses from agencies contacted as part of Step 4.1.2. In accordance with Step 4.2 the letters provided details about the location and nature of the proposal, as well as an invitation to register as an Aboriginal stakeholder.

Following the completion of steps 4.1.2 and 4.1.3, 44 Aboriginal stakeholders registered as persons or organisations that may hold cultural knowledge relevant to determining the Aboriginal cultural values of the study area. The registered Aboriginal stakeholders are summarised in Table 2 below.
### Table 2: Registered Stakeholders

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<th>Stakeholder 1</th>
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The ASR, Addendum ASR, test excavation methodology and an invitation to the first Aboriginal Focus Group (AFG) meeting were sent to stakeholders on 30 November 2015. The AFG was held on 7 December 2015 at Parramatta RSL. In accordance with Step 4.3 the AFG gave stakeholders the opportunity to contribute cultural information about the proposal area as well as contributing to the proposed methodologies. The attendees at the AFG agreed with the flexible approach proposed by the test excavation methodology in order to ensure areas with significant artefactual deposits would not be missed.

The meeting was attended by the following stakeholder groups:

**Table 3: Stakeholder attendees at first AFG**

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Written comments were received from three stakeholder groups. All of the respondents agreed with the recommendations of the PACHCI Stage 2 ASR and addendum. Two groups commented that they would like to see the artefacts reburied or placed within a Museum. All groups highlighted the social, spiritual and cultural values they hold for all land. Registered stakeholders who sent comments to Roads and Maritime in regards to the ASR and addendum report are listed in Table 4.
Table 4: Stakeholders that submitted written comments on ASR, Addendum ASR and test excavation methodology

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>Josh Symons</td>
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<td>Stephanie Moore</td>
<td>Artefact Heritage</td>
</tr>
<tr>
<td>Mike Spate</td>
<td>Artefact Heritage</td>
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<tr>
<td>Jayden van Beek</td>
<td>Artefact Heritage</td>
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</table>

In accordance with Step 4.1.6 of the OEH consultation requirements, a list of registered Aboriginal stakeholders and a copy of the published Step 4.1.3 advertisement were forwarded to both OEH Environment Protection and Regulation, TLALC and GLALC on the 18 January 2016.

Test excavation was conducted over five days between Monday 1 and Friday 5 February 2015. Representatives of three registered Aboriginal stakeholder groups and archaeologists from Artefact Heritage took part in the test excavation program.

Table 5: Excavation attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>Josh Symons</td>
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<td>Artefact Heritage</td>
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<tr>
<td>Jayden van Beek</td>
<td>Artefact Heritage</td>
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</table>

Following the completion of the test excavations and in accordance with Step 4.4.2, the draft Archaeological Test Excavation Report (ATER) and draft CHAR were sent to registered stakeholders with an invitation to the second AFG on 5 April 2015.

The second AFG was held on the 20 April 2016 at the Mercure in Parramatta. The AFG discussed the results of the ATER and the proposed salvage excavation methodology for TNRB AS01. The AFG attendees are listed in Table 6. It was found that the impacts to TNRU7 had increased and the draft CHAR would need to be updated to reflect this with an extended consultation period for all stakeholders to review the changes. The stakeholders all agreed that the reburial of artefacts close to the sites from which they were excavated was preferable.
Written correspondence regarding the draft CHAR and ATER were received from two groups. The first declined to comment on the documents as they did not feel adequately involved in the project. The second agreed with the recommendations of the reports and the proposed salvage methodology.

Following the results of the second AFG an updated draft CHAR was sent to all registered stakeholders for review and comments on 22 April 2016. Comments were received from two groups. Both groups agreed with the recommendations of the updated CHAR.
3.0 SUMMARY AND ANALYSIS OF BACKGROUND INFORMATION

3.1 Environmental Context

The study area is located within the Cumberland Plain, which is typified by an undulating landscape of rolling hills and prominent rises. The underlying geology of the study area consists of late Triassic period Bringelly shale deposits belonging to the Wianamatta Group (Clark and Jones 1991). These deposits consist predominantly of claystone and siltstone with thin laminate horizons. Areas of sandstone are minor and sporadic within the Bringelly formation. However, sandstone is prominent along north to south trending flat topped ridgelines from Minchinbury through Cecil Park to Leppington and from Orchard Hills through Luddenham and Bringelly to Cobbitty (Clark and Jones 1991).

The primary soil type across the study area is the Blacktown soil landscape. The Blacktown soil landscape is typified by shallow duplex soils over a clay base. The biomantle is underlain by heavily textured subsoil with a depth of generally less than a metre, and most commonly less than 30 cm. The archaeological implications of this soil landscape are that intact deposits are likely to occur in the A horizon, which is generally up to 30 cm depth, although stratigraphic potential would be limited.

The study area runs parallel to South Creek. Various tributaries of this watercourse traverse the study area. The northern end of the study area intersects with Thompsons Creek. The Nepean River is located approximately 10 km to the west of the study area.

The study area would once have been covered by open Cumberland Plain Woodland, which is typical of the Wianamatta Group shale geology. Tree species would have included Forest Red Gum (*E. tereticornis*) and Grey Box (*E. moluccana*). Honey Myrtle (*Melaleuca decora*) and Prickly Leaf Paperbark (*Melaleuca nodosa*) would have been present on the floodplain at Bells Creek (Benson and Howell 1990).

There are no known suitable stone sources for artefact manufacture within the study area (JMcdCHM 2007:17). Resources for tool manufacture would have been brought in from areas such as Mulgoa Creek, about 10 km north of the study area, or from the Plumpton Ridge and Marsden park silcrete deposits 20 km north-east of the study area. Raw materials such as silcrete and tuff cobbles are also found in the Nepean River gravels and have been recorded at the confluence of South Creek and Badgerys Creek 10 km north-east of the study area. Quartz pebbles that occur naturally across some portions of the local area would also have been utilised for stone tool production.

3.2 Aboriginal Land Use

3.2.1 Aboriginal Histories of the Locality

Aboriginal people traditionally lived in small family or clan groups that were associated with particular territories or places. The language group spoken in the Narellan/Bringelly area is thought to have been Dharrawal (Tindale 1974). The Dhrawal language group is thought to have extended from the Shoalhaven River, north to Botany Bay and then inland to Camden. Some sources also describe the Narellan area as being home to the Muringong people, speakers of the Darug language group (Mathews and Everitt 1900:265).

There is some evidence that Aboriginal people around Narellan spoke a distinctly separate language and their tribal area was known as Cubbitch-Barta after its white pipe clay (Russell 1914).
Government records from the 1830s and 1840s identify an Aboriginal group known as the Cobbiti Barta as associated with the Camden area (JMDCMH 2007:21).

Historical records show that Gandangara people visited the Narellan/Bringelly area. It is not known whether these visitations represented recent displacement patterns as a result of European colonisation or were part of a longer term interaction with the Dharawal (Karskens 2010:496).

Laila Haglund has suggested that at contact the area would have been near the border of the Dharawal, Darug and Gandangara territories and that the Narellan Valley may have been part of a ‘travel corridor’ facilitating movement between the northern Cumberland Plain and the Illawarra (JMDCMH 2007:21 after Haglund 1989).

Historical observations suggest that Aboriginal people lived in the Narellan/Bringelly area in relatively large numbers. Lieutenant Dawes observed that a number of bark huts, about seventy in all, located close to the river between the farms of Mr Wentworth and Mr Campbell at Narellan (Barton 1996).

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region, including Dharawal, Darug and Gandangara speakers. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture, timber, fishing grounds and water sources. Overall the devastation of the Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic over half of the Aboriginal people of the Sydney region died. The disease spread west to the Aboriginal groups of the Cumberland Plain and north to the Hawkesbury. It may have in fact spread much further afield, over the Blue Mountains (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely before Europeans could observe them, or record their clan names (Karskens 2010:425).

The British initially thought that Aboriginal people did not live inland, but were confined to the coast taking advantage of the abundant marine resources available. The first major expeditions into the interior did not witness any Aboriginal people, but evidence of their existence was noted. In April 1788 Governor Philip led an expedition west to Prospect Hill. It was noted, ‘…that these parts are frequented by the natives was undeniably proved by the temporary huts which were seen in several places. Near one of these huts, the bones of kangaroo were found, and several trees were seen on fire’ (Phillip 1789).

In 1789 Captain Watkin Tench led an expedition to the Nepean River. He noted that:

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*Traces of the natives appeared at every step, sometimes in their hunting huts which consist of nothing more than a large piece of bark bent in the middle and opened at both ends, exactly resembling two cards set up to form an acute angle; sometimes in marks on trees which they had climbed; or in squirrel-traps….We also met with two old damaged canoes hauled up on the beach.* (Tench 1789)

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It wasn’t until rural settlement began in the western Cumberland Plain, around 1791 that the colonists and Aboriginal peoples came face to face in that area. Relations quickly disintegrated, and tensions over land and resources intensified. Governor King sanctioned the shooting of Aboriginal people in a General Order made in 1801 (Kohen 1986:24). A sustained drought during 1814 and 1815, and continued disenfranchisement led to tensions between farmers and Aboriginal people who remained to the south-west of Sydney. Aboriginal people were accused of stealing corn and potatoes and spearing cattle. A number of farmers were killed on their properties. In a dispatch Governor Macquarie wrote that ‘The Native Blacks of this country…have lately broken out in open hostility
against the British Settlers residing on the banks of the River Nepean near the Cow Pastures’. Aboriginal people were targeted and it was ordered that Aboriginal men be strung from trees when they were killed as an example (Turbet 2011:234). Intermittent killings on both sides continued for over 15 years, including the Appin massacre and attacks at South Creek in 1816 (Kohen 1986:23, Karskens 2010:225).

Although tensions existed between Aboriginal people and Europeans on the Cumberland Plain, a number of Aboriginal families continued to live semi-traditional lives in the area. The first parcels of land granted to an Aboriginal person were to the north of the study area between Richmond Road and Plumpton Ridge along Bells Creek. Governor Macquarie granted this land to Colebee and Nurragingy in 1819. Colebee did not stay long but Nurragingy lived on the land and it remained in the family until 1920 when it was resumed by the Aboriginal Protection Board (Kohen 1986:27).

The government policy of removal of Aboriginal children from their parents in order to assimilate them into white society began fairly early on in the colony’s history, and was epitomised by the development of the Native Institution at Parramatta in 1814.

This facility was moved to the Black Town settlement in 1823, opposite Colebee and Nurragingy’s land grant. It was closed in 1829 and the land was used for farming, but the site remains significant for its historical, archaeological and social values (GML 2007:36).

Descendants of Darug language speakers continue to live in western Sydney along with Aboriginal people from other areas of NSW.

3.2.2 Natural Resources

The study area would once have been covered by open Cumberland Plain Woodland, which is typical of the Wianamatta Group shale geology. Tree species would have included Forest Red Gum (*E. tereticornis*) and Grey Box (*E. moluccana*). Honey Myrtle (*Melaleuca decora*) and Prickly Leaf Paperbark (*Melaleuca nodosa*) would have been present on the floodplain at Bells Creek (Benson and Howell 1990).

Aboriginal people were highly mobile hunter-gatherers utilising different landform units and resource zones. Different resources may have been available seasonally, necessitating movement or trade (Attenbrow 2010: 78). Aboriginal people hunted kangaroo and wallaby and snared possums for food and skins. In marine or estuarine environments Aboriginal people caught fish and collected shellfish. There are many accounts by Europeans of Aboriginal people in canoes on rivers and the ocean, fishing and cooking the fish on small fires within the vessels (e.g. Collins 1798).

Plants were an important source of nutrition. Common edible species being *Macrozamia*, a cycad palm with poisonous seeds that were detoxified and ground into a paste and *Xanthorrhoea*, or grass tree. The grass tree nectar was a high-energy food, the resin a strong hafting glue, and the flower spikes used for spear barbs. From observations by early European colonists, only about twenty species of plant are identified as being used for food or manufacture by Aboriginal people of the Sydney region (Attenbrow 2010:41). It would be likely that this is only a fraction of what was actually used.

There are no known suitable stone sources for artefact manufacture within the study area (JMcDCHM 2007:17). Resources for tool manufacture would have been brought in from areas such as Mulgoa Creek, about 10 km north of the study area, or from the Plumpton Ridge and Marsden park silcrete deposits 20 km north-east of the study area. Raw materials such as silcrete and tuff cobbles are also found in the Nepean River gravels and have been recorded at the confluence of South Creek and Badgerys Creek 10 km north-east of the study area. Quartz pebbles that occur naturally across some
portions of the local area would also have been utilised for stone tool production.

### 3.3 Historical Land Use

The study area has been heavily impacted by agricultural use and semi-rural development. Some areas have recently been developed as residential estates, or are in the process of such changes.

The Bringelly area was predominately part of a wider agricultural district until very recently and even now agricultural activities play a major role in the local area. During the 1840s, wheat cultivation was a major industry in the district and several flour mills were established to process this wheat (Atkinson 1988:31). However, in the early 1860s, an outbreak of rust destroyed the wheat industry and landholders diversified into other avenues of agricultural production (Atkinson 1988:95). These included sheep, cattle, dairying, crops such as oats, and fruit and vegetable cultivation. During the 1930s depression, many of the large properties in the area were subdivided and smaller farms for orchards or poultry became common (Willis n. d.).

Since the 1950s, the development of the region has been strongly affected by state government planning policies. The 1968 Sydney Region Outline Plan encouraged the growth of Bringelly (Willis n. d.) and from the 1970s, urbanisation in the area rapidly increased. The study area is currently within the South West Priority Growth Area.

### 3.4 Aboriginal Material Culture

Aboriginal people have lived in the Sydney area for more than 20,000 years. The oldest securely dated site in the greater Sydney region is 17,800 years before present (yBP), recorded in a rock shelter at Shaw’s Creek (Nanson et al 1987). Evidence of Aboriginal occupation has been found dated to 50-60,000 yBP at Lake Mungo in NSW, so it would be likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates available at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result, the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000 yBP in the Sydney region (Attenbrow 2010:102). It has been argued that these changes in material culture were an indication of changes in social organisation and behaviour.

The Eastern Regional Sequence was first developed by McCarthy in 1948 to explain the typological differences he was seeing in stone tool technology in different stratigraphic levels during excavations such as Lapstone Creek near the foot of the Blue Mountains (McCarthy 1948). The sequence had three phases that corresponded to different technologies and tool types (the Capertian, Bondaian and Eloueran). The categories have been refined through the interpretation of further excavation data and radiocarbon dates (Hiscock & Attenbrow 2005, JMcDCHM 2005). It is now thought that prior to 8,500 yBP tool technology remained fairly static with a preference for silicified tuff, quartz and some unheated silcrete. Bipolar flaking was rare with unifacial flaking predominant. No backed artefacts have been found of this antiquity. After 8,500 yBP silcrete was more dominant as a raw material, and bifacial flaking became the most common technique for tool manufacture. From about 4,000yBP to 1,000yBP backed artefacts appear more frequently. Tool manufacture techniques become more complex and bipolar flaking increases (JMcD CHM 2006). It has been argued that from 1,400 to 1,000
years before contact there is evidence of a decline in tool manufacture. This reduction may be the result of decreased tool making, an increase in the use of organic materials, changes in the way tools were made, or changes in what types of tools were preferred (Attenbrow 2010:102). The reduction in evidence coincides with the reduction in frequency of backed blades as a percentage of the assemblage.

After European colonisation Aboriginal people of the Sydney Basin often continued to manufacture tools, sometimes with new materials such as bottle glass or ceramics. There are a number of sites in Western Sydney where flaked glass has been recorded, for example at Prospect (Ngara Consulting 2003) and Oran Park (JMcD CHM 2007).

3.5 Registered Aboriginal Sites

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on the 26 June 2015 for sites registered within the following coordinates:

- GDA 1994 MGA 56
- Number of sites 23
- AHIMS Search ID 179293

An updated search of AHIMS database was conducted on 3 March 2016 as a period of nine months had passed between the original search and the preparation of this CHAR (AHIMS search ID: 214538). The above parameters were used and no additional sites were identified.

The distribution of registered sites is shown Figure 3. There are 23 registered sites located within the search area. The frequency of site features is summarised in Table 7 below.

Table 7: Frequency of site types within the search area

<table>
<thead>
<tr>
<th>Site Feature</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefact</td>
<td>19</td>
<td>82%</td>
</tr>
<tr>
<td>Artefact Scatter</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>Modified Tree (Scarred or Carved)</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Of the 23 previously recorded sites in the study area, artefacts are the predominant site feature (n=22, 95%). Of these three are recorded as scatters (13%). There is one scarred tree recorded to the south of the study area.

The majority of sites are associated with The Northern Road and Bringelly Road upgrade projects and associated investigations for energy and water infrastructure that utilises the road corridor.

Of the sites identified by the AHIMS extensive search, there are five sites located within the study area (see Table 8). These sites were visited during preparation of the ASR, details of which can be found in Appendix D.
Table 8: Registered sites located within the study area

<table>
<thead>
<tr>
<th>AHIMS #</th>
<th>Name</th>
<th>Site Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-5-3886</td>
<td>BRP-IF-16</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-3894</td>
<td>BRP-S-07</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-4150</td>
<td>TNRU14</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-4142</td>
<td>TNRU6</td>
<td>Artefact Scatter</td>
</tr>
<tr>
<td>45-5-4143</td>
<td>TNRU7</td>
<td>Artefact Scatter</td>
</tr>
</tbody>
</table>
Figure 3: AHIMS extensive search results
3.6 Previous Archaeological Investigations

A number of major archaeological investigations have been conducted in the local area that have included sections of the study area. These have generally been associated with large land releases and upgrades of The Northern Road and Bringelly Road. The following discussion takes into account the most recent and relevant studies and aims to provide contextual information for the current study. There have been recent subsurface excavation programs conducted along the Bringelly Road corridor and The Northern Road corridor for Roads and Maritime, with the results of those excavations forthcoming.

Harrington Park and Mater Dei rezoning project (Australian Museum Business Services 2006)

The Harrington Park and Mater Dei study area extends along Oran Park Road, Dan Cleary Drive and Cobbity Road between Camden Valley Way and Cobbity (seven kilometres south of the current study area).

The 2006 study of the Harrington Park and Mater Dei development areas followed on from a Phase 1 preliminary study which identified the need for further investigation (Central West Archaeological and Heritage Services 2004). The Phase 1 study identified 16 Aboriginal sites, including five possible scarred trees. The Phase 2 investigations identified a further 19 sites. A large portion of the study area was assessed as having a medium to high archaeological sensitivity with generally low disturbance levels. It was recommended that large sections of the precinct should be zoned for conservation with 60 per cent of the recorded sites located within the conservation areas.

Archaeological investigation of the Oran Park precinct in the South West Priority Growth Area (Jo McDonald Cultural Heritage Management 2007)

The Oran Park precinct is located approximately six kilometres south of the study area. The survey undertaken by Jo McDonald Cultural Heritage Management (JMcD CHM) aimed to locate Aboriginal sites within the precinct and recommend appropriate conservation or mitigation measures. A total of 44 sites and four areas of archaeological potential were located during the survey with several sites having very high densities of artefacts. Site OPR-15 comprised of 193 recorded artefacts located on the banks of a minor tributary in the north-eastern section of the precinct.

The majority of the area along The Northern Road was assessed as having a low/moderate archaeological sensitivity with only 15 per cent of the total precinct assessed as having a high archaeological sensitivity.

The Northern Road upgrade preliminary Aboriginal archaeological assessment (Biosis 2008)

The Biosis study assessed the area of the proposed upgrade of The Northern Road from the Old Northern Road, Narellan to Bringelly/Greendale Road at Bringelly. The study involved a desktop assessment and a site survey. The field survey focused on creeks, drainage features and prominent rises, and any previously recorded sites within the corridor. Although the ground surface visibility throughout the study area was low, a total of eight Aboriginal sites and two areas of potential archaeological deposit were identified during the survey. Two of these sites were scarred trees, one was an artefact scatter and five were isolated finds.

Oran Park and Turner Road Precincts Aboriginal heritage investigation for proposed Infrastructure service routes and site options (Kelleher Nightingale Consulting KNC 2008)

This study involved the Aboriginal heritage assessment of proposed infrastructure service routes and sites under consideration for the early release areas of Oran Park and Turner Road Precincts. The
survey of these routes located seven new Aboriginal sites, and five areas of potential archaeological deposit.

The assessment recommended that there were no constraints on development within the road corridor on either side of The Northern Road due to high levels of disturbance. It was recommended that a number of sites may be impacted by the proposed works outside the road corridor and within the Oran Park and Turner Road precincts. A Section 90 AHIP was recommended for these sites if they were to be impacted by the Oran Park and Turner Road proposal.

**Bringelly Road upgrade Camden Valley Way to The Northern Road Aboriginal cultural heritage assessment (Kelleher Nightingale Consulting KNC 2011)**

The KNC PACHCI Stage 3 investigation of the Bringelly Road upgrade followed on from the Austral Archaeology PACHCI Stage 2 investigation. There were 44 Aboriginal sites located along the Bringelly Road corridor during the KNC and Austral site surveys. The majority of artefacts recorded were made of silcrete, mudstone or tuff. Artefacts were predominantly flakes or flake fragments, with a smaller numbers of cores, flaked pieces and blades.

One of the sites recorded by KNC is located within the current study area. Site BRP-IF-16 (# 45-5-3886) is located within 993 Bringelly Road, 160 m east of the current Bringelly Road and The Northern Road intersection. This site was assessed as containing moderate archaeological potential. The site was considered to represent the remnant portions of larger and more disturbed areas with a moderate potential for subsurface material. This site was recommended for salvage excavation if it was to be significantly impacted by the proposed works.

**The Northern Road upgrade from The Old Northern Road, Narellan to Mersey Rd, Bringelly, Aboriginal Survey Report (Artefact Heritage 2012)**

Artefact Heritage conducted an Aboriginal archaeological survey of The Northern Road between The Old Northern Road and Mersey Road. Portions of this study area intersect with the current study area. The assessment identified 23 Aboriginal sites within the study area, seven Aboriginal sites 20 m outside the study area and two new sites recorded more than 50 m outside the study area.

The majority of the sites identified were recorded as isolated finds or artefact scatters. There were two scarred trees recorded along The Northern Road corridor and one area of Potential Archaeological Deposit (PAD) was also recorded. Of the isolated finds recorded during the survey one of these, TNRU14 was recorded in association with BRP-IF-16 (# 45-5-3886) originally recorded by KNC in 2011. The assessment recommended salvage excavation for five sites recorded within the study area as moderately significant including BRP-IF-16.

### 3.6.1 Previous archaeological excavations in the locality

**Archaeological Subsurface Testing Program Proposed Industrial Development Area: The Crossroads Liverpool NSW (Navin Officer 1998)**

Navin Officer conducted an archaeological survey and subsequent testing then salvage of an area of archaeological sensitivity identified along Maxwell’s Creek associated with AHIMS sites #45-4-0936 and #45-4-0937 (Crossroads 1 and 2) located 12 kilometres east of the current study area. The testing program included 21 test pits excavated on the western and eastern banks of the creek. The program recovered 92 artefacts from 16 of the test pits located on both sides of the creek.

Navin Officer considered the assemblage to be typical of those on the Cumberland Plain and South Eastern Australia in general. The sites were considered to be of low archaeological significance and no further investigation was recommended.
Maxwell’s Creek Archaeological Salvage and Monitoring, Prestons, NSW (AMBS 2000)

Australian Museum Business Services (AMBS) undertook two archaeological investigations in two stages at Maxwell’s Creek approximately 13 km northeast of the study area. The salvage excavation program focussed on an area associated with Maxwell’s Creek and AHIMS site MC1 #45-5-0778, a surface artefact scatter. A total of 82 m² was excavated within three excavation locations.

The excavation program retrieved 151 artefacts with artefact densities varying from 1.9/m² to 2.1/m². The dominant raw material was silcrete which accounted for over half of the assemblage. Artefacts were generally characterised as debitage indicating the production of stone tools within the salvage areas. The assemblage included five retouched artefacts, three of which were recorded as backed blades. Of the 151 artefacts there were only 2 cores recorded in the assemblage.

From the results of the salvage and other excavations conducted in the local area AMBS concluded that subsurface artefact scatters can be placed into two main categories (AMBS 2000: 31). The first is characterised as evidence of extensive knapping of stone in which a large number of artefacts are produced over a short period of time. The second group is characterised as the gradual deposition of artefacts as a direct result of resource use. This gradual deposition would be identified on the basis that these artefacts are not associated with knapping floors. The results from the salvage excavation indicate that MC1 is likely to represent gradual deposition of artefacts rather than concentrated knapping events.

Locality LB, Edmondson Park Archaeological Subsurface Testing Program (Navin Office 1998)

Navin Officer conducted test excavations within Locality LB of the Edmondson Park release area approximately nine kilometres east of the study area. The testing program involved the excavation of 68 test pits recovering 31 stone artefacts. The dominant lithology present was silcrete and the assemblage consisted of complete flakes, debitage, cores and points. The average artefact density across the site was 1.25/m².

The artefactual remains were interpreted as representative of low intensity occupation and background scatter. The highest concentration of subsurface artefacts was identified across lower slopes in areas closest to creek lines. No artefacts were located on the crest or upper slopes of the tested area. This was likely attributed to the higher levels of disturbance on these landforms compared to areas close to the creek.

Archaeological excavations at the Oran Park and Turner Road precincts (AECOM 2009)

The archaeological test excavations at Oran Park involved a program of test pitting and open area excavations. Three hundred and forty test pits were excavated across a variety of landform units, with 160m² of open area excavated during salvage excavations. A total of 4780 artefacts were recovered from Phase 1 and Phase 2 excavations, with around three quarters of the artefacts made of silcrete. Approximately five per cent of the assemblage comprised of tools or cores including backed artefacts and scrapers. The presence of grey and white silcrete was interpreted to be evidence of the importation of exotic silcrete from sources further south outside of the Cumberland Plain. Overall the small size of artefacts within the assemblage and low frequency of cores was interpreted to be indicative of raw material curation and transportation into the study area (AECOM 2009: 64).

The results of the excavations found that the generalisation of high artefact numbers in association with high stream order does not hold for the study area (AECOM 2009: 50). Rather the results indicate a more even spread of archaeological deposit with occasional concentrations in areas with a good out look over the Narellan Creek Valley (AECOM 2009: 50). Furthermore, these concentrations may occur up to several hundred metres from a watercourse.
The results of the excavations indicated a low density spread of archaeological material across the precinct which is argued to reflect a ‘pre-contact landscape of extensive but low intensity Aboriginal activity with evidence of strategic defensive positioning of campsites within a cultural interaction zone between different language groups’ (AECOM 2009:ES1).

**Archaeological Salvage Excavations at Site HPK9 Harrington Park, Sydney (KNC 2009)**

KNC conducted salvage excavations at artefact scatter site HPK9 (#52-2-3326) located approximately eight kilometres south of the study area. Site HPK9 incorporated a small rise at the confluence of two watercourses in the Narellan Creek Valley. The site was originally recorded as a surface scatter of stone artefacts. The excavations retrieved a total of 769 lithic items from the excavation of 14 dispersed test squares and one open area. The density of artefacts from test squares was relatively low averaging 4 artefacts/m². The open area artefact densities were higher with an average of 17 artefacts/m².

The artefact assemblage was dominated by silcrete followed by quartz. Other raw materials included chert, silicified wood, silicified tuff and unidentified fine-grained siliceous material. The majority of artefacts were small, measuring less than 1.5 cm in size and the largest artefact measuring 3.5 cm. The assemblage included heat shatters, microblade cores and knapping debitage characteristic of systematic core reduction. Two complete backed artefacts were also recovered.

KNC considered the site to indicate casual use for short stay hunting or maintenance camp used by small groups. The lithic assemblage was considered to belong to the Middle to Late Bondaian cultural phase. Radiocarbon dating of a charcoal sample from the base of deposit in the open area excavation corroborated this assessment with an age determination of 1,732±BP.

**South West Rail Link (SWRL): Preliminary Aboriginal Heritage Test Excavation (AMBS 2010)**

AMBS was commissioned to conduct a program of preliminary archaeological test excavations associated with the SWRL project approximately 5 km east of the study area. The excavation program focussed on the locations of geotechnical test pits and bore holes. This included areas considered to be of high archaeological sensitivity and low archaeological sensitivity.

A total of 70 artefacts were retrieved from 30 test trenches excavated for the program. The total area excavated was 46 m². The assemblage was predominantly composed of silcrete flaked pieces with some quartz and IMDT also present. Flaking techniques recorded included bipolar flaking and retouch was also recorded on four artefacts.

The excavation results identified areas with the highest number of artefacts were generally located on wanning slopes and flats near a water source. The test trenches with the highest number of artefacts were located within 180 m of Kemps Creek, 300 m of a swamp within the Edmondson Park Lands and 200 m of Maxwell’s Creek. Fewer artefacts were retrieved from test pits located along elevated areas such as ridgelines.

**Menangle Park Stables Project Archaeological Salvage Excavation Report (Artefact Heritage 2014)**

Artefact Heritage conducted an archaeological salvage excavation of Aboriginal site #52-2-3764 and associated area of high archaeological potential within Menangle Park approximately 17 km south of the study area. Artefact Heritage had completed test excavations in the area in 2013. These excavations had identified a variable density sub-surface archaeological deposit across the site. The salvage program targeted two areas of identified high artefact density.

Artefact densities varied between the two open areas excavated during the salvage program. An average density of 1.75 artefacts/m² was identified within Open Area A (OAA) and a high average
density of 13.4 artefacts/m² was identified from Open Area B (OAB). Overall the artefact density of the salvaged area was 8.6 artefacts/m².

The artefact assemblage was dominated by silcrete with indurated mudstone tuff (IMDT), quartz and quartzite also identified. Complete flakes were the most frequent artefact type followed by flake fragments. Cortex was only present on 3% of the artefact assemblage and only three cores are present within the assemblage. Three backed artefacts were identified and one retouched artefact were identified within the assemblage. The assemblage also included 14 blades (4%). Overall the artefacts were generally small in size with over 80% of the assemblage measuring less than 20 millimetres.

3.7 Predictive Model

Beth White and Jo McDonald have developed a model for site prediction on the Cumberland Plain in their discussion on the nature of Aboriginal site distribution as interpreted through lithic analysis of excavated sites in the Rouse Hill Development Area (RHDA) (White and McDonald 2010). This analysis brings together data from 631 dispersed 1m x 1m test squares from 19 sample areas, which yielded 4,429 stone artefacts in total. The findings of this study generally support earlier models that predicted correlations between proximity to permanent water sources and site location, but also highlighted the relationship between topographical unit and Aboriginal occupation.

The major findings of the study were that artefact densities were most likely to be greatest on terraces and lower slopes within 100 m of water. The stream order model was used to differentiate between artefact densities associated with intermittent streams as opposed to permanent water. It was found that artefacts were most likely within 50-100 m of higher (4th) order streams, within 50 m of second order streams, and that artefact distribution around first order streams was not significantly affected by distance from the watercourse (White and McDonald 2010: 33). Overall landscapes associated with higher order streams (2nd order or greater) were found to have higher artefact densities, higher maximum densities, and more continuous distribution than lower order intermittent streams. The analysis also concluded that while there were statistically viable correlations that demonstrated a relationship between stream order, land form unit and artefact distribution across the RHDA, the entire area should be recognised as a cultural landscape with varied levels of artefact distribution (White and McDonald 2010: 37). This predictive model can be transferred to other areas of the Cumberland Plain, especially those on shale soil geology, as landscape, soils and artefacts patterning are similar throughout the region.

The results of excavations at the Oran Park precinct have been argued to suggest that correlations between stream confluence, or stream order, and artefact density do not hold for the southern Cumberland Plain. Instead it was argued that ‘the evidence supports a more even spread of archaeological deposit comprising predominantly low density artefact distribution with occasional campsite concentrations in areas with good outlook over the main valley up to locations anywhere to several hundred metres away from the watercourses’ (AECOM 2009: 50).

The predictive model used in the current study comprises a series of statements about the nature and distribution of evidence of Aboriginal land use that is expected in the study area. These statements were based on the information gathered regarding:

- Landscape context and landform units
- Ethno-historical evidence of Aboriginal land use
- Distribution of natural resources
- Results of previous archaeological work in the vicinity of the study area
- Predictive modelling proposed in previous investigations.
Predictive statements were as follows:

- Stone artefacts/artefact scatters would be the most likely Aboriginal site type. Previous studies in the region, as discussed above, have found that stone artefacts are the most common site type.
- Culturally modified trees are known to exist within the Camden region and where there is remnant old growth vegetation remaining there is a possibility of scarred trees being retained.
- Artefact densities would be generally low. Previous studies in the region, and close to the study area such as AECOM 2009 have found that artefacts generally occur in a low density spread across the landscape with some isolated areas of higher density.
- Silcrete, silicified tuff and quartz would be the dominant raw materials. Previous studies have indicated that these raw materials are most common on the Cumberland Plain, including within the locality of the study area.
- In situ artefacts would be located in areas of least ground disturbance.
- Artefacts may be located on terraces and slopes within 100 m of water, or on areas with a good outlook over the main valley up to several hundred metres away from water, although it would be likely there would be a fairly even spread of archaeological material across the landscape. This prediction is based on the models developed by White and McDonald, and AECOM, as discussed above.

3.8 Results of Site Survey

The site survey was conducted in accordance with PACHCI Stage 2 and the OEH Code of Practice. Representatives of TLALC and GLALC were present for all days of survey. The survey targeted areas of high surface visibility and inspected the recorded locations of all AHIMS sites within the study area. Visibility was generally nil across the study area and limited to exposures associated with dam walls, driveways and along road easements. Access to several properties was restricted at the time of survey, therefore these properties were not assessed. Surface disturbance varied throughout the study area and was generally higher in association with the construction of houses, dams, sheds, gardens and Bringelly Road and The Northern Road.

The site survey did not relocate artefacts originally identified at the recorded AHIMS site locations within the study area. This is likely due to the dense vegetation cover as the areas in which the sites were located appeared to be generally intact with low disturbance. It is also likely that some of the sites had been subject to surface collection in accordance with the Bringelly Road Stage 2 AHIP.

Two areas of archaeological potential were identified during the survey. The PADs, TNRB PAD01 and TNRB PAD02 exhibited low levels of surface disturbance and were both located within landform contexts that have previously been identified as archaeologically sensitive. The location of these PADs as well as the AHIMS sites located within the study area are summarised in Figure 4.

3.9 Results of Test Excavation

Test excavations were carried out between the 1 and 5 February 2016 with the aim of informing this CHAR. The test excavations focussed on the two areas of PAD identified during PACHCI Stage 2. The areas of PAD were identified based on landscape, disturbance and land use observations indicating the likelihood of Aboriginal objects remaining below the ground surface. Test excavations were conducted in order to determine the presence and nature of subsurface archaeological deposits.
The test excavations identified one newly recorded Aboriginal site, TNRB AS01 (originally recorded as TNRB PAD02). This site is characterised as a dispersed artefact scatter with a significant concentration of artefacts located within the central portion of the site. No Aboriginal objects were identified at TNRB PAD01 therefore that area is not considered to be an Aboriginal site.

The archaeological test excavation report is included as Appendix F to this CHAR.

### 3.10 Summary of Aboriginal Archaeological Sites

An overview of the sites located within the study area is presented in Figure 4.

**BRP-IF-16 #45-5-3886/ TNRU14 #45-5-4150**

Site BRP-IF-16 was originally recorded by KNC in 2010. It was then revisited by Artefact Heritage in 2012 and additional artefacts were recorded as site TNRU14 (Figure 5).

Site BRP-IF-16 consists of an isolated silcrete artefact located along a property access track at [location information redacted] the study area. The artefact is located approximately [distance redacted] of Bringelly Road in an exposed area less than one metre squared. The site landform consists of a relatively intact north-facing upper slope of a low hill top. This area encompasses the crest of the low hill-top and the north and west running slopes from the hill-top. The site exhibits archaeological potential related to its landscape position, association with known archaeological sites and access to a range of resources (KNC 2010).

Site TNRU14 is located on an exposure on an unsealed track [location information redacted] the Bringelly Road corridor and [location information redacted] of the site BRP-IF-16. The extended site area is within an east-west running ridgeline on a low hilltop. The site consists of a single red silcrete flake. This site was considered to be associated with site BRP-IF-16 at the time of recording.

**BRP-S-07 #45-5-3894**

Site BRP-S-07 was originally recorded by KNC in 2010 as one chert and one silcrete artefact located at the front of property [location information redacted]. The site is located on the [location information redacted] side of Bringelly Road in a small area of exposure, about 15 m long by 15 m wide along a vehicle access track. The landform associated with the site is the upper slope of a gentle north-east running spur. The area is highly modified and disturbed with a road cutting across the surface of the slope. Road base gravels are evident in areas of exposure and the ground surface has been modified (Figure 4).

**TNRU6 #45-5-4142**

Site TNRU6 was originally recorded by Artefact Heritage in 2011 during the first PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade (Figure 6). The site was recorded as comprising two stone artefacts identified within a 15 m by 15 m exposure upon a lower hillslope landform. The lower hillslope landform rises gently upwards towards the south-west. The area is relatively undisturbed and has probably been cleared and used for grazing in the past. The site has been subject to archaeological salvage excavation as a condition of an AHIP for The Northern Road Stage 2.

**TNRU7 #45-5-4143**

Site TNRU7 was originally recorded by Artefact Heritage in 2011 during the first PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade (Figure 6). The site consists of seven artefacts scattered across the front paddock of a small property lot at [location information redacted]. The site encompasses an artificial embankment and the area next to it. The site is within the study area. A
small tributary of Lowes Creek runs to the south of the property with a gentle slope upwards towards the north.

**TNRB AS01 AHIMS # Pending**

TNRB AS01 is an artefact scatter located on a raised flat landform next to an incised creek line within the properties (Figure 7). The site was originally identified as an area of PAD (TNRB PAD02) and test excavated as part of PACHCI stage 3 investigations for this assessment. The artefact scatter consists of 61 flaked artefacts of predominantly silcrete with some quartz, indurated mudstone tuff and fine grained siliceous stone. The distribution of artefacts across the site indicates a dispersed low density artefact scatter with two areas of artefact clusters and one area of dense artefact concentration.
Figure 4: Overview of sites within the study area
Figure 5: BRP-IF-16/TNRU14 and extended site boundary
Figure 6: TNRU6 and TNRU7
4.0 SIGNIFICANCE ASSESSMENT

4.1 Aboriginal Material Culture

There are six Aboriginal archaeological sites located within the study area. These are:

- BRP-IF-16 / TNRU14 (#45-5-3886 / #45-5-4150),
- BRP-S-07 (#45-5-3894),
- TNRU6 (#45-5-4142),
- TNRU7 (#45-5-4143),
- TNRB AS01 (#Pending).

Sites BRP-IF-16/TNRU14, BRP-S-07, TNRU6 and TNRU7 consist of isolated artefacts and surface artefact scatters. The artefacts at these sites were not relocated during the investigation undertaken for the current report. It is understood that salvage collection of artefacts has been conducted at BRP-S-07 as part the Bringelly Road Stage 2 AHIP C0000436. It is understood that BRP-IF-16/TNRU14 would be subject to archaeological salvage excavation under the Bringelly Road Stage 2 AHIP C0000436. It is understood that TNRU6 has been subject to archaeological salvage excavation under The Northern Road Upgrade Stage 2 AHIP. Site TNRU7 is currently not subject to either the Bringelly Road Upgrade Stage 2 AHIP or The Northern Road Upgrade Stage 2 AHIP. Site TNRB AS01 was identified following the test excavations undertaken for this CHAR and is currently not subject to an existing AHIP.

The remainder of the study area is considered to have low archaeological potential. This is generally due to the residential and agricultural activities that have occurred within the area since European settlement. Areas within The Northern Road and Bringelly Road easements have been heavily disturbed by the construction and maintenance of these roadways.

4.2 Significance Assessment

An assessment of the cultural heritage significance of an item or place is required in order to form the basis of its management. OEH (2011) provides guidelines for heritage assessment with reference to the Burra Charter (Australia ICOMOS 2013) and the Heritage Office guidelines (2001). The assessment is made in relation to four values or criteria (Table 9). In relation to each of the criteria, the significance of the subject area should be ranked as high, moderate or low.

In addition to the four criteria, OEH requires consideration of the following:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state’s natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?
It is important to note that heritage significance is a dynamic value.

**Table 9: Heritage significance criteria**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>The spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them. Does the subject area have strong or special association with the Aboriginal community for social, cultural or spiritual reasons?</td>
</tr>
<tr>
<td>Historic</td>
<td>Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Is the subject area important to the cultural or natural history of the local area and/or region and/or state?</td>
</tr>
<tr>
<td>Scientific</td>
<td>This refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information. Information about scientific values will be gathered through any archaeological investigation undertaken. Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>This refers to the sensory, scenic, architectural and creative aspects of the place. It is often 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. Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?</td>
</tr>
</tbody>
</table>

4.2.1 Social Significance

OEH specifies that the social or cultural value of a place must be identified through consultation with Aboriginal people. The consultation process for the present project has not yet been completed, however the initial stages, along with the results of previous projects, have provided an indication of the social value of the study area.

No specific areas of cultural importance within the study area were identified by representatives of the registered Aboriginal stakeholders during the field survey or test excavation program, but it was made clear that the country and landscape as a whole is culturally significant to Aboriginal people.

4.2.2 Historic Significance

The study area is not known to be associated with any people, events or activities of historical importance to the Aboriginal community. There have been relatively few archaeological subsurface investigations undertaken within the study area.

Further work is required to form an adequate understanding of the archaeological resource and therefore Aboriginal land-use in the past within the study area. This would include salvage excavation within a portion of TNRB AS01 and comparison of salvage results with those from TNRU6 and BRP-IF-16/TNRU14. Correlation of those results in one report provides an excellent opportunity to analyse the archaeological context and historical significance of the local area.
4.2.3 Scientific Significance

A summary of the archaeological significance values for each of the sites recorded within the study area is given in Table 10. Sites BRP-IF-16/TNRU14, TNRU6 and TNRB AS01 have been assessed as having moderate archaeological significance. These sites are considered to be assessed with intact archaeological deposits and therefore have the potential to contribute to research questions within the southern Cumberland Plain. Sites BRP-S-07 and TNRU7 have both been assessed as having low archaeological potential. These sites consist of low density artefact scatters in disturbed contexts. Such sites are common on the Cumberland Plain and do not provide opportunity for further research or education.

Table 10: Summary of scientific significance

<table>
<thead>
<tr>
<th>Site name</th>
<th>Research Potential</th>
<th>Scientific Value</th>
<th>Representative Value</th>
<th>Rarity Value</th>
<th>Overall significance assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRP-IF-16 (#45-3886)/ TNRU14 (#45-5-4150)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>BRP-S-07 (#45-5-3894)</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>TNRU6</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>TNRU7</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>TNRB AS01</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate*</td>
</tr>
</tbody>
</table>

4.2.4 Aesthetic Significance

The study area has been subject to substantial modification over the historical period through to the present. The present rural landscape contains few connections to the pre-contact Aboriginal past of the area.

The study area is considered to be of low aesthetic significance in terms of Aboriginal heritage.

4.3 Statement of Significance

The study area contains Aboriginal sites which are considered to have low to moderate scientific values. These Aboriginal sites are considered to be of social significance to the contemporary Aboriginal community as part of an increasingly rare archaeological resource providing a tangible connection to the pre-contact Aboriginal people of the area.

The remainder of the study area is considered to have no scientific or aesthetic value. The historical value of the study area is unknown. This value would become clearer following the completion of the subsurface archaeological investigations at TNRB AS01 and BRP-IF-16/TNRU14 and the release of results from archaeological investigations at TNRU6.
5.0 AVOIDING AND MINIMISING HARM

5.1 Summary of Impacts to Archaeological Sites

A concept design showing an overall concept for the proposal has been developed (Figure 1). The largest impact to the study area will be the initial bulk earthworks. These works would directly impact on BRP-S-07, TNRU7 and TNRB AS01 and partially impact sites BRP-IF-16/TNRU14 and TNRU6 (Figure 9-Figure 12). The assessment of impact is summarised in Table 11.

Table 11: Summary of impacts to Aboriginal sites

<table>
<thead>
<tr>
<th>Site</th>
<th>Type of harm</th>
<th>Degree of harm</th>
<th>Consequence of harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRP-IF-16 (#45-5-3886)/TNRU14 (#45-5-4150)</td>
<td>Direct</td>
<td>Partial</td>
<td>Partial loss of value</td>
</tr>
<tr>
<td>BRP-S-07 (#45-5-3894)</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
<tr>
<td>TNRU6 (#45-5-4142)</td>
<td>Direct</td>
<td>Partial</td>
<td>Partial loss of value</td>
</tr>
<tr>
<td>TNRU7 (#45-5-4143)</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
<tr>
<td>TNRB AS01</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
</tbody>
</table>

5.2 Consideration of Alternatives and Justification of Impacts

Impacts to Aboriginal cultural heritage values have been considered during the planning stage of the proposal and archaeological test excavation has further investigated the nature and extent of subsurface archaeology.

The proposed works are deemed necessary by Roads and Maritime to provide a long term solution for associated upgrades to Bringelly Road and The Northern Road.

This CHAR and test excavation has confirmed that the proposed works will not impact on areas of high scientific significance.

5.3 Ecologically Sustainable Development (ESD) Principles

In accordance with the Guide, Ecologically Sustainable Development (ESD) principles have been considered in the preparation of this CHAR, including options to avoid impacts to Aboriginal cultural heritage, assessment of unavoidable impacts, identification of mitigation and management measures, and taking account of Aboriginal community views.

The principles of ESD are detailed in the NSW Protection of the Environment Administration Act 1991. The ESD principles relevant to the assessment of the current proposal as it relates to Aboriginal cultural heritage are considered below.

5.3.1 The integration principle

Decision-making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations (the ‘integration principle’). The proposal would
comply with the integration principle in regard to Aboriginal heritage. There are no areas of high significance located within the study area that will be impacted.

5.3.2 The precautionary principle

If there are threats of serious or irreversible environmental damage, lack of full scientific confidence should not be used as a reason for postponing measures to prevent environmental degradation (the ‘precautionary principle’).

The six recorded Aboriginal sites located within the study area would be impacted by the proposal.

For sites BRP-S-07 and TNRU7 scientific confidence was been achieved through assessment of prior research and/or through observations made during site survey.

Site TNRB AS01 required further investigation prior to impacts in order to achieve scientific confidence. Archaeological test excavation was necessary to inform the assessment of archaeological significance and management and mitigation measures for this site. Following archaeological test excavation TNRB AS01 was assessed as demonstrating moderate archaeological significance.

Archaeological investigation is ongoing at BRP-IF-16/TNRU14 and TNRU6 as part of the Bringelly Road Upgrade and The Northern Road Upgrade under separate AHIPs that have already been issued by OEH.

5.3.3 The principle of intergenerational equity

The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the ‘principle of intergenerational equity’). BRP-S-07 and TNRU7 have been assessed as demonstrating low archaeological significance.

Test excavation identified that the archaeological deposit at TNRB AS01 is a dispersed subsurface artefact scatter with two areas of artefact clusters and one distinct concentration of artefacts. Although this site type is common in the regional context, TNRB AS01 presents the opportunity to contribute to further research. It is unlikely that test excavation has adequately captured the nature and extent of subsurface archaeological deposits at this site.

Archaeological investigation is ongoing at BRP-IF-16/TNRU14 and TNRU6 under separate AHIPs already issued by OEH.

No sites of high archaeological significance will be impacted by the proposed works. Management and mitigation measures for sites which are to be impacted by the proposed works are detailed in section 5.5.

5.3.4 Conservation of biodiversity

Cultural values of biodiversity are intertwined with the lives of Aboriginal people and their use of the landscape. Biological impacts of the proposal are considered in separate technical report.

5.3.5 Improved valuation, pricing and incentive mechanisms

Roads and Maritime are committed to cultural heritage protection as a key component of project development. The costs and time required to ensure these high standards of assessment and
The Northern Road/ Bringelly Road Grade Separated Interchange

Protection measures are maintained as a standard part of road infrastructure planning. Roads and Maritime strive to comprehensively assess impacts, avoid impacts (where feasible), work with the community, and implement mitigation and management measures which strike a balance between meeting the state’s infrastructure needs and protecting Aboriginal heritage values, for the betterment of all.

5.4 Management and Mitigation Measures

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved.

Where unavoidable impacts occur measures to mitigate and manage impacts are proposed. Mitigation measures primarily concern preserving the heritage values of sites beyond the physical existence of the site. The most common methods of this involve detailed recording of Aboriginal objects, archaeological test and salvage excavations, artefact analysis and, where appropriate, reburial of Aboriginal objects in a location determined by the registered Aboriginal stakeholders.

Mitigation measures vary depending on the assessment of archaeological significance of a particular Aboriginal site and are based on its research potential, rarity, representativeness and educational value. In general, the significance of a site would influence the choice of preferred conservation outcomes and appropriate mitigation measures, usually on the following basis:

- **Low archaeological significance** - Conservation where possible, but usually no mitigation required if impacts are unavoidable.
- **Moderate archaeological significance** - Conservation where possible. If conservation is not practicable, salvage excavations or similar mechanisms determined in consultation with the Aboriginal community may be necessary.
- **High archaeological significance** - Conservation as a priority. Only if all practicable alternatives have been exhausted would impacts be considered justified. Comprehensive salvage excavations may be necessary.

The proposal is likely to have unavoidable impacts on the six sites located within the study area. These sites have all been assessed as demonstrating low to moderate archaeological significance.

Given these findings, consideration of ESD principles, the views of the registered Aboriginal stakeholders, and the lack of practicable alternatives to avoid impacts, the recommended mitigation and management measures are presented in Table 12.
Table 12: Summary of recorded Aboriginal sites and mitigation measures (blue = mitigation measures subject to existing AHIPs, yellow = mitigation measures subject to recommended AHIP)

<table>
<thead>
<tr>
<th>AHIMS</th>
<th>Site name</th>
<th>Significance</th>
<th>Type of harm</th>
<th>Degree of harm</th>
<th>Mitigation/management</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-5-3886 BRP-IF-16 TNRU14</td>
<td>Moderate</td>
<td>Direct</td>
<td>Partial</td>
<td>Salvage excavation in accordance with AHIP C0000436 is currently underway</td>
<td></td>
</tr>
<tr>
<td>45-5-3894 BRP-S-07</td>
<td>Low</td>
<td>Direct</td>
<td>Total</td>
<td>Surface collection as a condition of AHIP C0000436 has been completed</td>
<td></td>
</tr>
<tr>
<td>45-5-4142 TNRU6</td>
<td>Moderate</td>
<td>Direct</td>
<td>Partial</td>
<td>Salvage as a condition of AHIP C0001407 has been completed</td>
<td></td>
</tr>
<tr>
<td>45-5-4143 TNRU7</td>
<td>Low</td>
<td>Direct</td>
<td>Total</td>
<td>AHIP required prior to impacts. Submit site impact recording form to AHIMS following impact</td>
<td></td>
</tr>
<tr>
<td>Pending TNRB AS01</td>
<td>Moderate</td>
<td>Direct</td>
<td>Total</td>
<td>Targeted salvage excavation with an AHIP under PACHC Stage 4. Submit site impact recording form to AHIMS following impact</td>
<td></td>
</tr>
</tbody>
</table>

5.5 Proposed Management Policy for Aboriginal Sites

5.5.1 AHIP

An area based AHIP should be obtained for areas within the study area that are not covered by existing AHIPs (Figure 8). It is understood that two AHIPs currently held by Roads and Maritime overlap with the study area. These are:

- The Bringelly Road Upgrade Stage 2 AHIP C0000436. This AHIP carries conditions to be adhered to if sites BRP-IF-16/ TNRU14 (#45-5-3886/#45-5-4150) and BRP-S-07 (#45-5-3894) are to be impacted.
- The Northern Road Upgrade Stage 2 AHIP C0001407. This AHIP carries conditions to be adhered to if site TNRU6 is to be impacted.

OEH stipulates that AHIPs cannot overlap in areal extent. An area-based AHIP application for the current study area, which would include impacts to AHIMS sites #45-5-3886/#45-5-4150, #45-5-4142, #45-5-4143, #45-5-3894 and TNRB AS01 cannot include the area covered by AHIP C0000436 or AHIP C0001407.
Depending on the timing of The Northern Road and Bringelly Road upgrade works in relation to the proposal, Roads and Maritime may choose:

- To operate works for the proposal under the existing AHIPs in those areas (subject to the conditions of the AHIPs) or
- To relinquish The Northern Road Upgrade Stage 2 AHIP (C0001407) and current Bringelly Road Upgrade Stage 2 AHIP (C0000436) and apply for an area based AHIP for current proposal.

Figure 8: Proposed AHIP area excluding existing AHIP areas shaded in yellow
5.5.2 Salvage excavation

Archaeological salvage excavation would be conducted at TNRB AS01. The excavations would focus on the area of dense artefact concentration identified during PACHCI Stage 3 testing. A salvage methodology is included in Section 6.0.

Archaeological salvage excavation at TNRU6 has been completed as part of mitigation measures for The Northern Road Upgrade Stage 2 as part of AHIP C0001407.

Archaeological salvage excavation at BRP-IF-16/TNRU14 is currently underway as part of mitigation measures for the Bringelly Road Upgrade Stage 2 as part of AHIP C0000436.

Surface collection at site BRP-S-7 has been conducted as part of mitigation measures for Bringelly Road Upgrade Stage 2 as part of AHIP C0000436.

5.5.3 Construction Environment Management Plan

A CEMP and accompanying unexpected finds procedure will provide a method to manage potential heritage constraints and unexpected finds during construction works. Aspects of site area protection that should be included in the CEMP include:

- Establishing no-harm areas where appropriate. Depending on the nature and timing of works in the vicinity of identified Aboriginal sites that will not be impacted by the proposed works, it may be appropriate to establish visual markers around no-harm areas to avoid inadvertent impacts. This would include signage that clearly denotes the area as a “No Go Zone” Environmentally Sensitive area.
- Nature of the visual markers around no-harm areas. The CEMP should document what type of visual marker will be put in place, such as temporary fencing, high visibility tape, and temporary signage.
- Provide clear guidance to all site workers on access restrictions to no-harm areas through site inductions, tool box talks and daily heritage discussions.
- Unexpected finds procedure in accordance with the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.

5.5.4 Discovery of human remains

If suspected human skeletal remains are uncovered at any time throughout undertaking the proposed works, procedures outlined in the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.

5.5.5 Changes to the proposed works

This CHAR is based upon the most recent information made available to Artefact Heritage as of the date of preparation of this report. Any changes made to the proposal should be assessed by an archaeologist in consultation with the registered Aboriginal stakeholder groups. Any changes that may impact on Aboriginal sites not assessed during the current study may warrant further investigation and result in changes to the recommended management and mitigation measures.
5.5.6 Ongoing consultation with Aboriginal Stakeholders

Consultation with registered Aboriginal stakeholders would continue throughout the life of the project, as necessary. Ongoing consultation with registered Aboriginal stakeholders will take place throughout determination of the REF, any salvage excavations, care and control of retrieved artefacts and in the event of any unexpected Aboriginal objects being identified during works.

5.5.7 Management of Aboriginal objects

Further consultation with registered Aboriginal stakeholders will take place regarding the appropriate strategy for future long-term management of the retrieved artefact assemblage from test excavation and salvaged artefacts for the final version of this report.

Suitable long-term management of the retrieved artefact assemblage may include reburial at one location within the study area.
Figure 11: Proposed impacts to TNRU6 and TNRU7
Figure 12: Proposed impacts to TNRB AS01
6.0 ARCHAEOLOGICAL SALVAGE EXCAVATION METHODOLOGY

6.1 Salvage Excavation Methodology and Scope

The scope of this methodology is targeted archaeological salvage excavation of the high density artefact concentration identified at site TNRB AS01.

The salvage methodology should be read in conjunction with the archaeological test excavation report attached as Appendix F.

6.2 Salvage Excavation Justification

Archaeological test excavation completed in February 2016 informed the assessment of TNRB AS01 as demonstrating moderate archaeological significance.

Although the artefact scatter site type is common in the regional context, targeted salvage excavation provides the opportunity to further explore the identified high density of artefacts within a contained area at TNRB AS01. Salvage excavation also provides the opportunity to contribute to the understanding of site formation processes within the context of the southern Cumberland Plain.

Justification for archaeological salvage within TNRB AS001 includes

- The results of archaeological test excavation indicated a marked concentration of artefacts within a 1 m by 1.5 m area with a dispersed scatter throughout the remainder of the site.
- The assessment of TNRB AS01 as demonstrating moderate archaeological significance.
- The relatively limited amount of information available in the local area from archaeological sub-surface investigation and the possibility of contributing to the current state of knowledge about Aboriginal land-use strategies in the southern Cumberland Plain.
- To further investigate the landform context in which the site is located and compare and contrast this with excavations conducted in other landform contexts within the southern Cumberland Plain. The recent and ongoing salvage excavations in the local area for The Northern Road and Bringelly Road provides an excellent opportunity for comparative analysis within the local context.
- To retrieve a representative sample of the site prior to impacts.

6.3 Research Questions

The research questions are designed to focus the field work and analysis on particular aspects of archaeological investigation and therefore maximise the research value gained from the non-renewable resource of the archaeological record.

**Question 1: Can salvage excavation confirm the artefact distribution identified during the test excavation program?**

Archaeological test excavation identified a concentration of artefacts within a 1 by 1.5 metres area at excavation unit X3000 Y3075. This area contained over half \((n= 37, 60.65\%)\) of the excavated assemblage. One of the aims of the archaeological salvage excavation will be to determine whether
the test excavation results represent a broader high density artefact distribution associated with unit X3000 Y3075.

**Question 2: Is there evidence of single or overlapping knapping events?**

Whilst the test excavations identified a dense concentration of artefacts at X3000 Y3075 there was no evidence of a single or overlapping knapping events taking place. Therefore, one of the aims of the salvage program would be to further excavate the areas around X3000 Y3075 to identify any whether the artefacts retrieved could have resulted from one or more knapping events. This would include further investigation of possible artefact use and manufacturing activities identified during analysis of the test excavation assemblage.

This information may include data on depth of retrieved artefacts, differences in raw material, differing treatment of the raw material (ie heat treatment), and conjoin analysis. This information would be discussed in the context of previous predictive models for the distribution of archaeological material in the local and regional context.

**Question 3: How was raw material utilised in the local context?**

A general consensus among archaeological excavation reports for the southern Cumberland Plain is that good quality raw materials were relatively rare. Raw materials are considered to have been heavily curated and reduced due to this scarcity and the large distances required to procure them. This is generally evidenced by the small size of artefacts and the low proportion of cores to debitage within assemblages.

By analysing the amount of cortex, average size range and weight, the utilisation of different raw material types would be discussed in the context of raw material reduction and conservation away from source areas. This information would be used to discuss how the assemblage at TNRB AS01 either conforms to or challenges assumptions about raw material use within the southern Cumberland Plain.

**Question 4: How does the test excavation compare to the results of sub-surface investigation in the regional context?**

Salvage excavations have been conducted by AHMS for TNRU6 and salvage excavations are currently in progress for BRP-IF-16/TNRU14. These sites are located within contrasting landform contexts in the local area. This provides the opportunity to compare and contrast artefact assemblages from these different landform contexts within a

The results of test excavation would be discussed in relation to the findings of previous sub-surface investigations in the region. Comparative information would include intactness of deposit, degree of truncation, and nature and frequency of retrieved Aboriginal objects.

**Question 5: What information can the retrieved assemblage provide on land-use patterns in the local context?**

The comparative results of test excavation and the results of other sub-surface investigations in the area would be discussed in terms of Aboriginal land-use strategies of the local region. This would include a discussion of raw material conservation techniques, artefact types and size and weight characteristics of the assemblage.

### 6.4 Excavation Approach and Methodology

To further investigate the distribution of artefacts in the vicinity of excavation unit X3000 Y3075 and expansion units, a staged salvage excavation approach is recommended. This would include an initial
stage (Stage I) of one metre square excavation units surrounding the originally excavated area. This would be followed by open area excavation (Stage II) based on the results of Stage I excavation. One metre square units would form the basis of both Stage I and Stage II excavation.

The aim of Stage I excavation would be to further investigate the high density of artefacts. This would involve the excavation of at least four one metre square units spaced at cardinal points (north, south, east and west) five metres from X3000 Y3075. A fifth one metre square unit would be placed adjacent to X3000 Y3075 to ensure that the distribution of artefacts is adequately captured (Figure 13). The placement of this unit would be decided at the beginning of the salvage excavation program in consultation with Aboriginal stakeholder representatives present and Roads and Maritime. The layout of salvage excavation units in Figure 13 should be considered as a guide only. The final location of salvage excavation units would be decided in consultation with Aboriginal stakeholder representatives present and Roads and Maritime.

At least one unit from Stage I excavation would be selected for expansion as part of an open area excavation (Stage II). Depending on the results of Stage I further units may also be selected for expansion in open area excavation.

The decision to expand excavation pits (Stage II) would be made by the supervising archaeologist in consultation with registered Aboriginal stakeholders on site with regard to the following ‘triggers’ identified during Stage I excavations:

- Relative density of artefacts retrieved during Stage I excavation
- Rare or unusual artefact types
- Unusual raw material types and changes in raw material types
- Archaeological features such as hearths and/ or middens
- Cultural material with potential for scientific dating
- Any other features identified by the supervising archaeologist and Aboriginal stakeholder representatives

Open area Stage II excavation would be conducted around at least one Stage I pit at each site, based on the archaeological ‘triggers’ outlined above. Depending on the results of Stage I, further pits may also be selected for expansion into an open area excavation. The basal depth of Stage II excavation would be based on the results of Stage I excavation.

A total of up to 25 square metres would be allocated for Stage II excavation. As a minimum, one Stage I pit would be expanded into a three metre square open area excavation (utilising eight square metres). The remainder of the 25 square metres allocated for Stage II excavation may be utilised to further expand that open area based on the archaeological ‘triggers’ listed above, as well as allowing for the possible expansion of other Stage I pits. This means that the total number of Stage II squares would range between eight and 25.

All excavated squares would be recorded in detail including photographs, level readings, plans and context sheets. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would also be drawn. A detailed geomorphological analysis would be undertaken by a qualified geomorphologist where appropriate.

All squares would be excavated according to soil horizons were practicable, or 10 centimetre or 20 centimetre arbitrary spits where defined units within the A horizon are absent. Excavating in spits provides some vertical control, especially if a conjoin analysis is performed. If a stratigraphic deposit is identified, for example in alluvial soils on the terrace landform, excavation may be conducted stratigraphically.
All material retrieved from the excavated pits would be hand sieved through nested 3 millimetre and 5 millimetre mesh. Wet sieving would be preferred, especially in clay soils. All recovered stone artefacts would be cleaned, dried and bagged with a brief analysis conducted in the field. This analysis would include logging artefact type, raw material, and dimensions. These items would then be taken off site to be analysed in detail by relevant specialists in consultation with Aboriginal stakeholder groups. Wet sieving will be conducted on site close to the excavation area.

6.4.1 Procedure for the discovery of human remains

If suspected human skeletal remains are uncovered at any time throughout the excavation program, the Roads and Maritime Unexpected Heritage Items Procedure 2015 Appendix E would be followed.

6.4.2 Reporting and Aboriginal objects

All Aboriginal objects retrieved during the course of salvage excavation would be washed and placed in re-sealable bags for further analysis and recording. Once salvage excavation has been completed, the artefact assemblage would be recorded and stored as stipulated in the OEH code of practice as best practice. This includes recording key attributes of material, artefact type, platform type, termination type and dimensions, as well as photographic and drawn records of representative artefacts.

All recorded information would be entered into a Microsoft Excel spreadsheet with detail linked to the provenance of each artefact. Once entered into the spreadsheet, the data can be readily supplied with the test excavation report to OEH and registered Aboriginal stakeholders in either electronic or hard-copy form. An archaeologist experienced in stone artefact recording would conduct the attribute recording and analysis.

All artefacts would be given a unique number and stored in double re-sealable specimen bags. A permanent marker would be used to record the provenance and unique number of artefacts in each bag in writing on the outside of the bag and on an archival grade tag such as Dupont™ Tyvek® paper.

Further consultation with registered Aboriginal stakeholders would take place to determine the long-term care and management of the retrieved Aboriginal objects. This may include reburial within the study area in a location that would not be impacted by the proposed works.
Figure 13: Indicate salvage unit layout, TNRB AS01
7.0 RECOMMENDATIONS

The following recommendations are based on consideration of:

- Legislative, policy and procedural requirements for the assessment of Aboriginal cultural heritage
- The recommendations of the ASR
- The findings of the test excavation
- ESD principles
- The views and information provided by registered Aboriginal stakeholder groups
- The likely impacts of the proposed development.

It was found that:

- There are 6 Aboriginal sites located within the study area
- The proposal will impact all 6 Aboriginal sites (BRP-IF-16 #45-5-3886/TNRU14 #45-5-4150, BRP-S-07 #45-5-3894, TNRU6 #45-5-4142, TNRU7 #45-5-4143 and TNRB AS01 #Pending).
  - Sites BRP-S-07 and TNRU7 have been assessed as demonstrating low archaeological significance. The proposal would directly impact these sites.
  - Sites BRP-IF-16/TNRU14, TNRU6 and TNRB AS01 have been assessed as demonstrating moderate archaeological significance. The proposal would directly impact TNRB AS01 and partially impact BRP-IF-16/TNRU14 and TNRU6.
- AHIMS site BRP-S-07 is currently subject to AHIP C0000436 (Bringelly Road Upgrade Stage 2 between Camden Valley Way and the Northern Road). A condition of that AHIP is that community collection of artefacts occurs before the site is impacted.
- AHIMS site BRP-IF-16/TNRU14 is currently subject to AHIP C0000436 (Bringelly Road Upgrade Stage 2 between Camden Valley Way and the Northern Road). A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
- AHIMS site TNRU6 is subject to AHIP C0001407 for The Northern Road Stage 2. A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
- The Northern Road Stage 2 and Bringelly Road Stage 2 AHIP areas include portions of the study area.
- AHIMS site TNRU7 and newly identified site TNRB AS01 are not currently subject to an existing AHIP.

It is therefore recommended that:

- Roads and Maritime confirm whether the conditions of AHIP C0000436 have been met prior to impacts to BRP-IF-16/TNRU14 and BRP-S-07 by the proposal. These include:
  - Community collection of artefacts at BRP-S-07 and
  - Archaeological salvage excavation at BRP-IF-16/TNRU14.
- Roads and Maritime confirm whether the conditions of The Northern Road Upgrade Stage 2 AHIP C0001407 have been met prior to impacts to TNRU6 by the proposal. This includes:
- Salvage excavation at TNRU6.
- Targeted salvage excavation would occur at TNRB AS01 around the dense concentration of artefacts.
- Following the completion of the excavation programs at BRP-IF-16/TNRU14 and TNRU6 Roads and Maritime would make these results available to be incorporated into the TNRB AS01 PACHCI Stage 4 Salvage Excavation Report.
- No further investigation is recommended for site TNRU7. An AHIP will be required prior to impacts.
- Inadvertent impacts to sites outside of the impact area should be avoided by including information on the location of these sites in the CEMP.
- Long term arrangements for the management of excavated artefacts, such as reburial, should be determined in accordance with the recommendations of registered Aboriginal stakeholders and OEH guidelines.
- A CEMP and accompanying unexpected finds procedure will provide a method to manage potential heritage constraints and unexpected finds during construction works. Aspects of site and cultural area protection that should be included in the CEMP include:
  - Establishing no-harm areas where appropriate. Depending on the nature and timing of works in the vicinity of identified Aboriginal sites or cultural areas that will not be impacted by the proposed works, it may be appropriate to establish visual markers around no-harm areas with appropriate signage to avoid inadvertent impacts.
  - Nature of the visual markers around no-harm areas. The CEMP should document what type of visual marker will be put in place, such as temporary fencing, high visibility tape, and temporary signage.
  - Provide clear guidance to all site workers on access restrictions to no-harm areas including site inductions and tool box talks.
  - Unexpected finds procedure in accordance with the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.
- If any suspected human remains are located during any stage of the proposed works, work should stop immediately and the procedures outlined in the Roads and Maritime Unexpected Heritage Items Procedure 2015 would be followed.
- Should any changes be made to the proposed works that would involve additional impacts to Aboriginal heritage or areas outside of the study area, these changes should be assessed by an archaeologist in consultation with the registered Aboriginal stakeholder groups and further investigation may be necessary.
- The final version of this CHAR and accompanying documentation should be forwarded to registered Aboriginal stakeholders and OEH.
8.0 REFERENCES

AECOM 2010 Oran Park West Sewer Infrastructure Aboriginal Heritage Impact Assessment. Report to South West Priority Growth Area.


Attenbrow, V. 2010 Sydney’s Aboriginal Past: Investigating the archaeological and historical records. UNSW Press.

Artefact Heritage 2012 The Northern Road upgrade from The Old Northern Rd, Narellan, to Mersey Rd, Bringelly Archaeological Survey Report. A Report to Roads and Maritime Services

Artefact Heritage 2015 Addendum to the PACHCI Stage 2 archaeological survey report for the upgrade of The Northern Road between The Old Northern Road and Peter Brock Drive. A report to Roads and Maritime Services.


Austral Archaeology Pty Ltd (Austral) 2010. MR 647 Bringelly Road Upgrade Aboriginal Archaeological Survey, Camden Valley Way, Leppington to the Northern Road, Bringelly. Report to the Roads and Traffic Authority of NSW (Draft report, August 2010).


Biosis 2008 The Northern Road upgrade: Preliminary Aboriginal archaeological assessment. Report to RTA.


Butlin, N. 1983 Our original aggression: Aboriginal populations in southeastern Australia 1810-150, Melbourne, Cambridge University Press.


Jo McDonald CHM Pty Ltd. 2005. *Archaeological salvage excavation of site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW*. Report for Meriton Apartments Pty Ltd.


Jo McDonald CHM Pty Ltd. 2007. *Archaeological investigation of the Oran Park Precinct in the South West Priority Growth Area, Camden, NSW*. Report to APP.


Jo McDonald CHM Pty Ltd. 2010. *Archaeological Assessment of the proposed sewer and water mains associated with the Marsden Park Industrial Precinct, Stage 1*. Report to APP.


KNC 2008 *Oran Park and Turner Road Precincts: Aboriginal Heritage Investigation for Proposed Infrastructure Service Routes and Site Options*. Report to Landcom.

KNC 2010 *Bringelly Road upgrade: Camden Valley Way to The Northern Road Aboriginal cultural heritage Cultural Heritage Assessment Report* Prepared for the Roads and Traffic Authority.


Department of Environment, Climate Change and Water (now OEH), 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Roads and Maritime Services, 2011 Procedure for Aboriginal Cultural Heritage Consultation and Investigation.


9.0 APPENDICES
Appendix A: Newspaper Advertisement
CELEBRATING THE STORIES OF REDFERN THROUGH ART
Come hear community leaders and artists talk about the history and recreation of the adult Yaro Yaro mural and be part of a discussion about the future of public art in Redfern.

Details: Monday 26 November, 6pm, The Great Hall at ACMI, corner of府ster Street and Sydney Road, Redfern. All welcome! A delicious lunch will be provided by Sydney Rescue Mission.

For further information, please contact
ACMI, 10 St. Kilda Rd, Melbourne 03 9651 9000
P: 03 9651 9000
F: 03 9651 9011
E: info@acmi.net.au
W: acmi.acmi.net.au

Aboriginal Heritage
The Northern Road and Brindabella Road Interchange

The Australian and NSW governments are planning to upgrade the intersection of The Northern Road and Brindabella Road, Brindabella, as part of the $318 billion Western Sydney Infrastructure Plan.

Roads and Maritime Services invites Aboriginal people and Aboriginal groups that hold cultural knowledge relevant to determining the significance of Aboriginal objects and places, for Further information, please contact: The Northern Road and Brindabella Road Interchange to be consulted.

To register your interest, please contact Roads and Maritime Services, Aboriginal Cultural Heritage Officer, PO Box 971, Penrith NSW 2750 or email: Pat.Hunt@roads.nsw.gov.au

Registrations may also be made by phone on (02) 8869 1188 during business hours.

Registrations must be received by 18 November 2015. The proposal may result in a Roads and Maritime:
- Applying for an Aboriginal Heritage Impact Permit (AHIP) under Part B of the National Parks and Wildlife Act 1975
- Undertaking investigations in accordance with the Code of Practice for archaeological investigations in the National Parks and Wildlife Act 1975
- Undertaking an environmental impact assessment under the Environmental Planning and Assessment Act 1979

Flora celebrates
100th birthday

By ALF WILSON

WHEN Flora Hooleihan (nee Illin) was asked the secret of living to be 100 years old, she had a swift reply: “You will have to ask God about it.”

This wonderful lady turned 100 on October 20 and a party held in her honour in Townsville on October 24 was attended by family members going back five generations, as well as friends.

Some of her family suggested the waters of the Burdekin and Herbert Rivers may have had something to do with Flora’s long life. Others said the closeness of her family also had a lot to do with it.

Flora is the mother of four grandchildren of 20, great grandfather of 47 and great great grandfather of 22.

Flora Illin was born on October 20, 1915, at Papanmon on the Alt-rock TL and is the heart of Ngapay fans country.

She is the daughter of Leonora Illin, a Russian man, who fled from Russia before the 1917 child, and Kitty Clare, a Ngarinyin woman from the Arnhem Land.

Flora’s eldest son Emile Hooleihan said that in the early stages of her parents’ relationship it was considered illegal for a white man to marry an Aboriginal person. “They defied authorities and married anyway,” he said.

Dr Hooleihan said his mother met his father, Gaps Baathun man Richard Hooleihan, when they were both living in the Upper Burdekin River region.

“Personal life”

“This was again another fight for her personal life to marry someone of her own choosing because Richard Hooleihan was under the Protection Act and was considered property of the state and was not allowed to make important decisions without government interference and permission,” he said.

“Richard eventually, after three tries, was exempted from the Act and married Flora in Ingham in 1932.”

Flora eventually separated from Richard and lived on her own and ended up in Townsville in the late 1960s.

Throughout her life she has been an active community member, and was a founding member of the Townsville Aboriginal and Torres Strait Health Service, the Townsville Aboriginal Legal Service and the Yamatji-Ma Mixed Housing Association, where Flora House is named in her honour.

Noel Gerte, one of Flora’s grandsons, was glowing in his praise of her life.

“Granny has a very special place in her grandchildren’s and nephews’ and nieces’ hearts,” he said.

“She still provides wisdom and unconditional care and comfort when any of us have any difficulty, big or small. We should all cherish every precious moment with her and continue to learn from her.

“Can’t even imagine the changes with mankind that she has witnessed through her long and eventful life. “If there is a title for a learned person that ranks higher than a professor, then she is surely qualified to carry that honour.”

NATIONAL INDIGENOUS HEALTH CONFERENCE
Cairns, 1-3 December 2015
Held at: Shangri-La Hotel (The Marina)

Chief Roy S Jones Jnr

INTERNATIONAL GUEST SPEAKERS

Dr Fiona Te Momo

The conference will be a national and international gathering of Indigenous and non-Indigenous people with expertise in Indigenous health. The aim of the conference is to highlight and showcase successful community and research programs, which has led to positive impacts and outcomes within these communities.

- PROVIDE - networking opportunities
- SUPPORT - health professionals/workers
- UNITE - organizations as a united voice in closing the gap
- EXCHANGE - cultures, information, resources and programs
- PROMOTE - innovative ideas, strategies and programs

For further information contact: IC3 Staff on 07 4134 2663 or Email: admin@ic3.net.au
Special deal! Register 3 delegates for the price of only 2. When you mention the Koori Mail advert.

Register NOW!!! www.indigenoushealthconferences.com

Dinner and Twilight Harbour Cruises

The Voice of Indigenous Australia
He took the long trek home

(A) Ashleigh Hilton

Yvette Game’s little hero Lennan Mahl’s, 7, is being named Thursday’s Champion of the Year by the Newbridge Heights Public School principal after he won the title of Australia’s best fundraiser for a public school and was given a trophy at the school on Wednesday.

Each week for an entire school term Lennan walked 5.6 kilometres home from school with his mother Cathy Mahl, to raise money for the Childhood Australia’s Dream Bike Appeal.

Money raised for the appeal helps buy bicycles for children living in isolated communities in poor countries, such as Cambodia, Thailand and Timor. Lennan raised a total of $3010 by using $500 from his mother’s pocket money and $200 from his own pocket money.

"It was a great day for him to be recognised for his efforts," said Mr. Mahl.

Although the ride was not easy for him, Lennan had been selected as a finalist of the year’s event.

"Especially because he won the award," the school has been nominated as a finalist in the national competition.

"We put in a great effort to raise money for children in a community thousands of kilometres away."

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Blue Star Air Conditioning

Mon - Fri: 9:00 am - 5:30 pm
Sat: 9:00 am - 2:00 pm

www.bluestarac.com.au
Unit 38/62 Hume Highway, Lansvale
Tel: 9755 0909  Fax: 9755 0908

SPECIALS OF THE MONTH

NEW DAIKIN 1-PHASE 14 KW PREMIUM INVERTER DUCTED SYSTEM

- Zone controller
- Low-set home
- 2 zones / 8 outlets
- 5 years warranty

FULLY INSTALLED $9999

DAIKIN 6 KW WALL HUNG INVERTER SPLIT SYSTEM (R410A)

- Low-set home
- Back to Back
- Includes power circuit
- 5 years warranty

FULLY INSTALLED $2199

Call 13 24 26... That’s Free! Community Classifieds Liverpool City Champion, Wednesday, November 4, 2015 - 7
Appendix B: Consultation Log

This section has been removed from the public version
Appendix C: Correspondence Documents
19 October 2015

General Manager
Camden Council
PO Box 183
Camden NSW 2570

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

Roads and Maritime Services is seeking the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance objects and/or places within the project area for The Northern Road and Bringelly Road Interchange.

Aboriginal people identified by your agency will be notified of the project and invited to participate in the assessment process as described in Office of Environment and Heritage’s requirements. Please forward the details of relevant Aboriginal people to Roads and Maritime by 2 November 2015.

The contact details for this project are:
Mark Lester, Aboriginal Cultural Heritage Officer, 27-31 Argyle Street, Parramatta NSW 2150
Phone: 02 8849 2583 / Email: Mark.W.Lester@rms.nsw.gov.au

The proposal involves constructing a grade separated interchange about 300 metres east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The Northern Road will be realigned between Belmore Road and Thames Road. Both The Northern Road and Bringelly Road will have two traffic lanes in each direction with wide central medians to allow for future third lane in each direction. Please see the attached July 2015 project community update.

This letter forms part of the Roads and Maritime’s commitment to actively identify relevant Aboriginal people in accordance with section 4.1.2 of the Office of Environment and Heritage (OEH) Aboriginal cultural heritage requirements for proponents (2010).

Yours sincerely

Deanne Forrest
Project Development Manager

Level 11, 27-31 Argyle Street, Parramatta NSW 2150 | PO Box 973 Parramatta NSW 2124
T 02 8849 2585 | E Deanne.FORREST@rms.nsw.gov.au

www.rms.nsw.gov.au | 13 22 13
19 October 2015

Gandangara Local Aboriginal Land Council
PO Box 1038
Liverpool NSW 2170

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

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Yours sincerely

Deanne Forrest
Project Development Manager
Our reference: D/00642
File number: SF2015/006447

19 October 2015

Greater Sydney Local Land Services
PO Box 4515
Westfield Penrith 2750

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

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Yours sincerely

[Signature]
Deanne Forrest
Project Development Manager

Roads and Maritime Services
Our reference: D/00642
File number: SF2015/006447

19 October 2015

General Manager
Liverpool City Council
Locked Bag 7064
Liverpool BC NSW 1871

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

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Yours sincerely

[Signature]
Deanne Forrest
Project Development Manager

Roads and Maritime Services
Our reference: DI/00642
File number: SF2015/006447

19 October 2015

General Manager
Native Title Service Corporation
PO Box 2105
Strawberry Hills NSW 2012

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

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Yours sincerely

Deanne Forrest
Project Development Manager

Roads and Maritime Services
Our reference: D/00642
File number: SF2015/006447

19 October 2015

General Manager
National Native Title Tribunal – New South Wales Registry
GPO Box 9973
Sydney NSW 2001

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

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Deanne Forrest
Project Development Manager

Level 11, 27-31 Argyle Street, Parramatta NSW 2150 | PO Box 973 Parramatta NSW 2124
T 02 8849 2585 | E Deanne.FORREST@rms.nsw.gov.au
www.rms.nsw.gov.au | 13 22 13
19 October 2015

General Manager
Manager Planning & Aboriginal Heritage Section - Metropolitan
Office Environment and Heritage
PO Box 668
Parramatta NSW 2124

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

Roads and Maritime Services is seeking the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance objects and/or places within the project area for The Northern Road and Bringelly Road Interchange.

Aboriginal people identified by your agency will be notified of the project and invited to participate in the assessment process as described in Office of Environment and Heritage’s requirements. Please forward the details of relevant Aboriginal people to Roads and Maritime by 2 November 2015.

The contact details for this project are:
Mark Lester, Aboriginal Cultural Heritage Officer, 27-31 Argyle Street, Parramatta NSW 2150
Phone: 02 8849 2583 / Email: Mark.W.Lester@rms.nsw.gov.au

The proposal involves constructing a grade separated interchange about 300 metres east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The Northern Road will be realigned between Belmore Road and Thames Road. Both The Northern Road and Bringelly Road will have two traffic lanes in each direction with wide central medians to allow for future third lane in each direction. Please see the attached July 2015 project community update.

This letter forms part of the Roads and Maritime’s commitment to actively identify relevant Aboriginal people in accordance with section 4.1.2 of the Office of Environment and Heritage (OEH) Aboriginal cultural heritage requirements for proponents (2010).

Yours sincerely

Deanne Forrest
Project Development Manager

Roads and Maritime Services

Level 11, 27-31 Argyle Street, Parramatta NSW 2150 | PO Box 973 Parramatta NSW 2124
T 02 8849 2595 | E Deanne.FORREST@rms.nsw.gov.au
www.rms.nsw.gov.au | 13 22 13
Our reference: D/00642  
File number: SF2015/006447

19 October 2015

Tharawal Local Aboriginal Land Council
PO Box 163
Picton NSW 2571

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

Roads and Maritime Services is seeking the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance objects and/or places within the project area for The Northern Road and Bringelly Road Interchange.

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Mark Lester, Aboriginal Cultural Heritage Officer, 27-31 Argyle Street, Parramatta NSW 2150
Phone: 02 8849 2583 / Email: Mark.W.Lester@rms.nsw.gov.au

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Yours sincerely

[Signature]

Deanne Forrest
Project Development Manager
Our reference: D/00642
File number: SF2015/006447

27 October 2015

The Registrar General Manager
Aboriginal Lands Right Act 1983
PO Box 112
Glebe NSW 2037

Dear Sir/Madam

To seek Aboriginal knowledge holders to assist Roads and Maritime Services to prepare a cultural heritage assessment report for The Northern Road and Bringelly Road Interchange

Roads and Maritime Services is seeking the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance objects and/or places within the project area for The Northern Road and Bringelly Road Interchange.

Aboriginal people identified by your agency will be notified of the project and invited to participate in the assessment process as described in Office of Environment and Heritage’s requirements. Please forward the details of relevant Aboriginal people to Roads and Maritime by 10 November 2015.

The contact details for this project are:
Mark Lester, Aboriginal Cultural Heritage Officer, 27-31 Argyle Street, Parramatta NSW 2150
Phone: 02 8849 2583 / Email: Mark.W.Lester@rms.nsw.gov.au

The proposal involves constructing a grade separated interchange about 300 metres east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The Northern Road will be realigned between Belmore Road and Thames Road. Both The Northern Road and Bringelly Road will have two traffic lanes in each direction with wide central medians to allow for future third lane in each direction. Please see the attached July 2015 project community update.

This letter forms part of the Roads and Maritime’s commitment to actively identify relevant Aboriginal people in accordance with section 4.1.2 of the Office of Environment and Heritage (OEH) Aboriginal cultural heritage requirements for proponents (2010).

Yours sincerely

Deanne Forrest
Project Development Manager

Roads and Maritime Services
2 November 2015

Deanne Forrest
Project Development Manager
RMS
PO Box 973
Parramatta NSW 2124

Dear Deanne

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 27th October 2015 regarding Aboriginal Cultural Heritage Assessment within The Northern Road and Bringelly Road Interchange in NSW.

I have searched the Register of Aboriginal Owners and the project area described does not appear to have Registered Aboriginal Owners pursuant to Division 3 of the Aboriginal Land Rights Act 1983 (NSW).

I suggest that you contact the Deerubbin Local Aboriginal Land Council on 02 4724 5600. They will be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Kelly Bashford
Directorate Support Officer
Office of the Registrar, Aboriginal Land Rights Act 1983
Mr Mark Lester  
Aboriginal Cultural Heritage Officer  
Roads and Maritime Services  
27-31 Argyle Street  
PARRAMATTA NSW 2150  

Dear Mr Lester,

Thank you for your letter dated 19/10/2015 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in The Northern Road and Bringelly Road Interchange project.

Before making an application for the issue of an Aboriginal Heritage Impact Permit, the applicant must carry out an Aboriginal community consultation process in accordance with the National Parks and Wildlife Regulation 2009 and completed to the stage described in subclause 80C.

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project. OEH’s list of regional stakeholders is a list of groups, organisations or individuals who may hold cultural knowledge relevant to a proposal in a region. Contact details are correct as at the time of registration. Consultation with Aboriginal people should not be confused with employment. Inclusion on the OEH’s list is not an automatic right to employment. It is the decision of a proponent on who they choose to engage to deliver services based on a range of considerations including skills, relevant experience, and WHS considerations. To be clear, the proponent is under no obligation to employ Aboriginal people registered for consultation.

Further, receipt of this information does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties. Consultation with Aboriginal stakeholders must be in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 which can be found on the Office of Environment and Heritage (OEH) public website by accessing the following link:


If you wish to discuss any of the above matters further please contact Samantha Gibbins, Archaeologist, on (02) 9895 6586. Please note that the OEH postal address for requests for relevant Aboriginal stakeholder information changed two years ago. We can no longer guarantee that letters sent to the old mailbox will be received by us. Please make the necessary changes to your database to reflect the current mailing address below.

Yours sincerely

[Signature]  

Marnie Stewart  
Acting Senior Team Leader Planning  
Greater Sydney Region  
Regional Operations

Level 6, 10 Valentine Avenue, Parramatta NSW 2150  
PO Box 644, Parramatta NSW 2124  
Tel: (02) 9895 5477  
ABN 30 841 387 271  
www.environment.nsw.gov.au
Native Title Search Results for Liverpool and Camden Local Government Areas

Thank you for your search request in relation to the above areas.

Search Results
The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

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<th>NNTT Reference Numbers</th>
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<td>Schedule of Applications (unregistered claimant applications)</td>
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<tr>
<td>Register of Native Title Claims</td>
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<tr>
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<tr>
<td>Notified Indigenous Land Use Agreements</td>
<td>Nil</td>
</tr>
</tbody>
</table>

At the time this search was carried out, there were no relevant entries in the above databases.

Please note: There may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed with the Federal Court may not appear on the Tribunal’s databases.

Tribunal accepts no liability for reliance placed on enclosed information
The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representation, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

If you have any further queries, please feel free to contact the search team on the details listed below.

Susan Jenkins
National Native Title Tribunal | Sydney Office
Email nsw.enquiries@nntt.gov.au | Freecall 1800 640 501 | www.nntt.gov.au

Shared country, shared future.
30 November 2015

Ref number: D/00642
SF2015/006447

Dear [Name]

Receipt of registration to participate in Aboriginal cultural heritage assessment process for The Northern Road and Bringelly Road Interchange

Thank you for registering your interest with the Roads and Maritime Services to be involved in the Aboriginal cultural heritage consultation process for this project.

Shortly, you will receive an invitation to attend an Aboriginal focus group meeting. At this meeting, the Roads and Maritime Services will present an overview of the project; describe the statutory approvals process; outline critical milestones and invite you to discuss or present cultural information relevant to the Aboriginal objects or places that may be affected by the project.

You will receive a copy of a draft archaeological methodology which will outline how the Roads and Maritime proposes to manage its impact on Aboriginal objects and/or places. You are invited to review this methodology and provide comment.

As part of the consultation process, the Roads and Maritime is required to give Office of Environment and Heritage, OEH, and the relevant local Aboriginal land councils the names of all parties that have registered. If you do not want your name to be forwarded, please inform the contact person for this project.

Please note: OEH’s list of regional stakeholders is a list of groups, organisations or individuals who may hold cultural knowledge relevant to a proposal in a region. Consultation with Aboriginal people should not be confused with employment. Inclusion on the OEH’s list is not an automatic right to employment. It is the decision of the proponent on who they choose to engage to deliver services based on a range of considerations including skills, relevant experience, WHS considerations, staff availability, and adherence to Roads and Maritime Service Code of Conduct. To be clear, Roads and Maritime is under no obligation to employ Aboriginal people registered for consultation.
Roads and Maritime Service will make every effort to share services between stakeholders when employment is required, depending on meeting consideration criteria, workload, stakeholder availability, urgency, constraints, project and business needs.

Aboriginal community consultation will be undertaken in accordance with:

- The Office of Environment and Heritage (OEH) Aboriginal cultural heritage consultation requirements for applicants 2010; and

Please find enclosed information about the project to assist you with your understanding of potential impacts to Aboriginal cultural heritage.

The contact person for this project is Mr Mark Lester, Aboriginal Cultural Heritage Officer, Mark.W.LESTER@rms.nsw.gov.au or (02) 8849 2583.

For further information regarding the RMS Aboriginal Cultural Heritage Consultation and Investigation Procedure (PACHCI), please refer to the link below.


Yours faithfully

Mark Lester
Aboriginal Cultural Heritage Officer
30 November 2015

Ref number: D/00642
SF2015/006447

Dear Sir/Madam

Invitation to participate in heritage assessment process and to attend an Aboriginal focus group meeting for The Northern Road and Bringelly Road Interchange

Roads and Maritime Services are proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly as part of the $3.6 billion Western Sydney Infrastructure Plan to reduce future congestion and travel times and improve safety.

Roads and Maritime believes that the project may have an impact on Aboriginal cultural heritage. As a consequence, Roads and Maritime may require approvals under National Parks & Wildlife Act 1974 and/or the Environmental Planning & Assessment Act 1979 for this project.

As part of the consultation process, Roads and Maritime seeks cultural information to identify:
- Whether there are any Aboriginal objects of cultural value to Aboriginal people in the area of the proposed project.
- Whether there are any places of cultural value to Aboriginal people in the area of the proposed project. This includes places of social, spiritual and cultural value, historic places with cultural significance, and potential places/areas of historic, social, spiritual and/or cultural significance.

Roads and Maritime will be holding an Aboriginal focus group meeting to discuss the management of Aboriginal cultural heritage for this project at Parramatta RSL (Hunter Room) on Monday 7 December 2015, 10am to 2pm.

Also find enclosed a copy of the draft archaeological methodology and archaeological report (including addendum report) for your review and comment.

All comments on the cultural values of the study area, the archaeological methodology and/or archaeological report must be received by Monday 18 January 2016. Comments can be provided in writing, by phone or at the Aboriginal focus group meeting.
Aboriginal site officers may be required to undertake archaeological field work for this project. If you would like to nominate an Aboriginal person (including you) to be considered for a site officer role, please fill in and return the attached Aboriginal Site Officer Application Form.

Please advise Roads and Maritime whether any specific disability assistance may be required to assist in your attendance at the meeting, such as wheelchair access, hearing loops and any dietary requirements.

Please note that travel expenses will not be reimbursed for attendance at focus group meetings and site visits for this project.

To register your interest in attending the Aboriginal focus group meeting, you should write, email or phone: Mark Lester, Aboriginal Cultural Heritage Officer, Mark.W.LESTER@rms.nsw.gov.au or (02) 8849 2583.

For further information regarding the Roads and Maritime Aboriginal Cultural Heritage Consultation and Investigation procedure (PACHCI), please refer to the link below.


We look forward to your participation in the assessment of this project.

Yours faithfully

Mark Lester
Aboriginal Cultural Heritage Officer
22 April 2016

Ref number: D/00642
SF2015/006447

Dear Sir/Madam

**The Northern Road & Bringelly Road Interchange – updated Cultural Heritage Assessment Report**

On 4 April 2016 Roads and Maritime sent you an invitation to an Aboriginal focus group (AFG) meeting invitation for The Northern Road & Bringelly Road Interchange project, as well as a draft cultural heritage assessment (CHAR) report. Comments on the CHAR were due by Monday 2 May 2016.

The AFG was held on Wednesday 20 April 2016 and during a discussion it was found that an Aboriginal artefact site was inadequately assessed in the CHAR. The CHAR has since been revised and is attached to this email for your review. According to Office of Environment & Heritage and Roads and Maritime guidelines, the 28-day consultation period has been restarted.

Comments on the CHAR including draft methodology for further investigations are now due by Friday 20 May 2016, although any comments received prior to this date would be appreciated.

Please contact Mark Lester on 02 8849 2583 (email: Mark.W.LESTER@rms.nsw.gov.au) if you have any questions or concerns.

Yours faithfully

Mark Lester
Aboriginal Cultural Heritage Officer
Appendix D: PACHCI Stage 2 ASR
The Northern Road/Bringelly Road Grade Separated Interchange

PACHCI Stage 2 Archaeological Survey Report

Report to GHD October 2015
EXECUTIVE SUMMARY

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool.

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage has been engaged by GHD on behalf of Roads and Maritime to conduct an Aboriginal archaeological survey and assessment for the proposal in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). This heritage assessment forms part of the Review of Environmental Factors (REF) being prepared by GHD in accordance with the requirements of Part 5 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

This report assesses and documents the potential Aboriginal heritage impacts of the proposal. The aim of this report is to identify whether any Aboriginal objects or areas of archaeological potential would be impacted by the proposal, whether an Aboriginal Heritage Impact Permit (AHIP) would be required from the Office of Environment and Heritage (OEH), and to recommend if any further assessment and/or management or mitigation measures are required.

Overview of findings

- Ten properties within the study area were not accessible at the time of survey and have not been assessed.
- Five registered AHIMS sites are located within the study area.
- AHIMS site BRP-S-07 (AHIMS site 45-5-3894) was assessed by KNC (2011: 44) as demonstrating low archaeological significance. This site would be impacted in its entirety.
- The site boundary of BRP-IF-16 #45-5-3886 was extended to incorporate TRNU14 (#45-5-4150) by KNC. This was assessed by KNC (2011: 44) as demonstrating moderate archaeological significance. This site would be partially impacted on.
- Site TNRU6 (AHIMS site 45-5-4142) was assessed as demonstrating moderate archaeological significance. The site would be partially impacted on.
- Site TNRU7 was assessed as having low archaeological significance and would not be impacted on.
- Two areas of PAD were identified within the study area. TNRB PAD01 and TNRB PAD02 have been assessed as demonstrating moderate archaeological potential and are likely to demonstrate moderate-low archaeological significance.
- AHIMS site BRP-S-07 is currently subject to AHIP C0000436. A condition of that AHIP is that community collection of artefacts occurs before the site is impacted.
- AHIMS site BRP-IF-16/TRNU14 is currently subject to AHIP C0000436. A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
The Northern Road/ Bringelly Road Grade Separated Interchange

- AHIMS site TNRU6 is subject to an AHIP application for The Northern Road Stage 2. It is anticipated that a condition of that AHIP will be archaeological salvage excavation.
- The Northern Road Stage 2 Upgrade AHIP area includes portions of the proposal site boundary.

**Recommendations**

- Properties inaccessible at the time of survey should be investigated and incorporated into an addendum PACHCI Stage 2 report.
- Roads and Maritime confirm whether community collection of artefacts has occurred at BRP-S-07 as a condition of AHIP C0000436.
  - Where this has not occurred it will be necessary to conduct community collection of artefacts at BRP-S-07 as a condition of the existing AHIP where the site will be impacted by the proposal.
- Roads and Maritime confirm whether salvage excavation has occurred at BRP-IF-16/TNRU14 as a condition of AHIP C0000436.
  - Where salvage excavation has not occurred, it will be necessary to conduct salvage excavations as part of PACHCI Stage 4 as a condition of the existing AHIP where site BRP-IF-16/TNRU14 will be impacted by the proposal.
- Depending on the staging of The Northern Road upgrade works, Roads and Maritime may need to complete the current proposal under The Northern Roads Stage 2 AHIP in areas where they overlap.
- Prior to works commencing on the current project, Roads and Maritime will need to ensure that the conditions of The Northern Road Stage 2 AHIP have been met for site TNRU6.
- An AHIP will be required if the proposal is changed to include impacts to TNRU7.
- As Aboriginal sites would be impacted by the proposal, Stage 3 PACHCI would be implemented. Stage 3 PACHCI tasks would include comprehensive Aboriginal consultation and preparation of a Cultural Heritage Assessment Report (CHAR).
- As newly identified PAD TNRB PAD01 and TNRB PAD02 may be impacted by the proposal, test excavations under the PACHCI Stage 3 and OEH Code of practice would be undertaken within the portions to be impacted. Test excavations would confirm the likely archaeological significance of TNRB PAD01 and PAD02.
- If Aboriginal objects are located at any stage outside areas where test excavations are being undertaken, or outside areas for which an AHIP is granted, work would stop immediately and the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed. If human remains are located during any works associated with the project within the study area the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed.
- If the project design is changed and areas not surveyed are to be impacted, or other Aboriginal sites not identified are to be impacted, further archaeological assessment would be required.
• No impacts to identified Aboriginal sites may occur without an AHIP. Impacts to PAD would be avoided prior to the test excavation program commencing. This recommendation applies to geotechnical testing.
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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool (Figure 1).

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage has been engaged by GHD on behalf of Roads and Maritime to conduct an Aboriginal archaeological survey and assessment for the proposal in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). This heritage assessment forms part of the Review of Environmental Factors (REF) being prepared by GHD in accordance with the requirements of Part 5 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

This report assesses and documents the potential Aboriginal heritage impacts of the proposal. The aim of this report is to identify whether any Aboriginal objects or areas of archaeological potential would be impacted by the proposal, whether an Aboriginal Heritage Impact Permit (AHIP) would be required from the Office of Environment and Heritage (OEH), and to recommend if any further assessment and/or management or mitigation measures are required.

1.2 Study area and scope

The proposal site boundary supplied by GHD is shown in Figure 1. It is understood that the proposal site boundary represents the likely maximum extent of the road design and associated stockpile compound areas. For the purpose of this report, the proposal site boundary is referred to as the ‘study area’.

This Aboriginal archaeological survey complies with Stage 2 of the Roads and Maritime PACHCI and the OEH Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (referred to in this document as ‘the OEH Code of practice’). If Aboriginal sites or archaeological deposits were to be impacted by the proposal, Stage 3 PACHCI would be initiated by Roads and Maritime.

1.3 The Proposal

The grade separated interchange, which would involve The Northern Road passing under Bringelly Road, would be located about 300 m east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The proposal also involves modifications to the existing intersection. The key features of the proposal are shown in Figure 1 and include:

- Widening and upgrading about 400 m of Bringelly Road, between Kelvin Park Drive and Greendale Road, to provide:
- Two 3.5 m wide traffic lanes in each direction between Kelvin Park Drive and The Northern Road/Bringelly Road interchange, with wide central medians to allow for a future third traffic lane in each direction
- Two 3.5 m wide traffic lanes in each direction on the western side of the interchange, transitioning to one lane in each direction to tie in to the existing intersection and Greendale Road
- Two metre wide shoulders in each direction
  - Constructing a new section of The Northern Road, to the east of the existing alignment, between about 200 m south of Robinson Road and the southern abutment of the bridge over Thompsons Creek. The new section, which would pass beneath Bringelly Road, would be about one kilometre long and about 50 m wide (including embankments), and would include:
    - Two 3.5 m wide traffic lanes in each direction
    - Four metre wide shoulders connecting to the on and off ramps of the interchange, allowing for the future provision of bus lanes
    - An underpass about 60 m long beneath the upgraded section of Bringelly Road
    - 2.5 m wide shoulders along The Northern Road under the interchange for a length of about one kilometre
    - A wide central median to allow construction of a future third traffic lane in each direction
  - Providing a new signalised intersection on Bringelly Road over The Northern Road, with turning movements provided in all directions
  - Providing dual right turn movements in all directions to and from The Northern Road and Bringelly Road, and dedicated left turn lanes in all directions
  - Providing bus service facilities by:
    - Retaining the bus stops on the existing The Northern Road
    - Relocating bus stops on Bringelly Road to suit the interchange
    - Providing two new bus stops on The Northern Road northbound and southbound interchange on ramps
    - Providing a bus only lane for buses travelling north and south along The Northern Road at the traffic lights on Bringelly Road
  - Providing three metre wide shared paths for pedestrians and cyclists
  - Providing a new road connection between Robinson Road and The Northern Road via an extension of the realigned Belmore Road intersection, and building a cul-de-sac at the western end of Robinson Road
  - Converting the existing section of The Northern Road (to the west of the new section) to a ‘no through road’, by providing cul-de-sacs at both the northern (at Thames Road) and southern ends (near Robinson Road).

It is anticipated that construction of the proposal would commence in late 2016 / early 2017 and would be open to traffic by the end of 2019.
1.4 Scope of this assessment

The purpose of this report is to document the results of the assessment of the potential Aboriginal heritage impacts of the operation and construction of the proposal. The report supports the REF for the proposal. The scope of assessment included:

- An overview of the Aboriginal history of the study area
- Identification of Aboriginal sites and areas of archaeological potential within the study area
- A site survey
- Assessment of the significance of identified Aboriginal sites
- Conclusions and recommendations including proposed mitigation strategies for the management of Aboriginal sites and areas of archaeological potential.

1.5 Report structure

- **Section 2 – Statutory requirements**: outlines relevant legislation for this assessment
- **Section 3 – Environmental context**: provides a succinct overview of the environmental context of the proposal site
- **Section 4 – Aboriginal historical and archaeological context**: Provides an overview of the Aboriginal history of the area and the results of previous archaeological investigations
- **Section 5 – Predictions**: provides a predictive model for the proposal site
- **Section 6 – Field methods**: methodology for the site inspection
- **Section 7 – Survey results**: describes the site survey conducted for this assessment
- **Section 8 – Desktop discussion of inaccessible properties**: provides a desktop assessment of those properties that were inaccessible for the current investigation
- **Section 9 – Analysis and discussion**: provides a discussion of the results of the site survey
- **Section 10 – Significance assessment**: provides an assessment of archaeological significance
- **Section 11 – Impact assessment**: assesses potential impacts to identified Aboriginal sites and areas of archaeological potential
- **Section 12 – Management and mitigation measures**: outlines relevant management and mitigation measures for the proposal
- **Section 13 - Test excavation methodology**: provides a methodology for test excavation of TNRB PAD01 and TNRB PAD02
- **Section 14 – Conclusions and recommendations

1.6 Limitations and constraints

At the time of reporting ten properties within the study area were not accessible for inspection. Archaeological assessment of these properties would be undertaken once the access is available prior to works commencing on site. A discussion of the archaeological potential of each of those properties, and a map showing their location, is included in Section 8.
1.7 Report authorship and acknowledgements

This report was prepared by Claire Rayner, Archaeologist at Artefact Heritage, with contributions by Josh Symons, Senior Archaeologist. Dr Sandra Wallace, Principal Archaeologist at Artefact Heritage, provided review, management input and advice.

1.8 Aboriginal community involvement

Aboriginal consultation has been conducted in accordance with Stage 2 of the Roads and Maritime PACHCI. The study area falls within the boundaries of both Tharawal Local Aboriginal Land Council (TLALC) and Gandangara Local Aboriginal Land Council (GLALC). The Roads and Maritime Aboriginal cultural heritage advisor (ACHA) conducted the consultation with TLALC and GLALC. The consultation involved the participation of Aboriginal site officers from TLALC and GLALC during the survey. The second and third day of survey was confined to the south of Bringelly Road within the TLALC boundaries. When received, a copy of the TLALC and GLALC survey reports will be attached as an Appendix to this report. A draft version of this document was forwarded by Roads and Maritime to TLALC and GLALC for review and comment.
Figure 1: Key Features of the proposal and study area boundary (map provided by GHD)
2.0 STATUTORY REQUIREMENTS


The NPW Act, administered by the OEH provides statutory protection for all Aboriginal ‘objects’ (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for ‘Aboriginal Places’ (areas of cultural significance to the Aboriginal community) under Section 84.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.

The NPW Act was amended in 2010 and as a result the legislative structure for seeking permission to impact on heritage items has changed. A Section 90 permit is now the only AHIP available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

As part of the administration of Part 6 of the Act, OEH regulatory guidelines on Aboriginal consultation are in place, which are outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010). Guidelines are also in place for the processes of due diligence as outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (2010) in accordance with the 2010 amendment to the Act.

There are no gazetted Aboriginal Places within the proposal areas. All Aboriginal objects, whether recorded or not are protected under the Act.

2.2 Native Title Act (1994)

The NSW *Native Title Act 1994* was introduced to work in conjunction with the Commonwealth *Native Title Act 1993*. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

A search of the National Native Tribunal applications register was conducted on 20 May 2015. There are no Native Title claims registered within the study area.

2.3 Aboriginal heritage investigation guidelines

The current investigation adheres to Stage 2 of the Roads and Maritime PACHCI and the OEH Code of practice. Stage 2 of the PACHCI involve the identification of Aboriginal sites and areas of archaeological potential within a particular study area. The investigation involves an archaeological survey conducted with representatives of the local Aboriginal land council. Where it is identified in the PACHCI Stage 2 investigation that Aboriginal sites or areas of archaeological potential will be impacted, Roads and Maritime commences Stage 3 of the PACHCI. Stage 3 includes comprehensive Aboriginal stakeholder consultation, archaeological test excavation (where required), an Aboriginal Focus Group (AFG) meeting, and preparation of an Aboriginal Cultural Heritage Assessment Report (CHAR) to support an AHIP application or SSI approvals. Stage 4 of the PACHCI involves any mitigation measures required following approvals, such as archaeological salvage excavation or surface collection prior to impacts.
3.0 ENVIRONMENT CONTEXT

3.1 Geology

The study area is located within the Cumberland Plain, which is typified by an undulating landscape of rolling hills and prominent rises. The underlying geology of the study area consists of late Triassic period Bringelly shale deposits belonging to the Wianamatta Group (Clark and Jones 1991). These deposits consist predominantly of claystone and siltstone with thin laminate horizons. Areas of sandstone are minor and sporadic within the Bringelly formation. However, sandstone is prominent along north to south trending flat topped ridgelines from Minchinbury through Cecil Park to Leppington and from Orchard Hills through Luddenham and Bringelly to Cobbitty (Clark and Jones 1991).

3.2 Soils

The primary soil type across the study area is the Blacktown soil landscape. The Blacktown soil landscape is typified by shallow duplex soils over a clay base. The biomantle is underlain by heavily textured subsoil with a depth of generally less than a metre, and most commonly less than 30 cm. The archaeological implications of this soil landscape are that intact deposits are likely to occur in the A horizon, which is generally up to 30 cm depth, although stratigraphic potential would be limited.

3.3 Hydrology

The study area runs parallel to South Creek. Various tributaries of this watercourse traverse the study area. The northern end of the study area intersects with Thompsons Creek. The Nepean River runs 10 km to the west of the study area.

3.4 Natural resources

The study area would once have been covered by open Cumberland Plain Woodland, which is typical of the Wianamatta Group shale geology. Tree species would have included Forest Red Gum (E. tereticornis) and Grey Box (E. moluccana). Honey Myrtle (Melaleuca decora) and Prickly Leaf Paperbark (Melaleuca nodosa) would have been present on the floodplain at Bells Creek (Benson and Howell 1990).

Aboriginal people were highly mobile hunter-gatherers utilising different landform units and resource zones. Different resources may have been available seasonally, necessitating movement or trade (Attenbrow 2010: 78). Aboriginal people hunted kangaroo and wallaby and snared possums for food and skins. In marine or estuarine environments Aboriginal people caught fish and collected shellfish. There are many accounts by Europeans of Aboriginal people in canoes on rivers and the ocean, fishing and cooking the fish on small fires within the vessels (e.g. Collins 1798).

Plants were an important source of nutrition. Common edible species being Macrozamia, a cycad palm with poisonous seeds that were detoxified and ground into a paste and Xanthorrhoea, or grass tree. The grass tree nectar was a high-energy food, the resin a strong hafting glue, and the flower spikes used for spear barbs. From observations by early European colonists, only about twenty species of plant are identified as being used for food or manufacture by Aboriginal people of the Sydney region (Attenbrow 2010:41). It would be likely that this is only a fraction of what was actually used.

There are no known suitable stone sources for artefact manufacture within the study area (JMCDCHM 2007:17). Resources for tool manufacture would have been brought in from areas such as Mulgoa.
Creek, about 10 km north of the study area, or from the Plumpton Ridge and Marsden park silcrete deposits 20 km north-east of the study area. Raw materials such as silcrete and tuff cobbles are also found in the Nepean River gravels and have been recorded at the confluence of South Creek and Badgerys Creek 10 km north-east of the study area. Quartz pebbles that occur naturally across some portions of the local area would also have been utilised for stone tool production.

3.5 Land use history

The study area has been heavily impacted by agricultural use and semi-rural development. Some areas have recently been developed as residential estates, or are in the process of such changes.

The Bringelly area was predominately part of a wider agricultural district until very recently and even now agricultural activities play a major role in the local area. During the 1840s, wheat cultivation was a major industry in the district and several flour mills were established to process this wheat (Atkinson 1988:31). However, in the early 1860s, an outbreak of rust destroyed the wheat industry and landholders diversified into other avenues of agricultural production (Atkinson 1988:95). These included sheep, cattle, dairying, crops such as oats, and fruit and vegetable cultivation. During the 1930s depression, many of the large properties in the area were subdivided and smaller farms for orchards or poultry became common (Willis n.d.).

Since the 1950s, the development of the region has been strongly affected by state government planning policies. The 1968 Sydney Region Outline Plan encouraged the growth of Bringelly (Willis n.d.) and from the 1970s, urbanisation in the area rapidly increased. The study area is currently within the South West Priority Growth Area.
4.0 ABORIGINAL HISTORICAL AND ARCHAEOLOGICAL CONTEXT

4.1 Aboriginal material culture

Aboriginal people have lived in the Sydney area for more than 20,000 years. The oldest securely dated site in the greater Sydney region is 17,800 years before present (yBP), recorded in a rock shelter at Shaw’s Creek (Nanson et al 1987). Evidence of Aboriginal occupation has been found dated to 50-60,000 yBP at Lake Mungo in NSW, so it would be likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates available at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result, the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time.

Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000 yBP in the Sydney region (Attenbrow 2010:102). It has been argued that these changes in material culture were an indication of changes in social organisation and behaviour.

The Eastern Regional Sequence was first developed by McCarthy in 1948 to explain the typological differences he was seeing in stone tool technology in different stratigraphic levels during excavations such as Lapstone Creek near the foot of the Blue Mountains (McCarthy 1948). The sequence had three phases that corresponded to different technologies and tool types (the Capertian, Bondaian and Eloueran). The categories have been refined through the interpretation of further excavation data and radiocarbon dates (Hiscock & Attenbrow 2005, JMcDCHM 2005). It is now thought that prior to 8,500 yBP tool technology remained fairly static with a preference for silicified tuff, quartz and some unheated silcrete. Bipolar flaking was rare with unifacial flaking predominant. No backed artefacts have been found of this antiquity. After 8,500 yBP silcrete was more dominant as a raw material, and bifacial flaking became the most common technique for tool manufacture. From about 4,000yBP to 1,000yBP backed artefacts appear more frequently. Tool manufacture techniques become more complex and bipolar flaking increases (JMcD CHM 2006). It has been argued that from 1,400 to 1,000 years before contact there is evidence of a decline in tool manufacture. This reduction may be the result of decreased tool making, an increase in the use of organic materials, changes in the way tools were made, or changes in what types of tools were preferred (Attenbrow 2010:102). The reduction in evidence coincides with the reduction in frequency of backed blades as a percentage of the assemblage.

After European colonisation Aboriginal people of the Sydney Basin often continued to manufacture tools, sometimes with new materials such as bottle glass or ceramics. There are a number of sites in Western Sydney where flaked glass has been recorded, for example at Prospect (Ngara Consulting 2003) and Oran Park (JMcD CHM 2007).

4.2 Aboriginal ethno-historic context

Aboriginal people traditionally lived in small family or clan groups that were associated with particular territories or places. The language group spoken in the Narellan/Bringelly area is thought to have been Dharawal (Tindale 1974). The Dhrawal language group is thought to have extended from the
The Northern Road/ Bringelly Road Grade Separated Interchange

Shoalhaven River, north to Botany Bay and then inland to Camden. Some sources also describe the Narellan area as being home to the Murringong people, speakers of the Darug language group (Mathews and Everitt 1900:265).

There is some evidence that Aboriginal people around Narellan spoke a distinctly separate language and their tribal area was known as Cubbit-Barta after its white pipe clay (Russell 1914). Government records from the 1830s and 1840s identify an Aboriginal group known as the Cobbitt Barta as associated with the Camden area (JMcDCHM 2007:21).

Historical records show that Gandangara people visited the Narellan/Bringelly area. It is not known whether these visitations represented recent displacement patterns as a result of European colonisation or were part of a longer term interaction with the Dharawal (Karskens 2010:496).

Laila Haglund has suggested that at contact the area would have been near the border of the Dharawal, Darug and Gandangara territories and that the Narellan Valley may have been part of a ‘travel corridor’ facilitating movement between the northern Cumberland Plain and the Illawarra (JMcDCHM 2007:21 after Haglund 1989).

Historical observations suggest that Aboriginal people lived in the Narellan/Bringelly area in relatively large numbers. Lieutenant Dawes observed that a number of bark huts, about seventy in all, located close to the river between the farms of Mr Wentworth and Mr Campbell at Narellan (Barton 1996).

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region, including Dharawal, Darug and Gandangara speakers. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture, timber, fishing grounds and water sources. Overall the devastation of the Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic over half of the Aboriginal people of the Sydney region died. The disease spread west to the Aboriginal groups of the Cumberland Plain and north to the Hawkesbury. It may have in fact spread much further afield, over the Blue Mountains (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely before Europeans could observe them, or record their clan names (Karskens 2010:425).

The British initially thought that Aboriginal people did not live inland, but were confined to the coast taking advantage of the abundant marine resources available. The first major expeditions into the interior did not witness any Aboriginal people, but evidence of their existence was noted. In April 1788 Governor Philip led an expedition west to Prospect Hill. It was noted, ‘…that these parts are frequented by the natives was undeniably proved by the temporary huts which were seen in several places. Near one of these huts, the bones of kangaroo were found, and several trees were seen on fire’ (Phillip 1789).

In 1789 Captain Watkin Tench led an expedition to the Nepean River. He noted that:

> Traces of the natives appeared at every step, sometimes in their hunting huts which consist of nothing more than a large piece of bark bent in the middle and opened at both ends, exactly resembling two cards set up to form an acute angle; sometimes in marks on trees which they had climbed; or in squirrel-traps….We also met with two old damaged canoes hauled up on the beach. (Tench 1789)

It wasn’t until rural settlement began in the western Cumberland Plain, around 1791 that the colonists and Aboriginal peoples came face to face in that area. Relations quickly disintegrated, and tensions
over land and resources intensified. Governor King sanctioned the shooting of Aboriginal people in a General Order made in 1801 (Kohen 1986:24). A sustained drought during 1814 and 1815, and continued disenfranchisement led to tensions between farmers and Aboriginal people who remained to the south-west of Sydney. Aboriginal people were accused of stealing corn and potatoes and spearing cattle. A number of farmers were killed on their properties. In a dispatch Governor Macquarie wrote that ‘The Native Blacks of this country…have lately broken out in open hostility against the British Settlers residing on the banks of the River Nepean near the Cow Pastures’. Aboriginal people were targeted and it was ordered that Aboriginal men be strung from trees when they were killed as an example (Turbet 2011:234). Intermittent killings on both sides continued for over 15 years, including the Appin massacre and attacks at South Creek in 1816 (Kohen 1986:23, Karskens 2010:225).

Although tensions existed between Aboriginal people and Europeans on the Cumberland Plain, a number of Aboriginal families continued to live semi-traditional lives in the area. The first parcels of land granted to an Aboriginal person were to the north of the study area between Richmond Road and Plumpton Ridge along Bells Creek. Governor Macquarie granted this land to Colebee and Nurragingy in 1819. Colebee did not stay long but Nurragingy lived on the land and it remained in the family until 1920 when it was resumed by the Aboriginal Protection Board (Kohen 1986:27).

The government policy of removal of Aboriginal children from their parents in order to assimilate them into white society began fairly early on in the colony’s history, and was epitomised by the development of the Native Institution at Parramatta in 1814.

This facility was moved to the Black Town settlement in 1823, opposite Colebee and Nurragingy’s land grant. It was closed in 1829 and the land was used for farming, but the site remains significant for its historical, archaeological and social values (GML 2007:36).

Into the nineteen and twentieth centuries descendants of Darug language speakers continued to live in western Sydney along with Aboriginal people from other areas of NSW.

4.3 Registered Aboriginal sites in the study area

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on the 26 June 2015 for sites registered within the following coordinates:

| GDA 1994 MGA 56 | 289876 – 291603E |
| Number of sites | 23 |
| AHIMS Search ID | 179293 |

The distribution of registered sites is shown Table 1. There are 23 registered sites located within the search area. The frequency of site features are summarised in Table 1 below.

<table>
<thead>
<tr>
<th>Site Feature</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefact</td>
<td>19</td>
<td>82%</td>
</tr>
<tr>
<td>Artefact Scatter</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>Potential Archaeological Deposit</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>
Of the 23 previously recorded sites in the study area, artefacts are the predominant site feature (n=22, 95%). Of these three are recorded as scatters (13%). There is one scarred tree recorded to the south of the study area.

The majority of sites are associated with The Northern Road and Bringelly Road. This is likely to reflect the focus of previous studies on road corridors and the exposures that often occur in these areas.

Of the sites identified by the AHIMS extensive search, there are three sites located within the study area (see Table 2). These sites were visited during the current survey and will be discussed further in Section 7.3.1.

Table 2: Registered sites located within the study area

<table>
<thead>
<tr>
<th>AHIMS #</th>
<th>Name</th>
<th>Site Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-5-3886</td>
<td>BRP-IF-16</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-3894</td>
<td>BRP-S-07</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-4150</td>
<td>TNRU14</td>
<td>Artefact</td>
</tr>
<tr>
<td>45-5-4142</td>
<td>TNRU6</td>
<td>Artefact Scatter</td>
</tr>
<tr>
<td>45-5-4143</td>
<td>TNRU7</td>
<td>Artefact Scatter</td>
</tr>
</tbody>
</table>
Figure 2: AHIMS extensive search results
4.4 Overview of previous archaeological investigations

There have been a number of major archaeological investigations that have included sections of the study area. These have generally been associated with large land releases and upgrades of The Northern Road and Bringelly Road. The following discussion takes into account the most recent and relevant studies and aims to provide contextual information for the current study. There has been a recent subsurface excavation program conducted along the Bringelly Road corridor for Roads and Maritime, with the results of that excavation upcoming.

Harrington Park and Mater Dei rezoning project (Australian Museum Business Services 2006)

The Harrington Park and Mater Dei study area extends along The Northern Road from Harrington Park (seven kilometres south of the current study area) to its intersection with Cobbitty Road.

The 2006 study of the Harrington Park and Mater Dei development areas followed on from a Phase 1 preliminary study which identified the need for further investigation (Central West Archaeological and Heritage Services 2004). The Phase 1 study identified 16 Aboriginal sites, including five possible scarred trees. The Phase 2 investigations identified a further 19 sites. A large portion of the study area was assessed as having a medium to high archaeological sensitivity with generally low disturbance levels. It was recommended that large sections of the precinct should be zoned for conservation with 60 per cent of the recorded sites within the conservation areas.

Archaeological investigation of the Oran Park precinct in the South West Priority Growth Area (Jo McDonald Cultural Heritage Management 2007).

The Oran Park precinct is located approximately six kilometres south of the study area. The survey undertaken by Jo McDonald Cultural Heritage Management (JMcD CHM) aimed to locate Aboriginal sites within the precinct and recommend appropriate conservation or mitigation measures. A total of 44 sites and four areas of archaeological potential were located during the survey with several sites having very high densities of artefacts. Site OPR-15 comprised of 193 recorded artefacts located on the banks of a minor tributary in the north-eastern section of the precinct.

The majority of the area along The Northern Road was assessed as having a low/moderate archaeological sensitivity with only 15 per cent of the total precinct assessed as having a high archaeological sensitivity.

The Northern Road upgrade preliminary Aboriginal archaeological assessment (Biosis 2008).

The Biosis study assessed the area of the proposed upgrade of The Northern Road from the Old Northern Road, Narellan to Bringelly/Greendale Road at Bringelly. The study involved a desktop assessment and a site survey. The field survey focused on creeks, drainage features and prominent rises, and any previously recorded sites within the corridor. Although the ground surface visibility throughout the study area was low, a total of eight Aboriginal sites and two areas of potential archaeological deposit were identified during the survey. Two of these sites were scarred trees, one was an artefact scatter and five were isolated finds.

Oran Park and Turner Road Precincts Aboriginal heritage investigation for proposed Infrastructure service routes and site options (Kelleher Nightingale Consulting KNC 2008).

This study involved the Aboriginal heritage assessment of proposed infrastructure service routes and sites under consideration for the early release areas of Oran Park and Turner Road Precincts. The survey of these routes located seven new Aboriginal sites, and five areas of potential archaeological deposit.
The assessment recommended that there were no constraints on development within the road corridor on either side of The Northern Road due to high levels of disturbance. It was recommended that a number of sites may be impacted by the proposed works outside the road corridor and within the Oran Park and Turner Road precincts. A Section 90 AHIP was recommended for these sites if they were to be impacted by the Oran Park and Turner Road proposal.

Archaeological excavations at the Oran Park and Turner Road precincts (AECOM 2009).

The archaeological test excavations at Oran Park involved a program of test pitting and open area excavations. Three hundred and forty test pits were excavated across a variety of landform units, with 160m² of open area excavated during salvage excavations. A total of 4780 artefacts were recovered from Phase 1 and Phase 2 excavations, with around three quarters of the artefacts made of silcrete. Approximately five per cent of the assemblage comprised of tools or cores including backed artefacts and scrapers.

The results of the excavations indicated a low density spread of archaeological material across the precinct which is argued to reflect a ‘pre-contact landscape of extensive but low intensity Aboriginal activity with evidence of strategic defensive positioning of campsites within a cultural interaction zone between different language groups’ (AECOM 2009:ES1).

Bringelly Road upgrade Camden Valley Way to The Northern Road Aboriginal cultural heritage assessment (Kelleher Nightingale Consulting KNC 2011).

The KNC study followed on from the Austral Archaeology preliminary investigation for the Bringelly Road upgrade route. There were 44 Aboriginal sites located along the Bringelly Road corridor during the KNC and Austral site surveys. The majority of artefacts recorded were made of silcrete, mudstone or tuff. Artefacts were predominantly flakes or flake fragments, with a smaller numbers of cores, flaked pieces and blades.

One of the sites recorded by KNC is located within the current study area. BRP-IF-16 (# 45-5-3886) is located within 993 Bringelly Road, 160 m east of the Bringelly Road and The Northern Road intersection. This site was assessed as containing moderate archaeological potential. The site was considered to represent the remnant portions of larger and more disturbed areas with a moderate potential for subsurface material. This site was recommended for salvage excavation if it was to be significantly impacted by the proposed works.

The Northern Road upgrade from The Old Northern Road, Narellan to Mersey Rd, Bringelly, Aboriginal Survey Report (Artefact Heritage 2012)

Artefact Heritage conducted an Aboriginal archaeological survey of The Northern Road between The Old Northern Road and Mersey Road. Portions of this study area intersect with the current study area. The assessment identified 23 Aboriginal sites within the study area, seven Aboriginal sites 20 m outside the study area and two new sites recorded more than 50 m outside the study area.

The majority of the sites identified were recorded as isolated finds or artefact scatters. There were two scarred trees recorded along The Northern Road corridor and one area of Potential Archaeological Deposit (PAD) was also recorded. Of the isolated finds recorded during the survey one of these, TNRU14 was recorded in association with BRP-IF-16 (# 45-5-3886) originally recorded by KNC in 2011. The assessment recommended salvage excavation for five sites recorded within the study area as moderately significant including BRP-IF-16.
5.0  PREDICTIONS

5.1  Previous predictive models for the area

The exact nature of Aboriginal land use patterns in the vicinity of the study area before colonisation is unknown. Assumptions about land use patterns are made on the basis of archaeological information gained from the local area, from observations made by the Europeans after settlement of the area, and from information known about available natural resources.

As Aboriginal people were mobile hunter-gatherers, it would be likely that they moved across the landscape between resources. It would also be likely that movement was related to socio/cultural factors such as gatherings and ceremonial obligations. Campsites would have provided temporary residences such as bark structures. It is difficult to ascertain whether a campsite existed at a given location, but correlations between stone artefact density and campsites are often assumed. While it would be likely that knapping would have occurred at a campsite, it would also be likely that knapping would have occurred during movement across the landscape, as tools were prepared or repaired during hunting and gathering activities.

Archaeological data gathered in the locality suggests that artefacts would be found across the landscape in low densities. Higher densities would be found in certain locations, often close to permanent water, or on ridgelines (JMcDCHM 2007, AECOM 2009).

5.2  Predictive model for the study area

Beth White and Jo McDonald have developed a model for site prediction on the Cumberland Plain in their discussion on the nature of Aboriginal site distribution as interpreted through lithic analysis of excavated sites in the Rouse Hill Development Area (RHDA) (White and McDonald 2010). This analysis brings together data from 631 dispersed 1m x 1m test squares from 19 sample areas, which yielded 4,429 stone artefacts in total. The findings of this study generally support earlier models that predicted correlations between proximity to permanent water sources and site location, but also highlighted the relationship between topographical unit and Aboriginal occupation.

The major findings of the study were that artefact densities were most likely to be greatest on terraces and lower slopes within 100m of water. The stream order model was used to differentiate between artefact densities associated with intermittent streams as opposed to permanent water. It was found that artefacts were most likely within 50-100m of higher (4th) order streams, within 50m of second order streams, and that artefact distribution around first order streams was not significantly affected by distance from the watercourse (White and McDonald 2010: 33). Overall landscapes associated with higher order streams (2nd order or greater) were found to have higher artefact densities, higher maximum densities, and more continuous distribution than lower order intermittent streams. The analysis also concluded that while there were statistically viable correlations that demonstrated a relationship between stream order, land form unit and artefact distribution across the RHDA, the entire area should be recognised as a cultural landscape with varied levels of artefact distribution (White and McDonald 2010: 37). This predictive model can be transferred to other areas of the Cumberland Plain, especially those on shale soil geology, as landscape, soils and artefacts patterning are similar throughout the region.

The results of excavations at the Oran Park precinct have been argued to suggest that correlations between stream confluence, or stream order, and artefact density do not hold for this area. Instead it was argued that ‘the evidence supports a more even spread of archaeological deposit comprising predominantly low density artefact distribution with occasional campsite concentrations in areas with
good outlook over the main valley up to locations anywhere to several hundred metres away from the watercourses’ (AECOM 2009: 50).

The predictive model used in the current study comprises a series of statements about the nature and distribution of evidence of Aboriginal land use that is expected in the study area. These statements were based on the information gathered regarding:

- Landscape context and landform units
- Ethno-historical evidence of Aboriginal land use
- Distribution of natural resources
- Results of previous archaeological work in the vicinity of the study area
- Predictive modeling proposed in previous investigations.

Predictive statements were as follows:

- Stone artefacts/artefact scatters would be the most likely Aboriginal site type. Previous studies in the region, as discussed above, have found that stone artefacts are the most common site type
- Scarred trees are known to exist within the Camden region and where there is remnant old growth vegetation remaining there is a possibility of scarred trees being retained
- Artefact densities would be generally low. Previous studies in the region, and close to the study area such as AECOM 2009 have found that artefacts generally occur in a low density across the landscape with some isolated areas of higher density
- Silcrete, silicified tuff and quartz would be the dominant raw materials. Previous studies have indicated that these raw materials are most common on the Cumberland Plain, including the locality of the study area
- *In situ* artefacts would be located in areas of least ground disturbance
- Artefacts may be located on terraces and slopes within 100 m of water, or on areas with a good outlook over the main valley up to several hundred metres away from water, although it would be likely there would be a fairly even spread of archaeological material across the landscape. This prediction is based on the models developed by White and McDonald, and AECOM, as discussed above.
6.0 FIELD METHODS

6.1 Site definition

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

OEH guidelines state in regard to site definition that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location
- Obvious physical boundaries where present, e.g. mound site and middens (if visibility is good), a ceremonial ground
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study an Aboriginal site was defined by recording the spatial extent of visible traces or the direct evidence of their location.

6.2 Survey methodology and limitations

A survey of the study area was conducted over three days by Josh Symons (Artefact Heritage), Claire Rayner (Artefact Heritage), (TLALC) and (GLALC) on 15 July, 24 July and 30 September 2015. The survey was undertaken in accordance with Stage 2 of the Roads and Maritime PACHCI and the OEH Code of practice.

The study area was divided into four survey units based on landform units. All survey units were covered on foot. Parts of the study area have been previously assessed and have existing AHIPs in place. These areas were visited during the current survey. Access to some of the properties was restricted at the time of survey. These properties have been excluded from the following survey area discussion.

All exposed areas within survey units were targeted for stone artefacts or other traces of Aboriginal occupation. Mature trees were inspected for evidence of cultural scarring or carving. Previously recorded sites within the study area were revisited. Dense grasses covered the majority of the study area making the relocation of sites difficult.

A handheld Global Positioning System (GPS) was used to track the path of the surveyor, relocate previously recorded sites and to record the geographical coordinates of features within the study area. Aerial photographs and topographic maps were carried by survey team members.

A photographic record was kept of all sections of the study area. Photographs were taken to represent the landform unit, vegetation communities, objects of interest and levels of disturbance. Scales were used for photographs where appropriate.
7.0 SURVEY RESULTS

7.1 Effective survey coverage

The survey covered all four survey units. Areas of high exposure were targeted. The coordinates of all previously recorded sites within the study area were visited. The area covered by the survey is illustrated in Figure 3. The effective survey coverage is summarised in Table 3 and the landform survey coverage is summarised in Table 4.

Table 3: Effective survey coverage

<table>
<thead>
<tr>
<th>Survey Unit</th>
<th>Landform</th>
<th>Survey unit area (m²)</th>
<th>Visibility (%)</th>
<th>Exposure (%)</th>
<th>Effective Survey Coverage (m²)</th>
<th>Effective Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flat</td>
<td>14,729</td>
<td>5%</td>
<td>10%</td>
<td>73.64</td>
<td>0.5</td>
</tr>
<tr>
<td>2</td>
<td>Slope</td>
<td>24,254</td>
<td>10%</td>
<td>10%</td>
<td>242.54</td>
<td>1</td>
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<tr>
<td>3</td>
<td>Crest</td>
<td>47,025</td>
<td>10%</td>
<td>10%</td>
<td>470.25</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>slope</td>
<td>41713</td>
<td>10%</td>
<td>10%</td>
<td>417.13</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4: Landform survey coverage

<table>
<thead>
<tr>
<th>Landform</th>
<th>Landform area (m²)</th>
<th>Area effectively surveyed (m²)</th>
<th>% of landform surveyed</th>
<th>Number of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>14,729</td>
<td>73.64</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>Slope</td>
<td>65,967</td>
<td>659.67</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Crest</td>
<td>47,025</td>
<td>470.25</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
Figure 3: Survey units
7.2 Survey observations

7.2.1 Survey unit 1

Survey unit 1 extends south from the northernmost boundary of the study area to the southern boundary of 1250 The Northern Road. The survey unit is situated upon a flat landform adjacent to Thompsons Creek. The survey unit includes the following properties:

- 1262 The Northern Road
- 1254 The Northern Road
- 1250 The Northern Road.

Visibility within the survey unit was generally low, impeded by structures, sealed roads and driveways and vegetation. Exposures were inspected for Aboriginal objects and mature trees were inspected for evidence of scarring or carving. Disturbance was evident throughout the study area related to the construction of houses, gardens and The Northern Road. The area bordering Thompsons Creek was disturbed to a lesser extent. There were no Aboriginal sites or objects identified within survey unit 1.

![Plate 1: Low visibility in survey unit 1](image1)

![Plate 2: Low visibility due to dense grasses in survey unit 1](image2)

![Plate 3: Area of exposure, survey unit 1](image3)

![Plate 4: Mature trees, survey unit 1](image4)
7.2.2 Survey unit 2

Survey unit 2 is located on a slope landform, sloping north towards Thompsons Creek. This survey unit encompasses the following properties:

- 1222 The Northern Road
- 1200 The Northern Road
- 1250 Bringelly Road
- Part of 1232 Bringelly Road
- 16 Medich Place
- 23 Medich Place
- 25 Medich Place.

This area consists of mainly cleared fields that are currently used for grazing animals (Plate 6). The area features dense grass cover impeding visibility. Areas of exposure were inspected for Aboriginal objects although none were identified. There were no mature trees located within the survey unit. Disturbance was evident within the survey unit in relation to the construction of houses, gardens, swimming pools and sheds (Plate 7).
7.2.3 Survey unit 3

Survey unit 3 is located on a crest landform. It includes the following properties:

- Part of 1250 Bringelly Road
- 1232 Bringelly Road
- 1230 Bringelly Road
- 993 Bringelly Road
- Part of 971 Bringelly Road.

Visibility within the survey unit is generally impeded by dense grasses (Plate 8). Where exposures did occur these were inspected for Aboriginal objects. Levels of disturbance vary throughout the survey unit. The highest levels of disturbance are generally related to the construction of houses and Bringelly Road (Plate 9). Disturbance is generally found to be lower away from Bringelly Road towards the rear of the properties. Whilst clearance of vegetation has occurred in these areas the landform appears to be generally intact.

Three AHIMS sites (#45-5-3894, #45-5-4150 #45-5-3886) have previously been recorded within survey unit 3. The recorded coordinates of these sites were visited however the artefacts were not relocated. AHIMS site #45-5-3886 (BRP-IF-16, Plate 10) was originally assessed by KNC in 2011. Artefact Heritage later recorded AHIMS site #45-5-4150 (TRNU14) in association with BRP-IF-16. Both of these sites were recommended for salvage excavation as a condition of the Bringelly Road upgrade AHIP (C0000436). The area was assessed as demonstrating low levels of disturbance during the current survey.

TNRB PAD01 was identified towards the rear of on a crest landform (Plate 11). This area demonstrates low levels of disturbance and is likely to contain intact archaeological material. A description of TNRB PAD01 is included in Section 7.3.2.
7.2.4 Survey unit 4

Survey unit 4 is located on a slope landform sloping south from Bringelly Road. This survey unit includes the following properties:

- 971 Bringelly Road
- 1115 The Northern Road
- 1178 The Northern Road
- 1160 The Northern Road
- 1152 The Northern Road
- 1146 The Northern Road
- 11 Robinson Road
- 30 Robinson Road.

This survey area is mainly comprised of cleared fields currently used for grazing (Plate 12). Visibility is generally low due to dense grasses, driveways, and buildings. Areas of exposure were inspected for Aboriginal objects, none were identified (Plate 13). An unnamed low order watercourse flows through the southern portion of the survey unit (Plate 14). Levels of disturbance vary throughout the study area. These are generally related to ground disturbance works involved in the construction of houses, gardens and dams (Plate 15).

TNRB PAD02 was recorded in the south eastern portion of the survey unit. This area encompasses a raised flat landform next to an incised creek line. The area appears to have only been used for grazing and it is likely that the area of potential may extend into the neighbouring property which was inaccessible at the time of survey. A description of TNRB PAD01 is included in Section 7.3.2.
7.3 Summary of results

The current survey identified two areas of archaeological potential – TNRB PAD01 and TNRB PAD02. Both PADs are located in areas that demonstrated low levels of surface disturbance and are located in landform contexts previously identified as demonstrating archaeological potential. The locations of previously recorded AHIMS sites in the study area were inspected. The artefacts associated with these sites were not relocated. The locations of the newly recorded and AHIMS sites are shown in Figure 8.

Visibility was generally nil across the study area and limited to exposures associated with dam walls, driveways and along road easements. Access to several properties was restricted at the time of survey, therefore these properties were not assessed. Surface disturbance varied throughout the study area and was generally higher in association with the construction of houses, dams, sheds, gardens and Bringelly Road and The Northern Road.

7.3.1 Previously recorded sites

Three registered AHIMS sites are located within the study area. The results of the current inspection of these sites is detailed below.
AHIMS Sites 45-5-3886 BRP-IF-16 and 45-5-4150 TNRU14

Site BRP-IF-16 was originally recorded by KNC in 2010. It was then revisited by Artefact Heritage in 2012 and additional artefacts were recorded as site TNRU14.

Site BRP-IF-16 consists of an isolated silcrete artefact located along a property access track at 993 Bringelly Road within the study area. The artefact is located approximately 10 m south of Bringelly Road in an exposed area less than one metre squared. The site landform consists of a relatively intact north-facing upper slope of a low hill top. This area encompasses the crest of the low hill-top and the north and west running slopes from the hill-top (Figure 4). The site exhibits archaeological potential related to its landscape position, association with known archaeological sites and access to a range of resources (KNC 2010).

Site TNRU14 is located on an exposure within a BMX track 10 m from the Bringelly Road corridor and 40 m to the east of the site BRP-IF-16. The extended site area is within an east-west running ridgeline on a low hilltop. The site consists of a single red silcrete flake. This site was considered to be associated with site BRP-IF-16 at the time of recording.

The artefacts at site BRP-IF-16/TRNU14 were not relocated during the current survey. However, the landform was found to be in a relatively intact condition with very little evidence of subsurface disturbance (Plate 17).
Figure 4: BRP-IF-16 with TNRU14 and extended site boundary
AHIMS Site 45-5-3894 BRP-S-07

Site BRP-S-07 was originally recorded by KNC in 2010 as one chert and one silcrete artefact located at the front of property [operation hidden]. The site is located on the northern side of Bringelly Road in a small area of exposure, about 15 m long by 15 m wide along a vehicle access track. The landform associated with the site is the upper slope of a gentle north-east running spur. The area is highly modified and disturbed with a road cutting across the surface of the slope. Road base gravels are evident in areas of exposure and the ground surface has been modified.

The artefacts were not relocated during the current survey. There has been a large amount of grass overgrowth resulting in much lower visibility than during the original survey.

Plate 20: location of BRP-S-07

AHIMS Site 45-5-4142 TNRU6

Site TNRU6 was not revisited during the current investigation.

Site TNRU6 was originally recorded by Artefact Heritage in 2011 during the first PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade (see Figure 5). The site was recorded as comprising two stone artefacts identified within a 15 metre x 15 metre exposure upon a lower hillslope landform. The lower hillslope landform rises gently upwards towards the south-west. The area is relatively undisturbed and has probably been cleared and used for grazing in the past. The site will be subject to archaeological salvage excavation as a condition of an AHIP for The Northern Road Stage 2.

The lower hillslope landform extends across to the eastern side of The Northern Road and also includes sites AHIMS #45-5-4143 (TNRU7), and #45-5-45-5-4144 (TNRU 8). It is likely that these sites, along with AHIMS #45-5-4142 (TNRU6), would have once formed a large site complex which has since been highly disturbed on the eastern side of the road.

AHIMS Site 45-5-4143 TNRU7

Site TNRU7 was not revisited during the current investigation as it is located in a property that was not accessible for the survey team.

Site TNRU7 was originally recorded by Artefact Heritage in 2011 during the first PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade (see Figure 5). The site consists of seven artefacts scattered across an area of 100 m x 20 m within the front paddock of a small property lot at 1375 The Northern Road, Bringelly. The site is within the study area. A small tributary of Lowes Creek runs 20 m to the north of the property with a gentle slope upwards towards the south.
The site area has recently been graded with topsoil pushed across to form an earthen bank along The Northern Road. The removal of topsoil has exposed subsoil along with artefacts that would have been buried within it. Although this area contained a relatively high number of artefacts the archaeological potential has been compromised by the disturbance of the topsoil.

Figure 5: Location of TNRU6 and TNRU7
7.3.2 Newly recorded Potential Archaeological Deposit (PAD)

Two new PADs was identified during the current survey. The areas of potential is summarised below.

**TNRB PAD01**

TNRB PAD01 is located on a crest landform overlooking a drainage line within the property at 1232 Bringelly Road (Figure 6). The area of potential was identified behind the house and gardens within a cleared field that demonstrates much lower levels of disturbance than the rest of the property. Artefacts have been found in areas of exposure along Bringelly Road to the south and south-east of the PAD indicating the potential for this area to contain intact archaeological deposits and Aboriginal objects.

**TNRB PAD02**

TNRB PAD02 is located on a raised flat landform next to an incised creek line within the property at 30 Robinson Road (Figure 7). The landform appears to be relatively intact with no evidence of ploughing or furrowing. This field observation was also supported by analysis of aerial photography from 1947 until the present. Disturbance appears to be limited to the initial vegetation clearance. A mature gum tree is located within the vicinity of the area of potential. An artefact has been recorded on the wall of the dam in the neighbouring property to the east of the PAD and an artefact scatter has been recorded to the south west of the PAD. This indicates the potential for the area to contain intact archaeological deposits and Aboriginal objects. Note that the western, southern and eastern margins of the PAD are contained to the investigated area. It is likely that PAD02 would extend into neighbouring properties.
Figure 6: TNRB PAD01
Figure 7: TNRB PAD02
Figure 8: Survey results
8.0 DESKTOP DISCUSSION OF INACCESSIBLE PROPERTIES

A total of ten properties were not accessible for this version of the PACHCI Stage 2 report. Those properties are shown in Figure 9. This section provides a desktop assessment of the likely archaeological potential of those properties based on the observations and findings throughout the remainder of the study area.

8.1 Properties A and B (Lot 4 and 6 DP712840)

Survey of adjacent properties did not identify any Aboriginal objects or areas of archaeological potential. Aerial imagery and adjacent survey observations indicate a large number of regrowth Eucalypts with occasional old growth examples within Property A. The proposal portion of Property B is largely cleared of vegetation.

Based on the findings of adjacent properties, a summary of the archaeological potential of Properties A and B is as follows:

- It is likely that no areas of archaeological potential would be identified within Properties A and B.
- Due to the possible presence of old growth Eucalypts, survey would be required to determine if any scarred trees are located in Property A.
- Although no surface artefacts were identified in adjacent properties, isolated occurrences of artefacts on the ground surface may be identified in areas of surface exposure.

8.2 Property C (Lot 11 DP712840)

Property C is located approximately 100 metres east of TNRB PAD01 and adjacent to AHIMS site 45-5-3894. The landform associated with Property C generally consists of the eastern slopes of the crest at TRNB PAD01. The majority of the portion of Property C within the proposal site boundary that was not accessed for the current investigation was included in the Bringelly Road PACHCI Stages 2 and 3 investigations. That area is now within the area covered by AHIP C0000436. Only a small portion of Property C that has not been surveyed is within the proposal site boundary, and the results of both the Bringelly Road investigation and neighbouring properties for the current investigation indicate that archaeological potential is likely to be low in that area.

8.3 Property D (Lot 121 DP794437)

Property D is located on the southern side of Bringelly Road. The property is adjacent to Property C and AHIMS site 45-5-3894. The majority of the portion of Property D within the proposal site boundary that was not accessed for the current investigation was included in the Bringelly Road PACHCI Stages 2 and 3 investigations. That area is now within the area covered by AHIP C0000436. Only a small portion of Property D that has not been surveyed is within the proposal site boundary, and the results of both the Bringelly Road investigation and neighbouring properties for the current investigation indicate that archaeological potential is likely to be low in that area.

8.4 Property E (Lot 3 DP233637)

Property E fronts The Northern Road and extends northeast to the southern boundary of Property D. The portion of Property E within the proposal site boundary consists of slope landforms and a narrow
The crest landform. The crest landform is associated with a saddle between higher ground to the northwest and southeast. The portion of Property E within the proposal site boundary is relatively narrow and largely cleared of vegetation.

Based on the findings of adjacent properties, a summary of the archaeological potential of Property E is as follows:

- It is likely that no areas of archaeological potential would be identified within Property E.
- Although no surface artefacts were identified in adjacent properties, isolated occurrences of artefacts on the ground surface may be identified in areas of surface exposure.

8.5 Properties F, G and H

Properties F, G and H front The Northern Road (Property F) and Robinson Road (Properties G and H). The portion of the proposal site boundary within each property largely consists of slope and crest landform contexts. Each property has largely been cleared of vegetation, with some regrowth and the potential for isolated old growth trees. No areas of archaeological potential have been identified in neighbouring properties.

Based on the findings of adjacent properties, a summary of the archaeological potential of Properties F, G and H is as follows:

- It is likely that no areas of archaeological potential would be identified within Properties F, G and H.
- Due to the possible presence of isolated old growth Eucalypts, survey would be required to determine if any scarred trees are located in Properties F, G and H.
- Although no surface artefacts were identified in adjacent properties, isolated occurrences of artefacts on the ground surface may be identified in areas of surface exposure.

8.6 Properties I and J

Properties I and J front The Northern Road. The northern portion of Property I contains a portion of unnamed watercourse associated with TNRB PAD02 to the north. The area around the watercourse contains a large amount of vegetation, and may possibly contain old growth trees. One area of archaeological potential, TNRB PAD02, has been identified adjacent to Property I.

Property J has largely been cleared of vegetation. One Aboriginal site, TNRU 7, is located within Property I. As discussed in Section 7.3.1, the original site recording notes that the area has been comprehensively disturbed by land-use activities. The surface disturbance was assessed as likely to have compromised any research potential for that area. Although there may be no further research potential in Property I, the presence of site TNRU7 indicates the possibility that further surface artefacts may be identified across the property.

Based on the findings of adjacent properties, a summary of the archaeological potential of Properties I and J is as follows:

- It is likely that the area of archaeological potential associated with TNRB PAD02 extends south into Property I.
• Due to the possible presence of isolated old growth Eucalypts, survey would be required to determine if any scarred trees are located Property I
• Although the research potential of Property J appears to have been compromised by surface disturbance, it is likely that further occurrences of surface artefacts may be identified across the property.

Figure 9: Location of properties not accessed for this investigation
9.0 ANALYSIS AND DISCUSSION

9.1 Disturbance levels

Disturbance has occurred throughout the study area to varying degrees. Areas within The Northern Road and Bringelly Road easements were generally heavily disturbed by the construction and maintenance of the roadways. Areas in which residential and agricultural structures and associated infrastructure have been constructed demonstrate high levels of disturbance.

Areas which have not been impacted significantly since initial land clearing demonstrate high levels of intactness and were generally in good condition. These areas include the central portion of the study area to the north and south of Bringelly Road (excluding the road corridor).

Analysis of aerial photographs from 1947 and 1955 indicate that the subdivision of the majority of the study area occurred after 1955 (Figure 10 and Figure 11). From these images it can be seen that a number of the original drainage lines have since been dammed.

Figure 10: 1947 aerial with study area shown in red
9.2 Analysis of archaeological potential

Archaeological potential is closely related to the levels of ground disturbance in the area. Other factors are also taken into account when assessing archaeological potential, such as whether artefacts were located on the surface, and whether the area is within a sensitive land form unit according to the predictive statements for the area.

Disturbance within the study area was generally limited to areas within the road corridors and where residential and agricultural structures and related infrastructure have been constructed. The central portion of the study area north of Bringelly Road has been disturbed less when compared with the study area south of Bringelly Road.

The predictive model identifies areas of potential based on the landform unit and distance from water. Terraces and slopes within 100 m of water are considered to have a high potential to contain intact deposits and Aboriginal objects. Areas with a good outlook over a valley several hundred metres from water are considered to have moderate potential to contain intact archaeological deposits and Aboriginal objects.

By examining aerial photographs of the area from 1947 to 2015 it is possible to discern that there has been little ground disturbances around the areas of PAD identified in this study. Site BRP-IF-16 and TNRB PAD01 are located within crest landforms overlooking drainage lines. TNRB PAD02 is located
on a raised flat landform next to an incised creekline. These PADs would have been close to natural resources and are therefore considered to demonstrate archaeological potential according to the current predictive model.
10.0 SIGNIFICANCE ASSESSMENT

10.1 Assessment criteria

Archaeological significance refers to the archaeological or scientific importance of a landscape, site or area. This is characterised using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state’s natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

Cultural values and significance would be discussed by the Aboriginal groups during ongoing Aboriginal consultation for the project and would be detailed in the Cultural Heritage Assessment Report during Stage 3 of the Roads and Maritime PACHCI.

10.2 Archaeological significance assessment

The archaeological potential of each recorded Aboriginal site and the study area as a whole is closely related to significance values. Areas of archaeological potential have research potential and the potential for Aboriginal objects that are representative of Cumberland Plain archaeology.

Areas of low archaeological potential have limited research potential and rarity values, and are likely to be in disturbed contexts not representative of intact areas on the Cumberland Plain. Also, these areas are not associated with sensitive landforms and are therefore less likely to contain cultural material.

All recorded Aboriginal sites and areas of archaeological potential within the study area have education potential. The distribution and nature of Aboriginal sites and associated heritage values provide important educational values for Aboriginal land-use on the Cumberland Plain.

A summary of the archaeological significance of identified Aboriginal sites and areas of archaeological potential within the study area is outlined in Table 5 and discussed below.
Table 5: Summary of archaeological significance values

<table>
<thead>
<tr>
<th>Site name</th>
<th>Research Potential</th>
<th>Scientific Value</th>
<th>Representative Value</th>
<th>Rarity Value</th>
<th>Overall archaeological Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRP-IF-16 (#45-5-3886)/ TNRU14 (#45-5-4150)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>BRP-S-07 (#45-5-3894)</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>TNRU6</td>
<td>Moderate</td>
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<td>Moderate</td>
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<td>Moderate</td>
</tr>
<tr>
<td>TNRU7</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>TNRB PAD01</td>
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<td>Moderate</td>
<td>Moderate</td>
<td>Moderate – Low</td>
<td>Moderate – Low*</td>
</tr>
<tr>
<td>TNRB PAD02</td>
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<td>Moderate</td>
<td>Moderate</td>
<td>Moderate – Low</td>
<td>Moderate – Low*</td>
</tr>
</tbody>
</table>

* = likely significance (see text below)

**Sites of low archaeological significance**

AHIMS site #45-5-3894 and TNRU7 were assessed by KNC (2011: 44) and Artefact Heritage (2012) respectively as demonstrating low archaeological significance based on the disturbed context, low archaeological potential, and relative frequency of the site type in the local area.

**Sites of moderate archaeological significance**

Sites 45-5-3886/ 45-5-4150 and TNRU 6 were assessed by KNC (2011: 44) and Artefact Heritage (2012) respectively as demonstrating moderate archaeological significance based on the moderate potential for subsurface potential, the generally undisturbed nature of the site, and the ability of the site to add to the corpus of archaeological knowledge for the area. The high frequency of surface artefact site types in the area is indicated in the assessment of low rarity values.

**Likely significance of TNRB PAD01 and PAD02**

Although it is likely that intact Aboriginal archaeological deposits would be located during testing of TNRB PAD01 and TNRB PAD02, it is likely that these deposits would be similar to other Aboriginal sites recorded in the locality and have a moderate or low archaeological significance. No artefact sites of high archaeological significance were located during investigations for The Northern Road upgrade (Narellan to Bringelly) or the Bringelly Road upgrade (Camden Valley Way to The Northern Rd). TNRB PAD01 is within a similar crest landform to other previously identified sites such as BRP-IF-16 (#45-5-3886) which has been assessed as having moderate archaeological significance. TNRB PAD2 is within a similar landform (raised terrace next to a waterway) to identified sites such as TNRU 6 and TNRU 7 which have been assessed as having a moderate and low archaeological significance respectively.

It is therefore unlikely that TNRB PAD01 and TNRB PAD02 would be found to have high archaeological significance. It is therefore likely that impacts to TNRB PAD01 and TNRB PAD02 could be effectively mitigated through retrieval of information by archaeological excavation.
10.3 Cultural significance

The Aboriginal cultural heritage values associated with the study area will be discussed by Aboriginal stakeholders in their written responses to this report. It is anticipated that written comments will be incorporated into this document when received.
11.0 IMPACT ASSESSMENT

The proposal involves constructing a grade separated interchange about 300 m east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The key features of the proposal are shown in Figure 1 and include:

- Widening and upgrading about 400 m of Bringelly Road, between Kelvin Park Drive and Greendale Road, to provide:
  - Two traffic lanes in each direction between Kelvin Park Drive and The Northern Road/Bringelly Road interchange, with wide central medians to allow for a future third traffic lane in each direction
  - Two traffic lanes in each direction on the western side of the interchange, transitioning to one lane in each direction to tie in to Greendale Road

- Constructing a new section of The Northern Road between Robinson Road and Thompsons Creek, to the east of the existing alignment. The new section would be about one kilometre long and about 50 m wide (including embankments), and would include:
  - Two 3.5 m wide traffic lanes in each direction
  - Four metre wide shoulders connecting to the on and off ramps of the interchange, allowing for the future provision of a bus lane
  - An underpass about 60 m long beneath the upgraded section of Bringelly Road
  - 2.5 m wide shoulders along The Northern Road under the interchange for a length of about one kilometre
  - A wide central median to allow construction of a future third traffic lane in each direction

- Providing a new signalised intersection on Bringelly Road over The Northern Road, with turning movements provided in all directions

- Providing dual right turn movements in all directions to and from The Northern Road and Bringelly Road, and dedicated left turn lanes in all directions

- Providing bus service facilities by:
  - Retaining the existing bus stops on the existing alignment of The Northern Road
  - Relocating existing bus stops on Bringelly Road to suit the interchange
  - Providing two new bus stops on The Northern Road northbound and southbound interchange on ramps
  - Providing a bus only lane for buses travelling north and south along The Northern Road at the signalised intersection on Bringelly Road

- Providing three metre wide shared paths for pedestrians and cyclists

- Providing a new connection between Robinson Road and The Northern Road via an extension to the realigned Belmore Road intersection

- Converting the existing section of The Northern Road to a ‘no through road’, providing a cul-de-sac at the southern end near Robinson Road, and a cul-de-sac at Thames Road at the northern end.
On the basis of the 50 per cent concept design all of the AHIMS sites with the exception of TNRU7 and identified PADs within the study area will be impacted to varying degrees. The type, degree and consequence of harm is summarised in Table 6.

The wider site boundaries of sites BRP-IF-16 (#45-5-3886), TNRU14 (#45-5-4150) and TNRU6 (#45-5-4142) extend beyond the 50 per cent concept design footprint and therefore will only be partially impacted by the proposal. The recorded coordinates of BRP-IF-16 (#45-5-3886) and TNRU14 (#45-5-4150) will be directly impacted by the proposal. Sites BRP-S-07 (#45-5-3894), TNRB PAD01 and TNRB PAD02 will be totally impacted by the proposal resulting in a complete loss of value.

Site TNRU7 (#45-5-4143) is located within the proposal site boundary, but is not shown as being impacted by the 50% design. On this basis, although TNRU7 is located within the proposal site boundary, it is assumed that there will be no impact to the site.

**Table 6: Summary of impacts**

<table>
<thead>
<tr>
<th>Site</th>
<th>Type of harm</th>
<th>Degree of harm</th>
<th>Consequence of harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRP-IF-16 (#45-5-3886)/ TNRU14 (#45-5-4150)</td>
<td>Direct</td>
<td>Partial</td>
<td>Partial loss of value</td>
</tr>
<tr>
<td>BRP-S-07 (#45-5-3894)</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
<tr>
<td>TNRU6 (#45-5-4142)</td>
<td>Direct</td>
<td>Partial</td>
<td>Partial loss of value</td>
</tr>
<tr>
<td>TNRU7 (#45-5-4143)</td>
<td>None</td>
<td>None</td>
<td>No loss of value</td>
</tr>
<tr>
<td>TNRB PAD01</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
<tr>
<td>TNRB PAD02</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
</tbody>
</table>
Figure 12: Proposed impacts to BRP-IF-16 and TRNU14
Figure 13: Proposed impacts to TRU6 and TRU7
Figure 14: Proposed impacts to BRP-S-07
Figure 15: Proposed impacts to TNRB PAD01
12.0 MANAGEMENT AND MITIGATION MEASURES

12.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is based on the assessed significance of the site or sites. The final recommendations in the second REF in mid-September would also be informed by cultural significance, which will be discussed by the Aboriginal community in their responses to the current investigation.

12.2 Mitigation and management measures

The mitigation measures recommended vary depending on the assessment of archaeological significance of the Aboriginal site which is based on its research potential, rarity, representativeness and educational value. In general the significance of a site would involve the following mitigation measures:

- Low archaeological significance – Conservation where possible. An AHIP would be required to impact the site before works can commence.
- Moderate archaeological significance – Conservation where possible. If conservation was not practicable further archaeological investigation would be required such as salvage excavations or surface collection under an AHIP.
- High archaeological significance – Conservation as a priority. An AHIP would be required only if other practical alternatives have been discounted. Conditions of this AHIP would depend on the nature of the site, but may include removal and preservation of scarred trees, or comprehensive salvage excavations.
- Unknown archaeological significance – Conservation where possible. Further investigation under the OEH Code of practice (2010) will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure.

Table 7 provides a summary of the consequence of impacts and indicative management and mitigation measures. This information would be updated once the progressed concept design has been integrated into this report and the impact assessment revised.

Table 7: Summary of impacts and mitigation/management measures

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site names</th>
<th>Site type</th>
<th>Significance</th>
<th>Consequence of Impact</th>
<th>Mitigation/management measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>#45-5-3886</td>
<td>BRP-IF-16/</td>
<td>Artefact</td>
<td>Moderate</td>
<td>Partial loss of value</td>
<td>Salvage as a condition of AHIP C0000436</td>
</tr>
<tr>
<td>45-5-4150</td>
<td>TNRU14</td>
<td>sites</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#45-5-3894</td>
<td>BRP-S-07</td>
<td>Artefact</td>
<td>Low</td>
<td>Total loss of value</td>
<td>Surface collection as a condition of AHIP C0000436</td>
</tr>
<tr>
<td></td>
<td>Scatter</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site ID</td>
<td>Site names</td>
<td>Site type</td>
<td>Significance</td>
<td>Consequence of Impact</td>
<td>Mitigation/management measures</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>-----------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>45-5-4142</td>
<td>TNRU6</td>
<td>Artefact</td>
<td>Moderate</td>
<td>Partial loss of value</td>
<td>Salvage as a condition of The Northern Road Stage 2 AHIP application currently being processed by OEH</td>
</tr>
<tr>
<td>45-5-4143</td>
<td>TNRU7</td>
<td>Artefact</td>
<td>Low</td>
<td>No loss of value</td>
<td>AHIP required if proposal changes and site is impacted.</td>
</tr>
</tbody>
</table>

12.2.1 AHIMS sites BRP-IF-16 (#45-5-3886)/ TNRU14 (#45-5-4150) and BRP-S-07 (#45-5-3894)

The proposal will impact registered AHIMS sites #45-5-3886/#45-5-4150 and #45-5-3894.

These sites are currently subject to AHIP C0000436 which applies to the Bringelly Road upgrade held by Roads and Maritime. The conditions of the AHIP require salvage excavation of BRP-IF-16/TNRU14 and surface collection at BRP-S-07 prior to impacts at these sites.

Information on what mitigation measures have been conducted subject to AHIP C0000436 at AHIMS sites 45-5-3886, 45-5-4150 and 45-5-3894 was not available when this report was prepared. Roads and Maritime will need to confirm whether mitigation measures specified in AHIP C0000436 have been carried out and may need to seek a variation to AHIP C0000436 where there is an increase in impact to AHIMS sites 45-5-3886, 45-5-4150 and 45-5-3894 from the Bringelly Road proposal.

12.2.2 TNRB PAD01 and TNRB PAD02

PAD TNRB PAD01 and TNRB PAD02 will be impacted by the current proposal resulting in total loss of value.

The archaeological significance of the PADs is at present assessed as likely to be moderate - low. The PADs have been assessed as having moderate archaeological potential. If impacts to the PADs cannot be avoided by the proposal, test excavation under the PACHCI Stage 3 and OEH Code of practice would be undertaken in order to determine whether sub-surface intact archaeological deposits and Aboriginal objects are present in that area. The purpose of these excavations would be to assess the significance of each PAD and not to mitigate against impacts. A test excavation methodology is included in Section 12 of this document.

If bot PAD areas are found to be of a low archaeological significance, there would be no Aboriginal heritage constraints on the proposed development in those areas. However, where Aboriginal objects are retrieved during test excavation an AHIP would be required prior to any works commencing. Where no Aboriginal objects are retrieved during test excavation, an AHIP will not be required prior to impacts in that area.
If the PAD areas are confirmed to have moderate archaeological significance it is likely that there would be no constraints on the proposed development in those areas, but that archaeological salvage excavations would be recommended to mitigate against any proposed impacts as a condition of an AHIP. An AHIP would be obtained from OEH prior to works commencing.

If the PAD areas are found to be of high archaeological significance, this would inform future design preparation during Stage 3 of the Roads and Maritime PACHCI regarding future management of the areas, such as conservation where possible. It is therefore important to understand the nature of the buried archaeological deposits within the PAD by archaeological test excavation before further recommendations are made.

12.2.3 TNRU6 (#45-5-4142)

Site TNRU6 (#45-5-4142) would be directly impacted by the proposed works. The impacts would result in partial loss of value for TNRU6. Salvage excavation has been recommended for TNRU6 as a condition of an AHIP currently being processed by OEH in regards to The Northern Road Stage 2 upgrade. Prior to commencement of works for the current proposal, Roads and Maritime will need to confirm that salvage excavation mitigation measures associated with The Northern Road Stage 2 AHIP have been completed.

12.2.4 TNRU7 (#45-5-4143)

Although site TNRU7 (#45-5-4143) is located within the proposal site boundary, the site would not be impacted by the road alignment as shown in the 50% design. Where the proposal changes or ancillary facilities are added that will impact TNRU7, an AHIP will be required prior to impacts taking place.

12.3 Management strategies

A comprehensive discussion of management strategies and processes would be prepared for the Stage 3 CHAR in consultation with Aboriginal stakeholder groups. This discussion would outline procedures for management of unexpected archaeological finds, including human remains, along with processes to manage changes in proposed impacts.

12.3.1 Existing AHIPS within the study area

Roads and Maritime currently hold AHIP C0000436 for the Bringelly Road upgrade. This AHIP carries conditions to be adhered to if sites BRP-IF-16/ TNRU14 (#45-5-3886/#45-5-4150) and BRP-S-07 (#45-5-3894) are to be impacted.

Roads and Maritime have also applied for an area AHIP in relation to The Northern Road upgrade Stage 2. It is understood that an AHIP has been issued for The Northern Road Stage 2, the area for which is shown in Figure 18. Note that the Bringelly Road AHIP has not been mapped and is not shown in Figure 18.

OEH stipulates that AHIPs cannot overlap in areal extent. An area-based AHIP application for the current proposed works corridor, which would include impacts to AHIMS sites 45-5-3886/45-5-4150, 45-5-4142 and 45-5-3894 and TNRB PAD01 cannot include the area covered by AHIP C0000436 or the area covered by the AHIP for The Northern Road Stage 2 upgrade.

Depending on the timing of The Northern Road and Bringelly Road upgrade works in relation to the proposal, Roads and Maritime may choose:
• To operate works for the proposal under the existing AHIPs in those areas (subject to the conditions of the AHIPs) or
• To relinquish the pending The Northern Road Stage 2 AHIP and current Bringelly Road AHIP (C0000436) and apply for an area based AHIP for current proposal.

Figure 17: Location of The Northern Road Stage 2 AHIP area (yellow) overlaid with the proposal site boundary
13.0 TEST EXCAVATION METHODOLOGY

13.1 Test Excavation Scope

The scope of this archaeological test excavation methodology is TNRB PAD01 and TNRB PAD02. These areas of potential have been identified during the current PACHCI Stage 2 investigations. The PADs have been recommended for test excavation in accordance with the OEH code of practice.

The aim of this chapter is to outline the proposed methodology for archaeological test excavation of those areas during Stage 3 of the PACHCI.

13.2 Archaeological Test Excavation Guidelines

Archaeological test excavation will be conducted in accordance with the OEH code of practice. The OEH code of practice prescribes guidelines for archaeological test excavation, and outlines the amount of excavation allowed in a particular area, the size of the test pits, and the way in which they are excavated. The code of practice provides a standard methodology which can be used to effectively compare data sets from other sites in the locality and does not require an AHIP.

13.3 Aboriginal Stakeholder Consultation

Comprehensive Aboriginal stakeholder consultation in accordance with the Roads and Maritime PACHCI and the OEH ‘Aboriginal cultural heritage consultation requirements for proponents’ (2010) is being conducted by Roads and Maritime.

13.4 Areas for Archaeological Test Excavation

The current study has identified two areas of PAD that may be impacted by the proposal, TNRB PAD01 and TNRB PAD02 (see Figure 15 and Figure 16).

13.5 Aims of Test Excavation

The archaeological field survey conducted for the current study observed very low surface visibility across the proposal site. This was largely due to dense grass cover. Due to this low surface visibility in most areas, landform observations and information from previous archaeological investigations were used to inform the selection of areas of PAD.

TNRB PAD01 is located on a crest landform overlooking a drainage line leading down slope towards Thompasons Creek. TNRB PAD02 is located on a raised flat area next to an incised creek line. This PAD is located down slope to the south of TNRB PAD01. The location of these PADs within two contrasting landforms presents the opportunity to further investigate these landforms within the context of the southern Cumberland Plain.

In accordance with the OEH code of practice the aims of archaeological test excavation are:

- To adequately identify the extent of TNRB PAD01 and TNRB PAD02.
- To assess the scientific significance of TNRB PAD01 and TNRB PAD02 following an assessment of the test excavation results.
- To provide an opportunity for registered Aboriginal stakeholders to comment on the Aboriginal cultural heritage values of the site.
To provide the proponent with recommendations on opportunities to avoid impact and future requirements for further archaeological investigation where required.

13.6 Excavation Methodology

Archaeological test excavation would be conducted at each location with the aim of testing the extent and nature of potential sub-surface Aboriginal objects.

The basis of the test excavation would be hand excavation 50 centimetre x 50 centimetre excavation units. These would be spaced out 15 metres apart on transects laid out generally on a north to south orientation across the PAD. The location of the test pits would be at the discretion of the site supervisor, and may exclude areas that are unsuitable for excavation at the time of testing. This would provide an adequate sample of the site and provide a clear indication to the extent and characteristics of sub-surface archaeological deposit.

The distribution and total number of test pits is a guide only (see Figure 19 and Figure 20) and may include a varying number of pits to that shown at the discretion of the supervising archaeologist in the field. Examples of circumstances that may alter the timing and total number of pits at each location include the depth of deposit, hardness of deposit, any encountered areas of contamination, and access issues.

The OEH code of practice outlines requirements for when enough information has been retrieved and test excavation must cease. Test excavation at each location must cease when (OEH 2010: 28):

- ‘Suspected human remains are encountered’
- ‘Enough information has been recovered to adequately characterise the objects present with regard to their nature and significance’

‘Enough information’ is defined by OEH (OEH 2010: 28) as: ‘…the sample of excavated material clearly and self-evidently demonstrates the deposit’s nature and significance, and may include things like:

- Locally or regionally high object density.
- Presence of rare or representative objects.
- Presence of archaeological features or locally or regionally significant deposits, stratified or not.’

The determination of whether there is enough information to stop excavation would be made in the field following discussions between the site supervisor and Aboriginal stakeholder representatives present in the field at that time.

13.6.1 Excavated Area

Under the OEH code of practice guidelines for test excavation, no more than 0.5% of each investigated location can be excavated without an AHIP. A summary of the areal total of each area and proposed total excavation area is outlined in Table 8 below.
## Table 8: Proposed total excavated area at each PAD

<table>
<thead>
<tr>
<th>PAD</th>
<th>Total square metres</th>
<th>Proposed excavation area (metres²)</th>
<th>Proposed excavated percentage of total area</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRB PAD01</td>
<td>1708</td>
<td>1.5</td>
<td>0.08</td>
</tr>
<tr>
<td>TNRB PAD02</td>
<td>2775</td>
<td>2.5</td>
<td>0.09</td>
</tr>
</tbody>
</table>

**Figure 18: Indicative location and number of test pits at TNRB PAD01**
Figure 19: Indicative location and number of test pits at TNRB PAD02
13.6.2 TNRB PAD02 extent

At the time of this report the Stage 2 PACHCI investigations for the proposal have not been completed. The properties to the south of TNRB PAD02 have not been surveyed and it is likely that the PAD extends into these properties. Therefore the total area TNRB PAD02 in Table 8 and the mapped extent in Figure 19 are indicative only and may change following the completion of PACHCI Stage 2 investigations.

13.6.3 Excavation Procedure

Transects and excavation squares would be laid out using long hand-tapes, flags and pegs. An initial baseline would be laid out at each location, and trigonometry used to lay out parallel transects and offset excavation squares. A flag and peg would be placed at each point to be tested, and hand tapes and pegs used to lay out the remaining pegs at each corner of the excavation units. A datum would be established at the first excavation unit on the baseline. The location of each excavation unit would be recorded using a hand-held non-differential GPS, and the magnetic bearing of the first transect recorded using a compass. An arbitrary site grid would be established at the datum.

In accordance with the OEH code of practice, the initial excavation unit would be excavated in 5 centimetre spits. Subsequent excavation units will be excavated in 10 centimetre spits to the base of the artefact bearing deposit. Where time allows and further investigation is required for particular areas, the code of practice allows for excavation units to be combined to open an area no larger than three square metres. The location of small open area excavations at each location would be at the discretion of the supervising archaeologist in consultation with Aboriginal stakeholder representatives in the field.

A context sheet for each excavation unit would be completed in the field. Details recorded will include date of excavation, name of excavators, depth, number of buckets and soil description. Additionally, one representative section wall from each excavation unit will be scale drawn, and photographs will be recorded of each section wall and base.

All retrieved deposit from each excavation unit would be placed in buckets and transported to a sieve area using wheelbarrows. All retrieved deposit would be sieved using nested 5 mm and 3 mm sieves.

All excavation units would be back-filled with clean fill and sieve spoil following the completion of test excavation using a rubber tracked back-hoe or similar plant.

13.6.4 Wet sieving

It is anticipated that all of the excavated soils will be wet sieved as opposed to dry sieving. Wet sieving will involve establishing silt fencing where necessary to stop the flow of sediment loaded water into any neighbouring watercourse. Erection of silt fencing will involve the placement of wooden stakes in the ground at set intervals to support the silt fence.

Management of sieved spoil at each location will be arranged with GHD and Roads and Maritime, and may involve collection of some of that material and back-fill into the excavated pits using a rubber tracked back-hoe or similar plant.

13.6.5 Fencing off open excavation units

Arrangements for the necessity of fencing off open excavation units overnight will be discussed with GHD and Roads and Maritime for each location. Depending on the presence of livestock or public accessibility, marking out open excavation units may require high-visibility fencing around wooden
stakes or metal star pickets. Where there is no livestock or public access, a flag at one corner of the pit may suffice.

13.6.6 Procedure for the discovery of human remains


In the situation where human remains or suspected human remains are identified, all work will cease at that location and procedures enacted as outlined in Appendix E of the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015). This includes seeking specialist advice where clarification of the nature of skeletal remains is required, or contacting the NSW Police directly where it is immediately obvious that the remains are human. Where the skeletal material is more than 100 years old and are likely to be Aboriginal remains, OEH must be notified on the Environment Line (131 555) and no further works can proceed in that area until authorisation in writing is provided by OEH.

Hard copies of the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) and the OEH code of practice will be available in the field throughout the test excavation program.

13.6.7 Aboriginal Objects

All Aboriginal objects retrieved during the course of test excavation would be washed and placed in re-sealable bags for further analysis and recording. Once test excavation has been completed, the artefact assemblage would be recorded and stored as stipulated in the OEH code of practice. This includes recording key attributes of material, artefact type, platform type, termination type and dimensions, as well as photographic and drawn records of representative artefacts. All recorded information would be entered into a Microsoft Excel spreadsheet with detail linked to the provenance of each artefact. Once entered into the Excel spreadsheet, the data can be readily supplied with the test excavation report to OEH and registered Aboriginal stakeholders in both electronic and hard-copy form. In accordance with the PACHCI, Roads and Maritime would provide the test excavation report to registered Aboriginal stakeholders.

All artefacts would be given a unique number and stored in double re-sealable snap lock bags. A permanent marker will be used to record the provenance and unique number of artefacts on the outside of the bag and on an archival grade tag such as Dupont ™ Tyvek ® paper.

All artefacts retrieved during the test excavation program must be reburied as soon as practicable in a manner prescribed by the OEH code of practice. The exact location of reburial would be decided following the completion of the test excavation report and assessment of site extent and scientific significance. The location of the reburied artefacts must be recorded with a hand-held GPS and the coordinates forwarded to OEH on an Aboriginal Heritage Information Management System (AHIMS) site recording form.

Options for long-term management of retrieved Aboriginal objects will be discussed with registered Aboriginal stakeholders during Stage 3 of the PACHCI.
13.7 Reporting on Aboriginal Objects

A report detailing the results of the archaeological test excavation program would be prepared once excavation and artefact recording activities are concluded. The excavation report would be completed to the requirements outlined in the OEH code of practice requirement 11 and Stage 3 of the PACHCI.

The excavation report would provide details on the established extent and scientific significance of each of the investigated PADs and would provide recommendations regarding the necessity of further archaeological investigations.

If an investigated location is assessed as demonstrating low archaeological significance, no further archaeological investigation would be required.

If an investigation location is assessed as demonstrating moderate-high archaeological significance, further archaeological work, such as salvage may be required following completion of PACHCI Stage 3 investigations.

13.7.1 Changes to proposed impacts

Where proposed impacts are revised to encompass other areas of high archaeological potential identified during PACHCI Stage 2 investigations, a separate test excavation methodology and timeframes for stakeholder review as specified in the OEH code of practice and Roads and Maritime PACHCI will be required.

13.7.2 Site recording form and site impact recording form

A site recording form will be submitted to the OEH AHIMS site register where Aboriginal objects are retrieved from any of the investigated PADs. It is not a requirement to submit a site impact recording form for any of the investigated PADs where no Aboriginal objects are retrieved.
14.0 RECOMMENDATIONS

The following recommendations were based on consideration of:

- Statutory requirements under the National Parks and Wildlife Act 1974 as amended.
- The results of the background research, site survey and assessment.
- The interests of the Aboriginal stakeholder groups.
- The likely impacts of the proposed development.

It was found that:

- Ten properties within the study area were not accessible at the time of survey and have not been assessed.
- Five registered AHIMS sites are located within the study area.
- AHIMS site BRP-S-07 (AHIMS site 45-5-3894) was assessed by KNC (2011: 44) as demonstrating low archaeological significance. This site would be impacted in its entirety.
- The site boundary of BRP-IF-16 #45-5-3886 was extended to incorporate TRNU14 (#45-5-4150) by KNC. This was assessed by KNC (2011: 44) as demonstrating moderate archaeological significance. This site would be partially impacted on.
- Site TNRU6 (AHIMS site 45-5-4142) was assessed as demonstrating moderate archaeological significance. The site would be partially impacted on.
- Site TNRU7 was assessed as having low archaeological significance and would not be impacted on.
- Two areas of PAD were identified within the study area. TNRB PAD01 and TNRB PAD02 have been assessed as demonstrating moderate archaeological potential and are likely to demonstrate moderate-low archaeological significance.
- AHIMS site BRP-S-07 is currently subject to AHIP C0000436. A condition of that AHIP is that community collection of artefacts occurs before the site is impacted.
- AHIMS site BRP-IF-16/TRNU14 is currently subject to AHIP C0000436. A condition of the AHIP is that salvage excavation of the site occurs before any impacts.
- AHIMS site TNRU6 is subject to an AHIP application for The Northern Road Stage 2. It is anticipated that a condition of that AHIP will be archaeological salvage excavation.
- The Northern Road Stage 2 Upgrade AHIP area includes portions of the proposal site boundary.

It is therefore recommended that:

- Properties inaccessible at the time of survey should be investigated and incorporated into an addendum PACHCI Stage 2 report.
- Roads and Maritime confirm whether community collection of artefacts has occurred at BRP-S-07 as a condition of AHIP C0000436.
- Where this has not occurred it will be necessary to conduct community collection of artefacts at BRP-S-07 as a condition of the existing AHIP where the site will be impacted by the proposal.

- Roads and Maritime confirm whether salvage excavation has occurred at BRP-IF-16/TNRU14 as a condition of AHIP C0000436.

- Where salvage excavation has not occurred, it will be necessary to conduct salvage excavations as part of PACHCI Stage 4 as a condition of the existing AHIP where site BRP-IF-16/TNRU14 will be impacted by the proposal.

- Depending on the staging of The Northern Road upgrade works, Roads and Maritime may need to complete the current proposal under The Northern Roads Stage 2 AHIP in areas where they overlap.

- Prior to works commencing on the current project, Roads and Maritime will need to ensure that the conditions of The Northern Road Stage 2 AHIP have been met for site TNRU6.

- An AHIP will be required if the proposal is changed to include impacts to TNRU7.

- As Aboriginal sites would be impacted by the proposal, Stage 3 PACHCI would be implemented. Stage 3 PACHCI tasks would include comprehensive Aboriginal consultation and preparation of a Cultural Heritage Assessment Report (CHAR).

- As newly identified PAD TNRB PAD01 and TNRB PAD02 may be impacted by the proposal, test excavations under the PACHCI Stage 3 and OEH Code of practice would be undertaken within the portions to be impacted. Test excavations would confirm the likely archaeological significance of TNRB PAD01 and PAD02.

- If Aboriginal objects are located at any stage outside areas where test excavations are being undertaken, or outside areas for which an AHIP is granted, work would stop immediately and the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed. If human remains are located during any works associated with the project within the study area the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed.

- If the project design is changed and areas not surveyed are to be impacted, or other Aboriginal sites not identified are to be impacted, further archaeological assessment would be required.

- No impacts to identified Aboriginal sites may occur without an AHIP. Impacts to PAD would be avoided prior to the test excavation program commencing. This recommendation applies to geotechnical testing.
15.0 REFERENCES

AECOM 2010 Oran Park West Sewer Infrastructure Aboriginal Heritage Impact Assessment. Report to South West Priority Growth Area.


Attenbrow, V. 2010 Sydney’s Aboriginal Past: Investigating the archaeological and historical records. UNSW Press.

Artefact Heritage 2012 The Northern Road upgrade from The Old Northern Rd, Narellan, to Mersey Rd, Bringelly Archaeological Survey Report. A Report to Roads and Maritime Services

Artefact Heritage 2015 Addendum to the PACHCI Stage 2 archaeological survey report for the upgrade of The Northern Road between The Old Northern Road and Peter Brock Drive. A report to Roads and Maritime Services.


Austral Archaeology Pty Ltd (Austral) 2010. MR 647 Bringelly Road Upgrade Aboriginal Archaeological Survey, Camden Valley Way, Leppington to the Northern Road, Bringelly. Report to the Roads and Traffic Authority of NSW (Draft report, August 2010).


Biosis 2008 The Northern Road upgrade: Preliminary Aboriginal archaeological assessment. Report to RTA.


Butlin, N. 1983 Our original aggression: Aboriginal populations in southeastern Australia 1810-150, Melbourne, Cambridge University Press.


Jo McDonald CHM Pty Ltd. 2005. *Archaeological salvage excavation of site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW*. Report for Meriton Apartments Pty Ltd.


Jo McDonald CHM Pty Ltd. 2007. *Archaeological investigation of the Oran Park Precinct in the South West Priority Growth Area, Camden, NSW*. Report to APP.


Jo McDonald CHM Pty Ltd. 2010. *Archaeological Assessment of the proposed sewer and water mains associated with the Marsden Park Industrial Precinct, Stage 1*. Report to APP.


KNC 2008 *Oran Park and Turner Road Precincts: Aboriginal Heritage Investigation for Proposed Infrastructure Service Routes and Site Options*. Report to Landcom.

KNC 2010 *Bringelly Road upgrade: Camden Valley Way to The Northern Road Aboriginal cultural heritage Cultural Heritage Assessment Report*. Prepared for the Roads and Traffic Authority.


Department of Environment, Climate Change and Water (now OEH), 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Roads and Maritime Services, 2011 Procedure for Aboriginal Cultural Heritage Consultation and Investigation.


Appendix E: PACHCI Stage 2 ASR Addendum
EXECUTIVE SUMMARY

Roads and Maritime Services (Roads and Maritime) is proposing to construct a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (the proposal). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool.

Artefact Heritage prepared an archaeological survey report (ASR) in 2015 as part of the preparation of a Review of Environmental Factors (REF) for the proposal. The ASR was prepared in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). The proposal area is located near the existing intersection of The Northern Road and Bringelly Road, Bringelly.

Ten properties within the proposal site boundary were not accessible prior to finalisation of the PACHCI Stage 2 ASR. Following arrangements by GHD to access nine of those ten properties, Artefact was engaged to prepare an addendum PACHCI Stage 2 ASR that addresses those previously unassessed areas.

The purpose of this addendum report is to document the location of Aboriginal objects and areas of archaeological potential within those ten properties not accessed for the PACHCI Stage 2 ASR.

This report includes a discussion of archaeological potential and the likelihood of archaeological material occurring within the one property inaccessible during preparation of this report. The portion of the proposal site boundary investigated for preparation of this report is referred to as the ‘survey area’.

This addendum report is intended to be read in conjunction with the PACHCI Stage 2 ASR. Key report sections, including environmental context and archaeological background, are summarised in this report. For a full description of the proposal refer to the REF and Section 1 of the PACHCI Stage 2 ASR.

Findings

- One registered AHIMS site is located within the proposal site boundary (TNRU7)
- Site TNRU7 is assessed as demonstrating low archaeological significance and will not be impact by the 50 per cent design
- Previously recorded PADTNRB PAD02 has been extended into survey unit six. PAD02 is assessed as demonstrating moderate archaeological potential and is likely to demonstrate moderate-low archaeological significance
- 1232 The Northern Road was not surveyed for this assessment. A desktop assessment within the PACHCI Stage 2 ASR and this report indicates that 1232 The Northern Road is likely to demonstrate low archaeological potential.

Recommendations

- As TNRB PAD02 may be impacted by the proposal, test excavations in accordance with PACHCI Stage 3 and the OEH code of practice would be required to determine the nature and extent of that area.
• If Aboriginal objects are located at any stage outside areas where test excavations are being undertaken, or outside areas for which an AHIP is granted, work would stop immediately and the *Roads and Maritime Standard Management Procedure – Unexpected heritage items* (2015) would be followed. If human remains are located during any works associated with the project within the study area the *Roads and Maritime Standard Management Procedure – Unexpected heritage items* (2015) would be followed.

• If the project design is changed and areas not surveyed are to be impacted, or other Aboriginal sites not identified are to be impacted, further archaeological assessment would be required.

• No impacts to identified Aboriginal sites may occur without an AHIP. Impacts to PAD would be avoided prior to the test excavation program commencing. This recommendation applies to geotechnical testing.
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1.0 INTRODUCTION AND BACKGROUND

Roads and Maritime Services (Roads and Maritime) is proposing to construct a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (the proposal). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool.

Artefact Heritage prepared an archaeological survey report (ASR) in 2015 as part of the preparation of a Review of Environmental Factors (REF) for the proposal. The ASR was prepared in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). The proposal area is located near the existing intersection of The Northern Road and Bringelly Road, Bringelly (see Figure 1).

Ten properties within the proposal site boundary were not accessible prior to finalisation of the PACHCI Stage 2 ASR. Following arrangements by GHD to access nine of those ten properties, Artefact was engaged to prepare an addendum PACHCI Stage 2 ASR that addresses those previously unassessed areas (see Figure 2).

The purpose of this addendum report is to document the location of Aboriginal objects and areas of archaeological potential within those ten properties not accessed for the PACHCI Stage 2 ASR.

This report includes a discussion of archaeological potential and the likelihood of archaeological material occurring within the one property inaccessible during preparation of this report (see Figure 2). The portion of the proposal site boundary investigated for preparation of this report is referred to as the ‘survey area’.

This addendum report is intended to be read in conjunction with the PACHCI Stage 2 ASR. Key report sections, including environmental context and archaeological background, are summarised in this report. For a full description of the proposal refer to the REF and Section 1 of the PACHCI Stage 2 ASR.

1.1 Objectives of Addendum

This addendum report outlines the following information:

- Assessment of impact within the survey area (ten properties shown on Figure 2 inaccessible during preparation of the PACHCI Stage 2 ASR)
- An updated AHIMS search
- Development of a significance assessment and impact assessment for Aboriginal sites located within the survey area
- Recommendations for management and mitigation measures for Aboriginal sites within the survey area.

1.2 Investigators and Contributors

This addendum was prepared by Alyce Haast (Archaeologist). Josh Symons (Senior Archaeologist) and Dr Sandra Wallace (Principal Archaeologist) provided management input and review.
1.3 Aboriginal Stakeholder Consultation

Aboriginal stakeholder consultation was conducted by Roads and Maritime as per the PACHCI guidelines.

Gandangara Local Aboriginal Land Council (GLALC), took part in the site survey.
Figure 1: Key Features of the proposal and proposal site boundary (map provided by GHD)
Figure 2: Location of the survey area and the proposal site boundary
2.0 BACKGROUND CONTEXT

This section provides a brief summary of background information relevant to this addendum. A full description of the background context for the proposal is located in Sections 3, 4 and 5 of the PACHCI Stage 2 ASR.

2.1 Survey area location

The proposal site boundary supplied by GHD is shown in Figure 1. It is understood that the proposal site boundary represents the likely maximum extent of the road design and associated stockpile compound areas.

The survey area under consideration for this report consists of ten properties that were inaccessible for the PACHCI Stage 2 ASR (see Figure 2).

2.2 Identified Aboriginal objects

There is one previously recorded Aboriginal site located within the survey area. That site is referred to as TNRU 7 (AHIMS site 45-5-4143) and was recorded during the PACHCI Stage 2 investigation for The Northern Road upgrade. The PACHCI Stage 2 ASR identifies one area of PAD (TNRB PAD02) adjacent to the survey area.

2.3 Environmental context

The study area is located within the Cumberland Plain, which is typified by an undulating landscape of rolling hills and prominent rises. Soil within the region consists of the Blacktown soil landscape which is typified by shallow soils over a clay base.

The proposal area runs parallel to South Creek. Various tributaries of this watercourse traverse the study area. The northern end of the study area intersects with Thompsons Creek. The Nepean River runs 10 km to the west of the study area.

2.4 Aboriginal land use

Aboriginal people traditionally lived in small family or clan groups that were associated with particular territories or places. The language group spoken in the Narellan/Bringelly area is thought to have been Dharawal (Tindale 1974). The Dhrawal language group is thought to have extended from the Shoalhaven River, north to Botany Bay and then inland to Camden. Some sources also describe the Narellan area as being home to the Muringong people, speakers of the Darug language group (Mathews and Everitt 1900:265).

There is some evidence that Aboriginal people around Narellan spoke a distinctly separate language and their tribal area was known as Cubbitch-Barta after its white pipe clay (Russell 1914). Government records from the 1830s and 1840s identify an Aboriginal group known as the Cobbiti Barta as associated with the Camden area (JMcDCHM 2007:21).

Historical records show that Gandangara people visited the Narellan/Bringelly area. It is not known whether these visitations represented recent displacement patterns as a result of European colonisation or were part of a longer term interaction with the Dharawal (Karskens 2010:496).
3.0 STATUTORY REQUIREMENTS


The NPW Act, administered by the OEH provides statutory protection for all Aboriginal ‘objects’ (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for ‘Aboriginal Places’ (areas of cultural significance to the Aboriginal community) under Section 84.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.

The NPW Act was amended in 2010 and as a result the legislative structure for seeking permission to impact on heritage items has changed. A Section 90 permit is now the only AHIP available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

As part of the administration of Part 6 of the Act, OEH regulatory guidelines on Aboriginal consultation are in place, which are outlined in the Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010). Guidelines are also in place for the processes of due diligence as outlined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010) in accordance with the 2010 amendment to the Act.

There are no gazetted Aboriginal Places within the proposal areas. All Aboriginal objects, whether recorded or not are protected under the Act.

3.2 Native Title Act (1994)

The NSW Native Title Act 1994 was introduced to work in conjunction with the Commonwealth Native Title Act 1993. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

A search of the National Native Tribunal applications register was conducted on 20 May 2015. There are no Native Title claims registered within the study area.

3.3 Aboriginal heritage investigation guidelines

The current investigation adheres to Stage 2 of the Roads and Maritime PACHCI and the OEH code of practice. Stage 2 of the PACHCI involves the identification of Aboriginal sites and areas of archaeological potential within a particular study area. The investigation involves an archaeological survey conducted with representatives of the local Aboriginal land council. Where it is identified in the PACHCI Stage 2 investigation that Aboriginal sites or areas of archaeological potential will be impacted, Roads and Maritime commences Stage 3 of the PACHCI. Stage 3 includes comprehensive Aboriginal stakeholder consultation, archaeological test excavation (where required), an Aboriginal Focus Group (AFG) meeting, and preparation of an Aboriginal Cultural Heritage Assessment Report (CHAR) to support an AHIP application or SSI approvals. Stage 4 of the PACHCI involves any mitigation measures required following approvals, such as archaeological salvage excavation or surface collection prior to impacts.
4.0 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS) SEARCH

An extensive search of the Aboriginal Heritage Information System (AHIMS) was completed on 18 November 2015 (Client ID: 199829) to determine whether Aboriginal sites had been recorded within the study area and to ascertain its archaeological context. This search updated the original AHIMS search conducted for the PACHCI Stage 2 ASR. An area of 1.7 kilometres (east to west) by 3.1 kilometres (north to south) was included in the search. The details of the AHIMS search parameters are as follows:

- **GDA 94 MGA 56**
- **AHIMS Search ID**: 199829
- **Number of sites**: 23
- **Buffer**: 0m

A total of 23 sites were identified by the extensive AHIMS search. The frequency of recorded site types is summarised in Table 1 below. The distribution of recorded sites within the AHIMS search area is shown in Table 1.

The location of Aboriginal sites is considered culturally sensitive information. It is advised this information, including the AHIMS data appearing on the heritage map for the proposal be removed from this report if it is to enter the public domain.

**Table 1: Frequency of site features from AHIMS data**

<table>
<thead>
<tr>
<th>Site Feature</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artefact</td>
<td>19</td>
<td>82%</td>
</tr>
<tr>
<td>Artefact Scatter</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>Modified Tree (Carved or Scarred)</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

Of the 23 previously recorded sites in the study area, artefacts are the predominant site feature (n= 22, 95%). Of these, three are recorded as scatters (13%). There is one scarred tree recorded to the south of the study area.

The majority of sites are associated with The Northern Road and Bringelly Road. This is likely to reflect the focus of previous studies on road corridors and the exposures that often occur in these areas.

Of the sites identified by the AHIMS extensive search, there is one site located within the study area TNRU7 (AHIMS# 45-5-4145). Site TNRU7 was originally recorded by Artefact Heritage in 2011 during the first PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade. The site consists of seven artefacts scattered across an area of 100 m x 20 m within the front paddock of a small property lot at [redacted]. This site was visited during the current survey and will be discussed further in Section 6.3.

A second site is located approximately 60m north east of survey unit six. This site TNRU12 (AHIMS# 45-5-4148) consists of an isolated silcrete artefact located on a dam wall at [redacted]. This artefact is location east of TNRB PAD02.
Figure 3: AHIMS extensive search results
5.0 FIELD METHODS

5.1 Site definition

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

OEH guidelines state in regard to site definition that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location
- Obvious physical boundaries where present, e.g. mound site and middens (if visibility is good), a ceremonial ground
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study an Aboriginal site was defined by recording the spatial extent of visible traces or the direct evidence of their location.

5.2 Survey methodology and limitations

Pedestrian survey of the survey area was conducted on the 19 and 23 September 2015 by Alyce Haast, Claire Rayner (Artefact Heritage) and (GLALC).

Survey units were defined by distinct property groupings with several survey units comprising of multiple adjacent properties. Each additional survey area was labelled numerically as individual survey units (see Figure 4).

Survey included nine of the ten properties omitted from the previous report. Access to the tenth property was not available during preparation of this report.

A sample survey of the survey area was conducted. A sample survey is acceptable in accordance with the OEH code of practice with justification. Sample survey was utilised as most survey units contained very small proportions of ground surface exposure. Grass and vegetation coverage was dense in all survey areas, resulting in poor to nil visibility throughout the study area. All surface exposures were inspected, and old growth native trees were similarly targeted for evidence of cultural modification. Local landforms, evidence of land use history and previous research were used to inform assessments of archaeological potential.
Figure 4: Survey unit locations within the proposal site boundary
6.0 SURVEY RESULTS

6.1 Effective survey coverage

The effective survey coverage is summarised in Table 2 and the landform survey coverage is summarised in Table 3.

Table 2: Survey coverage

<table>
<thead>
<tr>
<th>Survey Unit Landform Unit</th>
<th>Survey unit area (m²)</th>
<th>Visibility (%)</th>
<th>Exposure (%)</th>
<th>Effective Survey Coverage (m²)</th>
<th>Effective Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Flat</td>
<td>1831 m</td>
<td>5%</td>
<td>5%</td>
<td>4.6</td>
<td>0.25%</td>
</tr>
<tr>
<td>2 Slope</td>
<td>2786 m</td>
<td>10%</td>
<td>10%</td>
<td>27.9</td>
<td>1%</td>
</tr>
<tr>
<td>3 Flat</td>
<td>5865 m</td>
<td>5%</td>
<td>1%</td>
<td>2.9</td>
<td>0.05%</td>
</tr>
<tr>
<td>4 Slope, Artificial drainage basin</td>
<td>21501 m</td>
<td>5%</td>
<td>5%</td>
<td>53.7</td>
<td>0.25%</td>
</tr>
<tr>
<td>5 Flat</td>
<td>6624 m</td>
<td>10%</td>
<td>10%</td>
<td>66.2</td>
<td>1%</td>
</tr>
<tr>
<td>6 Flat, Artificial drainage</td>
<td>8860 m</td>
<td>10%</td>
<td>10%</td>
<td>88.6</td>
<td>1%</td>
</tr>
<tr>
<td>7 Flat</td>
<td>4312 m</td>
<td>50%</td>
<td>30%</td>
<td>646.8</td>
<td>15%</td>
</tr>
</tbody>
</table>

Table 3: Landform Summary

<table>
<thead>
<tr>
<th>Landform</th>
<th>Landform area (m²)</th>
<th>Area effectively surveyed</th>
<th>% of landform effectively surveyed</th>
<th>Number of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>26818</td>
<td>802</td>
<td>3%</td>
<td>1</td>
</tr>
<tr>
<td>Slope</td>
<td>23440</td>
<td>79.5</td>
<td>0.3%</td>
<td>0</td>
</tr>
<tr>
<td>Artificial drainage basin</td>
<td>1520</td>
<td>8.8</td>
<td>0.6%</td>
<td>0</td>
</tr>
</tbody>
</table>

6.2 Survey Observations

6.2.1 Survey Unit 1 (1220 Bringelly Road)

Survey Unit 1 is located within the eastern portion of the proposal site boundary on Bringelly Road. The survey unit consists of the southern portion of the property located at 1220 Bringelly Road (Plate 1).

Survey Unit 1 consists of a gently sloping landform. Vegetation within survey unit one consists primarily of dense grass, which significantly restricted ground surface visibility during the survey. One
area of ground surface visibility was the access vehicle track into the property. That track had been formed with introduced gravels. Exotic tree species lined the gravel pathway (Plate 2).

No artefacts were identified within Survey Unit 1 and the area was assessed as demonstrating low archaeological potential.

6.2.2 Survey Unit 2 (953 Bringelly Road)

Survey Unit 2 is located within the eastern portion of the proposal site boundary. The survey unit consists of the northwestern portion of the property located at 953 Bringelly Road (Plate 3).

Survey Unit 2 consists of a gently sloping landscape rising to the north. The survey unit has undergone extensive landform modification with an artificial dam located directly south of the study area. The area is littered with a variety of building material waste (Plate 4).

Vegetation within Survey Unit 2 primarily consists of high dense grass, significantly restricting ground surface visibility. Ground surfaces were also partially covered by building waste. Areas of exposure existed within area of gravel paths which appeared to consist of imported gravels.

No artefacts were identified within Survey Unit 2 and the area was assessed as demonstrating low archaeological potential.
6.2.3  Survey Unit 3 (1152 The Northern Road)

Survey Unit 3 is located within the central portion of the project area, with entry to the property off The Northern Road. The survey unit consists of the northwestern portion of the property located at 953 Bringelly Road.

Survey Unit 3 consists of a flat landscape located between two rises to the north and south of the proposal site. The survey unit appears to have been used extensively for agriculture (Plate 5). Vegetation within Survey Unit 3 primarily consists of high dense grass which significantly restricted ground surface visibility.

No artefacts were identified within Survey Unit 3. The area was assessed as demonstrating low archaeological potential.

Plate 5: North eastern view of the survey unit  Plate 6: South eastern view of the survey unit

6.2.4  Survey Unit 4 (3, 9 and 11 Robinson Road)

Survey Unit 4 is located within the southern portion of the proposal site boundary. The survey unit consists of the northwestern portion of the properties at 3 and 9 Robinson Road.

Survey Unit 4 consists of a sloping landscape rising to the north (Plate 7). The survey unit includes multiple land uses with current pastoral use and small scale market gardens (Plate 8) to the east and north of the survey unit respectively.

Vegetation within Survey Unit 4 primarily consists of low dense grass (Plate 8 and Plate 9) which significantly restricted ground surface visibility. Areas of exposure were located within vehicle tracks. Several sheds were located within the survey unit further obscuring the ground surface.

No artefacts were identified within Survey Unit 4. The area was assessed as demonstrating low archaeological potential.
6.2.5 Survey Unit 5

Survey Unit 5 is located within the southern portion of the proposal site boundary. The survey unit consists of the western portion of the properties at [obscured].

Survey Unit 5 consists of a flat landform comprised of lawn areas and driveways at the front of the properties. The northern portion of Survey Unit 5 consisted of an area that was inaccessible due to the tall dense grass and trees that covered that area.

Surface visibility was very limited throughout Survey Unit 5. The southern portion of the survey unit consisted of a cleared paddock area with an artificial mound which ran parallel to the existing road. The mound has been created by the movement of topsoil subsequently exposing bare earth (Plate 12).

A previously recorded site TNRU7 (AHIMS #45-5-4145) is located within the mound area. The site location was revisited however no artefacts were identified during the current survey.
6.2.6 Survey Unit 6

Survey Unit 6 is located within the southern portion of the proposal site boundary (Figure 1). The survey unit consists of the eastern portion of the properties at [location details].

Survey Unit 6 consists of a flat landform with artificial mounding related to the development of a dam in the south of the survey area. The dam structure is surrounded by gravel and supported by concrete foundations (Plate 13). The dam wall is covered with grass however several areas of exposure exist within the dam walls (Plate 14). Additional grassed areas are located to the south of the dam area. Several sheds were located within the survey unit further obscuring the ground surface.

The northern portion of the survey unit consisted of open paddock. Ground disturbance appeared to be limited and likely to be associated primarily with grazing and market gardening activities (Plate 16). Evidence of ploughing works and the development of agricultural drainage channels were noted west of the survey unit. No artefacts were identified within Survey Unit 6.

The northern portion of the survey unit was considered to represent an intact landform that was considered to be an extension of the previously recorded TNRB PAD02. The extension of TNRB PAD 2 is discussed further in Section 6.4.
6.2.7 Survey Unit 7 (1216 The Northern Road Bringelly)

Survey Unit 7 is located within the northern portion of the proposal site boundary. The survey unit consists of the eastern portion of the property at 1216 The Northern Road Bringelly.

Survey Unit 7 consists of a flat landform. The northwest of the survey unit appears to have been levelled, removing the A soil horizon. The eastern portion of the survey unit is dominated by thick grass with occasional piles of tree stumps and wood chips suggesting recent land clearance within the survey unit. Small pockets of regrowth eucalypts are located along the property boundary. Surface disturbance within the western portion of the property has resulted in high levels of surface visibility.

No artefacts were identified within Survey Unit 7. The area was assessed as demonstrating low archaeological potential.
6.3 Site TNRU7

Site TNRU7 was originally recorded by Artefact Heritage in 2011 during the PACHCI Stage 2 investigation for The Northern Road Stage 2 upgrade (see Figure 3). The site recording noted seven artefacts scattered across an area of 100 metres x 20 metres within the front paddock of a small property lot at [insert coordinates]. A small tributary of Lowes Creek runs 20 metres to the north of the property with a gentle slope upwards towards the south.

At the time of the original recording, the site area had recently been graded with topsoil pushed across to form an earthen bank along the margin of The Northern Road. The removal of topsoil had exposed subsoil along with artefacts that would have been buried within it. Based on this disturbance, the archaeological potential of the site has been compromised despite the relatively high number of artefacts.

The artefacts were not relocated during the current survey. There has been a large amount of grass overgrowth resulting in much lower visibility along the ground surface than during the original survey.

6.4 TNRB PAD02

TNRB PAD02 was originally recorded by Artefact within a portion of the property at 30 Robinson Road during preparation of the PACHCI Stage 2 ASR. The PAD is located on a raised flat landform next to an incised creek line. The landform was considered to be relatively intact with no evidence of ploughing or furrowing. This field observation was also supported by analysis of aerial photography from 1947 until the present. Disturbance appears to be limited to the initial vegetation clearance.

The current survey identified that TNRB PAD02 extended further south into survey unit six. The recorded extent of the PAD is limited to the proposal site boundary, and is likely to extend outside that area.

6.5 Inaccessible properties - 1323 The Northern Road

Of the ten properties requiring survey, one property was inaccessible for the current survey. An overview of the likely archaeological potential of 1323 The Northern Road is outlined below. This information is based on the results of survey in neighbouring properties and available desktop information.
The portion of the proposal site boundary within 1323 The Northern Road consists of an area that appears to have been disturbed by significant landscaping, housing and driveways. The eastern portion of the property, outside the proposal site boundary, appears by comparison to be relatively undisturbed.

Survey of adjacent properties did not identify any Aboriginal objects or areas of archaeological potential. Aerial imagery and observations from neighbouring properties, indicate a large number of regrowth Eucalypts with occasional old growth trees within the eastern portion of the survey unit. The survey unit is located approximately 300 metres from the closest water source.

The eastern portion of the survey unit is considered relatively intact based on desktop analysis. Despite this, the survey unit does not contain landform elements that would indicate it as an area of potential based the OEH Due Diligence Code of Practice. This, in combination with the lack of archaeological potential within the adjacent properties suggests that the survey unit will have a low archaeological potential.
7.0 ANALYSIS AND DISCUSSION

Archaeological potential is closely related to the levels of ground disturbance. Other factors are also taken into account when assessing archaeological potential, such as whether artefacts were located on the surface, and whether the area is within a sensitive land form unit according to the predictive statements for the area.

Disturbance has occurred throughout the study area to varying degrees. Several survey units have been impacted by dam construction as well as construction of residential buildings and sheds. Given the shallow nature of soils within the study area it is likely that any archaeological remains in these areas would have been significantly disturbed.

Predictive models for the area predictive model identifies areas of potential based on the landform unit and distance from water. Terraces and slopes within 100 metres of water are considered to have a high potential to contain intact deposits and Aboriginal objects. Areas with a good outlook over a valley several hundred metres from water are considered to have moderate potential to contain intact archaeological deposits and Aboriginal objects. Additional information regarding the predictive modelling used in this survey is available in the previous report (Artefact 2015).

TNRB PAD02 is located on a raised flat landform next to an incised creekline. Examination of aerial photographs taken between 1947 and 2015 suggest that there has been little ground disturbance in the extended area of TNRB PAD02. This PAD would have been close to natural resources and is therefore considered to demonstrate archaeological potential according to the current predictive model.
8.0 SIGNIFICANCE ASSESSMENT

8.1 Assessment criteria

Archaeological significance refers to the archaeological or scientific importance of a landscape, site or area. This is characterised using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state’s natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

Cultural values and significance would be discussed by the Aboriginal groups during ongoing Aboriginal consultation for the project and would be detailed in the Cultural Heritage Assessment Report during Stage 3 of the Roads and Maritime PACHCI.

8.2 Archaeological significance assessment

The archaeological potential of each recorded Aboriginal site and the study area as a whole is closely related to significance values. Areas of archaeological potential have research potential and the potential for Aboriginal objects that are representative of Cumberland Plain archaeology.

Areas of low archaeological potential have limited research potential and rarity values, and are likely to be in disturbed contexts not representative of intact areas on the Cumberland Plain. Also, these areas are not associated with sensitive landforms and are therefore less likely to contain cultural material.

All recorded Aboriginal sites and areas of archaeological potential within the study area have education potential. The distribution and nature of Aboriginal sites and associated heritage values provide important educational values for Aboriginal land-use on the Cumberland Plain.

A summary of the archaeological significance of identified Aboriginal sites and areas of archaeological potential within the study area is outlined in Table 4 and discussed below.
Table 4: Summary of archaeological significance values

<table>
<thead>
<tr>
<th>Site name</th>
<th>Research Potential</th>
<th>Scientific Value</th>
<th>Representative Value</th>
<th>Rarity Value</th>
<th>Overall archaeological Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRU7</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>TNRB PAD02</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate – Low</td>
<td>Moderate – Low*</td>
</tr>
</tbody>
</table>

* = likely significance (see text below)

Sites of low archaeological significance

TNRU7 was assessed by Artefact Heritage (2012) as demonstrating low archaeological significance based on the disturbed context, low archaeological potential and relative frequency of the site type in the local area.

Likely significance of TNRB PAD02

Although it is likely that intact Aboriginal archaeological deposits would be located during testing of TNRB PAD02, it is likely that these deposits would be similar to other Aboriginal sites recorded in the locality and have a moderate or low archaeological significance. No artefact sites of high archaeological significance were located during investigations for The Northern Road upgrade (Narellan to Bringelly) or the Bringelly Road upgrade (Camden Valley Way to The Northern Rd). TNRB PAD01 is within a similar crest landform to other previously identified sites such as BRP-IF-16 (#45-5-3886) which has been assessed as having moderate archaeological significance. TNRB PAD2 is within a similar landform (raised terrace next to a waterway) to identified sites such as TNRU 6 and TNRU 7 which have been assessed as having a moderate and low archaeological significance respectively.

It is therefore unlikely that TNRB PAD02 would be found to have high archaeological significance. It is therefore likely that impacts to TNRB PAD02 could be effectively mitigated through retrieval of information by archaeological excavation.

8.3 Cultural significance

The Aboriginal cultural heritage values associated with the study area will be discussed by Aboriginal stakeholders in their written responses to this report. It is anticipated that written comments will be incorporated into this document when received.
9.0 IMPACT ASSESSMENT

The proposal involves constructing a grade separated interchange about 300 metres east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. Proposed works include the widening and upgrading of Bringelly Road, the construction of a new section of The Northern Road and the development of an underpass under Bringelly Road.

This impact assessment has been prepared for the Aboriginal site (TNRU7) and area of archaeological potential (TNRB PAD02) identified in this addendum report only.

On the basis of the 50 per cent concept design provided for finalisation of the PACHCI Stage 2 ASR, TNRU7 would not be impacted.

TNRB PAD02 would be impacted by the extension of Belmore Road to intersect with Robinson Road.

Table 5: Summary of impacts

<table>
<thead>
<tr>
<th>Site</th>
<th>Type of harm</th>
<th>Degree of harm</th>
<th>Consequence of harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRU7 (#45-5-4143)</td>
<td>None</td>
<td>None</td>
<td>No loss of value</td>
</tr>
<tr>
<td>TNRB PAD02</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
</tbody>
</table>
Figure 6: Proposed impacts to TNRB PAD02
10.0 MANAGEMENT AND MITIGATION MEASURES

10.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is based on the assessed significance of the site or sites. The final recommendations in the second REF in mid-September would also be informed by cultural significance, which will be discussed by the Aboriginal community in their responses to the current investigation.

10.2 Mitigation and management measures

The mitigation measures recommended vary depending on the assessment of archaeological significance of the Aboriginal site which is based on its research potential, rarity, representativeness and educational value. In general the significance of a site would involve the following mitigation measures:

- Low archaeological significance – Conservation where possible. An AHIP would be required to impact the site before works can commence.
- Moderate archaeological significance – Conservation where possible. If conservation was not practicable further archaeological investigation would be required such as salvage excavations or surface collection under an AHIP.
- High archaeological significance – Conservation as a priority. An AHIP would be required only if other practical alternatives have been discounted. Conditions of this AHIP would depend on the nature of the site, but may include removal and preservation of scarred trees, or comprehensive salvage excavations.
- Unknown archaeological significance – Conservation where possible. Further investigation under the OEH Code of practice (2010) will be required to assess the extent and significance of the PAD. Test excavation is not a mitigation measure.

Table 6 provides a summary of the consequence of impacts and indicative management and mitigation measures. This information would be updated once the progressed concept design has been integrated into this report and the impact assessment revised.

Table 6: Summary of impacts and mitigation/management measures

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site names</th>
<th>Site type</th>
<th>Significance</th>
<th>Consequence of Impact</th>
<th>Mitigation/management measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-5-4143</td>
<td>TNRU7</td>
<td>Artefact Scatter</td>
<td>Low</td>
<td>No loss of value</td>
<td>AHIP required if proposal changes and site is impacted.</td>
</tr>
<tr>
<td>N/A</td>
<td>TNRB PAD02</td>
<td>PAD</td>
<td>Likely: moderate - low</td>
<td>Total loss of value</td>
<td>Further investigation under the OEH Code of practice (2010) required</td>
</tr>
</tbody>
</table>
10.2.1 TNRB PAD02

The identified extent of PAD TNRB PAD02 will be impacted by the current proposal resulting in total loss of value.

The archaeological significance of TNRB PAD02 is at present assessed as likely to be moderate-low. The PACHCI Stage 2 ASR identified that where impact to PAD02 could not be avoided that test excavation conducted in accordance with the OEH code of practice would be required to investigate the nature and extent of potential sub-surface archaeological deposit in that area and not to mitigate impacts.

If, following test excavation, TNRB PAD02 is found to be of a low archaeological significance, there would be no Aboriginal heritage constraints on the proposed development in those areas. However, where Aboriginal objects are retrieved during test excavation an AHIP would be required prior to any works commencing. Where no Aboriginal objects are retrieved during test excavation, an AHIP will not be required prior to impacts in that area.

If the PAD area is confirmed to have moderate archaeological significance it is likely that there would be no constraints on the proposed development in those areas, but that archaeological salvage excavations would be recommended to mitigate against any proposed impacts as a condition of an AHIP. An AHIP would be obtained from OEH prior to works commencing.

If the PAD area is found to be of high archaeological significance, this would inform future design preparation during Stage 3 of the Roads and Maritime PACHCI regarding future management of the areas, such as conservation where possible. It is therefore important to understand the nature of the buried archaeological deposits within the PAD by archaeological test excavation before further recommendations are made.

Revisions to the TNRB PAD02 test excavation methodology

A comprehensive test excavation methodology for TNRB PAD02 is included in Section 13 of the PACHCI Stage 2 ASR. With the identification in this report of the southern extension of TNRB PAD02 into Survey Unit 6, the test excavation methodology has been increased to 20 pits (see Figure 7).

The original methodology included a suggested total of ten test excavation squares within TNRB PAD02. With the doubling of the identified extent of PAD02, it is recommended that the suggested total number of test pits is extended to 20. A map showing the suggested locations for test pits within PAD02 is included below as Figure 7.

As noted in the PACHCI Stage 2 ASR, the total number and location of pits shown in Figure 7 is a guide only. The total number of test pits would vary and would depend upon circumstances including depth of deposit, hardness of deposit, any encountered areas of contamination and access issues.

10.2.2 TNRU7 (#45-5-4143)

Although site TNRU7 (#45-5-4143) is located within the proposal site boundary, the site would not be impacted by the road alignment as shown in the 50% design. Where the proposal changes or ancillary facilities are added that will impact TNRU7, an AHIP will be required prior to impacts taking place.
Figure 7: Suggested test pit locations, TNRB PAD02
10.3 Management strategies

A comprehensive discussion of management strategies and processes would be prepared for the Stage 3 CHAR in consultation with Aboriginal stakeholder groups. This discussion would outline procedures for management of unexpected archaeological finds, including human remains, along with processes to manage changes in proposed impacts.

A full outline of recommended management strategies for the project, including the extent of existing AHIPs in the area issued to Roads and Maritime, is outlined in Section 12.3 of the PACHCI Stage 2 ASR.
11.0 RECOMMENDATIONS

The following recommendations were based on consideration of:

- Statutory requirements under the National Parks and Wildlife Act 1974 as amended.
- The results of the background research, site survey and assessment.
- The interests of the Aboriginal stakeholder groups.
- The likely impacts of the proposed development.

It was found that:

- One registered AHIMS site is located within the proposal site boundary (TNRU7)
- Site TNRU7 is assessed as demonstrating low archaeological significance and will not be impact by the 50 per cent design
- Previously recorded PADTNRB PAD02 has been extended into survey unit six. PAD02 is assessed as demonstrating moderate archaeological potential and is likely to demonstrate moderate-low archaeological significance
- 1232 The Northern Road was not surveyed for this assessment. A desktop assessment within the PACHCI Stage 2 ASR and this report indicates that 1232 The Northern Road is likely to demonstrate low archaeological potential.

It is therefore recommended that:

- As TNRB PAD02 may be impacted by the proposal, test excavations in accordance with PACHCI Stage 3 and the OEH code of practice would be required to determine the nature and extent of that area.
- If Aboriginal objects are located at any stage outside areas where test excavations are being undertaken, or outside areas for which an AHIP is granted, work would stop immediately and the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed. If human remains are located during any works associated with the project within the study area the Roads and Maritime Standard Management Procedure – Unexpected heritage items (2015) would be followed.
- If the project design is changed and areas not surveyed are to be impacted, or other Aboriginal sites not identified are to be impacted, further archaeological assessment would be required.
- No impacts to identified Aboriginal sites may occur without an AHIP. Impacts to PAD would be avoided prior to the test excavation program commencing. This recommendation applies to geotechnical testing.
12.0 REFERENCES

Artefact Heritage 2012 *The Northern Road upgrade from The Old Northern Rd, Narellan, to Mersey Rd, Bringelly Archaeological Survey Report*. A Report to Roads and Maritime Services

Artefact Heritage 2015 Addendum to the PACHCI Stage 2 archaeological survey report for the upgrade of The Northern Road between The Old Northern Road and Peter Brock Drive. A report to Roads and Maritime Services.

Jo McDonald CHM Pty Ltd. 2007. *Archaeological investigation of the Oran Park Precinct in the South West Priority Growth Area, Camden, NSW*. Report to APP.


KNC 2010 *Bringelly Road upgrade: Camden Valley Way to The Northern Road Aboriginal cultural heritage Cultural Heritage Assessment Report*. Prepared for the Roads and Traffic Authority.


Department of Environment, Climate Change and Water (now OEH), 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*.

Roads and Maritime Services, 2011 *Procedure for Aboriginal Cultural Heritage Consultation and Investigation*. 


Appendix F: PACHCI Stage 3 ATER
EXECUTIVE SUMMARY

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool.

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage (2015a) was engaged by GHD on behalf of Roads and Maritime to conduct an Aboriginal heritage assessment for the proposal in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). That assessment identified that two areas of potential archaeological deposit (PAD) would require further archaeological investigation in accordance with Stage 3 of the PACHCI and the Office of Environment and Heritage (OEH) Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (the OEH Code of Practice). The two areas of PAD are referred to as PAD01 and PAD02.

Following the preparation of a test excavation methodology (Artefact 2015) and presentation of that methodology to registered Aboriginal stakeholders at an Aboriginal Focus Group (AFG) held on 7 December 2015. The test excavation program was conducted over five days between 1 February and 5 February 2016. Further details of Aboriginal stakeholder consultation and participation in the test excavation program is outlined in Sections 3.0 and 7.2 of this report.

This Archaeological Test Excavation Report (ATER) outlines the results of archaeological test excavation conducted at PAD01 and PAD02.

Summary of Findings

It was found that:

- No Aboriginal objects were retrieved from TNRB PAD01.
- A dispersed artefact scatter was identified at TNRB AS02 (previously TNRB PAD02). A total of 61 artefacts were excavated from this site. Stone artefact scatters are considered to be common on the Cumberland Plain however, the high concentration of artefacts within a small area of the site presents the opportunity to further investigate the nature of use of the site by Aboriginal people in the past.

Recommendations

It is therefore recommended that:

- TNRB PAD01 is not considered to be an Aboriginal site and there are no heritage constraints in regards to this area for the proposed works.
• If impacts to TNRB AS01 cannot be avoided, archaeological salvage excavation would be required in order to adequately investigate the subsurface deposits of this site.

• Long term care of excavated artefacts, such as reburial would be undertaken in accordance with the Code of Practice and the recommendations of registered Aboriginal stakeholders.

• A site recording form has been submitted to AHIMS for TNRB AS01.
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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

Roads and Maritime Services (Roads and Maritime) is proposing a new grade separated interchange at The Northern Road and Bringelly Road, Bringelly (referred to as ‘the proposal’ for the purposes of this report). The proposal is located within the Western Sydney Priority Growth Area (formerly known as the South West Growth Centre), about 45 km south-west of the Sydney central business district and 12 km west of Liverpool.

The proposal would tie into The Northern Road Upgrade Stage 2A (Peter Brock Drive to Belmore Road) to the south, The Northern Road Upgrade Stage 2C (Thames Road to Mersey Road) to the north, and the Bringelly Road Upgrade Stage 2 (King Street to The Northern Road) to the east.

Artefact Heritage (2015a) was engaged by GHD on behalf of Roads and Maritime to conduct an Aboriginal heritage assessment for the proposal in accordance with Stage 2 of the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI). That assessment identified that two areas of potential archaeological deposit (PAD) would require further archaeological investigation in accordance with Stage 3 of the PACHCI and the Office of Environment and Heritage (OEH) Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (the OEH Code of Practice). The two areas of PAD are referred to as PAD01 and PAD02, and their location is shown in Figure 2. A summary description of PAD01 and PAD02 is provided in Section 5.0.

Following the preparation of a test excavation methodology (Artefact 2015) and presentation of that methodology to registered Aboriginal stakeholders at an Aboriginal Focus Group (AFG) held on the 7 December 2015. The test excavation program was conducted over five days between 1 February and 5 February 2016. Further details of Aboriginal stakeholder consultation and participation in the test excavation program is outlined in Sections 3.0 and 7.1 of this report.

This Archaeological Test Excavation Report (ATER) outlines the results of archaeological test excavation conducted at PAD01 and PAD02.

1.2 Study Area

The proposal site boundary supplied by GHD is shown in Figure 1. It is understood that the proposal site boundary represents the likely maximum extent of the road design and associated stockpile compound areas. For the purpose of this report, the proposal site boundary is referred to as the ‘study area’.

This Aboriginal archaeological survey complies with Stage 3 of the Roads and Maritime PACHCI and the OEH Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (referred to in this document as ‘the OEH Code of practice’).

1.3 The Proposal

The grade separated interchange, which would involve The Northern Road passing under Bringelly Road, would be located about 300 m east of the existing intersection of The Northern Road, Bringelly Road and Greendale Road. The proposal also involves modifications to the existing intersection. The key features of the proposal are shown in Figure 1. A full description of the proposal is included in the PACHCI Stage 3 Aboriginal Cultural Heritage Assessment Report (CHAR) and REF.
1.4 Author

Claire Rayner (Heritage Consultant) prepared this report. Management input and review was provided by Josh Symons (Principal).

1.5 Scope of this report

This report discusses the archaeological test excavation of PAD01 and PAD02 only. Details of the nature and mitigation measures for other recorded Aboriginal sites identified within the proposal area in Figure 2 are provided in the associated PACHCI Stage 3 CHAR document.
Figure 1: Key Features of the proposal and study area boundary (map provided by GHD)
2.0 LEGISLATIVE CONTEXT

This ATER has been undertaken within the context of several items of legislation that relate to Aboriginal heritage and its protection in New South Wales.

The National Parks and Wildlife Act 1974 (NPW Act), administered by Office of Environment and Heritage (OEH), provides statutory protection to all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under section 90. The NPW Act was amended in 2010, and as a result the legislative structure for seeking permission to impact on heritage items has changed. A section 90 permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and may only be granted by OEH if the conditions of the ‘due diligence guidelines’, and / or an ‘archaeological investigation’ have been met.

As part of the administration of Part 6 of the NPW Act, the OEH has developed regulatory guidelines on Aboriginal consultation, which are outlined in the Aboriginal cultural heritage consultation requirements for proponents 2010. In accordance with the 2010 amendment to the NPW Act guidelines have also been developed for the processes of due diligence – Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, and for investigation of Aboriginal objects – Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (herein referred to as the Code of Practice).

The Aboriginal Land Rights Act 1983 is administered by the NSW Department of Human Services - Aboriginal Affairs. This Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Act to; (a) take action to protect the culture and heritage of Aboriginal persons in the council’s area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council’s area.

The Native Title Act 1994 was introduced to work in conjunction with the Commonwealth Native Title Act. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

2.1 Archaeological test excavation guidelines

Archaeological test excavation was conducted in accordance with the OEH Code of Practice. The Code of Practice prescribes guidelines for archaeological test excavation without an AHIP, and outlines the amount of excavation allowed in a particular area, the size of the test pits, and the way that they are excavated.
3.0 ABORIGINAL CONSULTATION

Aboriginal stakeholder consultation has been conducted by Roads and Maritime in accordance with the Roads and Maritime PACHCI and the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (herein referred to as the Consultation Requirements).

Artefact Heritage has been informed by Roads and Maritime that a list of registered stakeholders for the project has been submitted to OEH. Due to confidentiality reasons this list has not been provided to Artefact Heritage at this stage of the project.

The test excavation methodology was presented to Aboriginal stakeholder representatives at an Aboriginal Focus Group (AFG) held on 7 December 2015. Comments received from three groups supported the test excavation methodology. Two groups commented that they would like to see the artefacts reburied or placed with a Museum. All groups highlighted the social, spiritual and cultural values they hold for all land.

Representatives from three of the registered stakeholder groups attended the test excavations.

Full details of Aboriginal stakeholder consultation conducted by Roads and Maritime is outlined in the PACHCI Stage 3 CHAR.
4.0 BACKGROUND CONTEXT

A summary of background information is included below. Comprehensive background information can be found in the PACHCI Stage 2 reporting for the proposal (Artefact 2015).

4.1 Environmental Context

The study area is located within the Cumberland Plain, which is typified by an undulating landscape of rolling hills and prominent rises. The underlying geology of the study area consists of late Triassic period Bringelly shale deposits belonging to the Wianamatta Group (Clark and Jones 1991). These deposits consist predominantly of claystone and siltstone with thin laminate horizons. Areas of sandstone are minor and sporadic within the Bringelly formation. However, sandstone is prominent along north to south trending flat topped ridgelines from Minchinbury through Cecil Park to Leppington and from Orchard Hills through Luddenham and Bringelly to Cobbitty (Clark and Jones 1991).

The primary soil type across the study area is the Blacktown soil landscape. The Blacktown soil landscape is typified by shallow duplex soils over a clay base. The biomantle is underlain by heavily textured subsoil with a depth of generally less than a metre, and most commonly less than 30 cm. The archaeological implications of this soil landscape are that intact deposits are likely to occur in the A horizon, which is generally up to 30 cm depth, although stratigraphic potential would be limited.

The study area runs parallel to South Creek. Various tributaries of this watercourse traverse the study area. The northern end of the study area intersects with Thompsons Creek. The Nepean River runs 10 km to the west of the study area.

The study area would once have been covered by open Cumberland Plain Woodland, which is typical of the Wianamatta Group shale geology. Tree species would have included Forest Red Gum (E. tereticornis) and Grey Box (E. moluccana). Honey Myrtle (Melaleuca decora) and Prickly Leaf Paperbark (Melaleuca nodosa) would have been present on the floodplain at Bells Creek (Benson and Howell 1990).

4.2 Aboriginal History of the Locality

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The language group spoken on the Cumberland Plain is known as Darug (Dharruk – alternative spelling).

This term was used for the first time in 1900 (Matthews and Everitt) as before the late 1800s language groups or dialects were not discussed in the literature (Attenbrow 2010:31). The Darug language group is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow 2010:34). This area was home to a number of different clan groups throughout the Cumberland Plain.

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region, including Darug speakers. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture, timber, fishing grounds and water sources. Overall the devastation of the Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic over half of the Aboriginal people of the Sydney region died. The disease spread west to the Darug of the Cumberland Plain and...
north to the Hawkesbury. It may have in fact spread much further afield, over the Blue Mountains (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely before Europeans could observe them, or record their clan names (Karskens 2010:425).

The British initially thought that Aboriginal people were confined to the coast taking advantage of the abundant marine resources available. The first major recorded expeditions into the interior did not witness any Aboriginal people, but evidence of their existence was noted. In April 1788 Governor Philip led an expedition west to Prospect Hill. It was noted,

‘...that these parts are frequented by the natives was undeniably proved by the temporary huts which were seen in several places. Near one of these huts, the bones of kangaroo were found, and several trees where seen on fire’ (Phillip 1789).

In 1789 Captain Watkin Tench led an expedition to the Nepean River. He noted that:

Traces of the natives appeared at every step, sometimes in their hunting huts which consist of nothing more than a large piece of bark bent in the middle and opened at both ends, exactly resembling two cards set up to form an acute angle; sometimes in marks on trees which they had climbed; or in squirrel-traps….We also met with two old damaged canoes hauled up on the beach. (Tench 1789)

It wasn’t until rural settlement began in the western Cumberland Plain, during the 1790s, that Aboriginal groups in this region came into regular and permanent contact with British colonists. Relations quickly disintegrated, and tensions over land and resources spilled over. Governor King sanctioned the shooting of Aboriginal peoples in a General Order made in 1801 (Kohen 1986:24). Intermittent killings on both sides continued for over 15 years, including the Appin massacre and attacks at South Creek in 1816 (Kohen 1986:23, Karskens 2010:225).

Although tensions existed between Aboriginal people and the British on the Cumberland Plain, a number of Aboriginal families and British farmers managed to peacefully co-exist (Karskens 2010:537). William Cox employed members of the Mulgowie tribe on his Mulgoa Estate (Karskens 2010). Impressive tree climbing demonstrations were recorded in 1828 on Robert Lethbridge’s Flushcombe Estate near present-day Blacktown (Karskens 2010). Records indicate that Corroborees were held in Camden on the Macarthur’s estate up until the 1850s (Karskens 2010).

The first parcels of land granted to an Aboriginal person were to the north of the study area between Richmond Road and Plumpton Ridge along Bells Creek. Governor Macquarie granted this land to Colebee and Nurragingy in 1819. Colebee did not stay long but Nurragingy lived on the land and it remained in the family until 1920 when it was resumed by the Aboriginal Protection Board (Kohen 1986:27).

The government policy of removal of Aboriginal children from their parents in order to assimilate them into white society began fairly early on in the colony’s history, and was epitomized by the development of the Native Institution at Parramatta in 1814.

This facility was moved to the Black Town settlement in 1823. It was closed in 1829 and the land was used for farming, but the site remains significant for its historical, archaeological and social values (GML 2007:36).
Descendants of Darug language speakers continue to live in Western Sydney along with Aboriginal people from other parts of NSW.

4.3 Archaeological Context

The archaeological understanding of the early Aboriginal settlement of the Sydney Basin and surrounds is constantly expanding and developing. At present, the earliest occupation known is associated with deposits on the Parramatta and Nepean Rivers, which have been dated to c.25-30 000 years before present (yBP) and 36 000 yBP (JMcD CHM Oct 2005; AHMS Feb 2013). Two coastal sites south of Wollongong at Bass Point and Burrill Lake in the Shoalhaven have both been dated to around 20,000 yBP (Lampert 1971 and Nanson et al 1987). Evidence of Aboriginal occupation at Lake Mungo has been dated to 50-60,000 yBP (Bowler et al 2003). Excavations on the Georges River have retrieved a date of 18 000 yBP in association with artefact bearing deposits (AHMS 2015).

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result, the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000 yBP in the Sydney region (Attenbrow 2010:102). It is argued that these changes in material culture were an indication of changes in social organisation and behaviour.

4.3.1 Previous archaeological excavations in the locality

Archaeological Subsurface Testing Program Proposed Industrial Development Area: The Crossroads Liverpool NSW (Navin Officer 1998)

Navin Officer conducted an archaeological survey and subsequent testing then salvage of an area of archaeological sensitivity identified along Maxwell’s Creek associated with AHIMS sites #45-4-0936 and #45-4-0937 (Crossroads 1 and 2) located 12 kilometres east of the current study area. The testing program included 21 test pits excavated on the western and eastern banks of the creek. The program recovered 92 artefacts from 16 of the test pits located on both sides of the creek.

Navin Officer considered the assemblage to be typical of those on the Cumberland Plain and South eastern Australia in general. The sites were considered to of low archaeological significance and no further investigation was recommended.

Maxwell’s Creek Archaeological Salvage and Monitoring, Prestons, NSW (AMBS 2000)

Australian Museum Business Services (AMBS) undertook two archaeological investigations in two stages at Maxwell’s Creek approximately 13 kilometres north east of the study area. The salvage excavation program focussed on an area associated with Maxwell’s Creek and AHIMS site MC1 #45-5-0778, a surface artefact scatter. A total of 82 m² was excavated within three excavation locations.

The excavation program retrieved 151 artefacts with artefact densities varying from 1.9/m² to 2.1/m². The dominant raw material was silcrete which accounted for over half of the assemblage. Artefacts were generally characterised as debitage indicating the production of stone tools within the salvage areas. The assemblage included five retouched artefacts, three of which were recorded as backed blades. Of the 151 artefacts there were only 2 cores recorded in the assemblage.

From the results of the salvage and other excavations conducted in the local area AMBS concluded that subsurface artefact scatter can be placed into two main groups (AMBS 2000: 31). The first is
characterised as evidence of extensive knapping of stone in which a large number of artefacts are produced over a short period of time. The second group is characterised as the gradual deposition of artefacts as a direct result of resource use. This gradual deposition would be identified on the basis that these artefacts are not associated with knapping floors. The results from the salvage excavation indicate that MC1 is likely to represent gradual deposition of artefacts rather than concentrated knapping events.

**Locality LB, Edmondson Park Archaeological Subsurface Testing Program (Navin Office 1998)**

Navin Officer conducted test excavations within Locality LB of the Edmondson Park release area approximately 9 kilometres east of the study area. The testing program involved the excavation of 68 test pits recovering 31 stone artefacts. The dominant lithology present was silcrete and the assemblage consisted of complete flakes, debitage, cores and points. The average artefact density across the site was 1.25/m².

The artefactual remains were interpreted as representative of low intensity occupation and background scatter. The highest concentration of subsurface artefacts were excavated from lower slopes in areas closest to creek lines. No artefacts were located on the crest or upper slopes of the tested area. This was likely attributed to the higher levels of disturbance on these landforms compared to areas close to the creek.

**Archaeological excavations at the Oran Park and Turner Road precincts (AECOM 2009).**

The archaeological test excavations at Oran Park involved a program of test pitting and open area excavations. Three hundred and forty test pits were excavated across a variety of landform units, with 160m² of open area excavated during salvage excavations. A total of 4780 artefacts were recovered from Phase 1 and Phase 2 excavations, with around three quarters of the artefacts made of silcrete. Approximately five per cent of the assemblage comprised of tools or cores including backed artefacts and scrapers. The presence of grey and white silcrete was interpreted to be evidence of the importation of exotic silcrete from sources further south rather. Overall the small size of artefacts within the assemblage and low frequency of cores was interpreted to be indicative of raw material curation and transportation into the study area (AECOM 2009: 64).

The results of the excavations found that the generalisation of high artefact numbers in association with high stream order does not hold for the study area (AECOM 2009: 50). Rather the results indicate a more even spread of archaeological deposit with occasional concentrations in areas with a good outlook over the Narellan Creek Valley (AECOM 2009: 50). Furthermore these concentrations may occur up to several hundred metres from a watercourse.

The results of the excavations indicated a low density spread of archaeological material across the precinct which is argued to reflect a ‘pre-contact landscape of extensive but low intensity Aboriginal activity with evidence of strategic defensive positioning of campsites within a cultural interaction zone between different language groups’ (AECOM 2009:ES1).

**Archaeological Salvage Excavations at Site HPK9 Harrington Park, Sydney (KNC 2009)**

KNC conducted salvage excavations at artefact scatter site HPK9 (#52-2-3326) located approximately eight kilometres south of the study area. Site HPK9 encorporated a small rise at the confluence of two watercourses in the Narellan Creek Valley. The site was originally recorded as a surface scatter of stone artefacts. The excavations retrieved a total of 769 lithic items from the excavation of 14 dispersed test squares and one open area. The density of artefacts from test squares was relatively low averaging 4 artefacts/m². The open area artefact densities were higher with an average of 17 artefacts/m².
The artefact assemblage was dominated by silcrete followed by quartz. Other raw materials included chert, silicified wood silicified tuff and unidentified fine-grained siliceous material. The majority of artefacts were small, measuring less than 1.5 centimetres in size and the largest artefact measuring 3.5 centimetres. The assemblage included heat shatters, microblade cores and kapping debitage characteristic of systematic core reduction. Two complete backed artefacts were also recovered.

KNC considered the site to indicate casual use for short stay hunting or maintenance camp used by small groups. The lithic assemblage was considered to belong to the Middle to Late Bondaian cultural phase. Radiocarbon dating of a charcoal sample from the base of deposit in the open area excavation corroborated this assessment with an age determination of 1,732±BP.

**South West Rail Link (SWRL): Preliminary Aboriginal Heritage Test Excavation (AMBS 2010)**

AMBS were commissioned to conduct a program of preliminary archaeological test excavations associated with the SWRL project approximately 5 kilometres east of the study area. The excavation program focussed on the locations of geotechnical test pits and bore holes. This included areas considered to be of high archaeological sensitivity and low archaeological sensitivity.

A total of 70 artefacts were retrieved from 30 test trenches excavated for the program. The total area excavated was 46 m². The assemblage was predominantly composed of silcrete flaked pieces with some quartz and IMDT also present. Flaking techniques recorded included bipolar flaking and retouch was also recorded on four artefacts. The excavation results identified areas with the highest number of artefacts were generally located on waning slopes and flats near a water source. The test trenches with the highest number of artefacts were located within 180 metres of Kemps Creek, 300 metres of a swamp within the Edmondson Park Lands and 200 metres of Maxwell’s Creek. Fewer artefacts were retrieved from test pits located along elevated areas such as ridgelines.

**Menangle Park Stables Project Archaeological Salvage Excavation Report (Artefact Heritage 2014)**

Artefact Heritage conducted an archaeological salvage excavation of Aboriginal site #52-2-3764 and associated area high archaeological potential within Menangle Park approximately 17 kilometres south of the study area. Artefact Heritage had complete test excavations of the area in 2013 which had identified a variable density sub-surface archaeological deposit across the site. The salvage program targeted two areas of identified high artefact density.

Artefact densities varied between the two open areas excavated during the salvage program. An average density of 1.75 artefacts/m² was identified within Open Area A (OAA) and a high average density of 13.4 artefacts/m² was identified from Open Area B (OAB). Overall the artefact density of the salvaged area was 8.6 artefacts/m². The artefact assemblage was dominated by silcrete with indurated mudstone tuff (IMDT), quartz and quartzite also identified. Complete flakes were the most frequent artefact type followed by flake fragments. Cortex was only present on 3% of the artefact assemblage and only three cores are present within the assemblage. Three backed artefacts were identified and one retouched artefact were identified within the assemblage. The assemblage also included 14 blades (4%). Overall the artefacts were generally small in size with over 80% of the assemblage measuring less than 20 millimetres.

**The Northern Road and Bringelly Road archaeological investigations**

Reporting for recent salvage excavation on Bringelly Road in the immediate vicinity of the study area is currently in preparation. Archaeological salvage excavation on Bringelly Road within the study area is understood to be taking place in the immediate future. The result of those investigations combined with the results of this test excavation and PACHCI Stage 4 excavation will provide an excellent comparative archaeological information for the local area.
5.0 PAD DESCRIPTIONS

5.1 TNRB PAD01

TNRB PAD01 is located on a crest landform overlooking a drainage line within the property at (Plate 1-Plate 2 and Figure 3). The area of potential was identified behind the house and gardens within a cleared field that demonstrates on the surface much lower levels of disturbance than the rest of the property. Artefacts have been found in areas of exposure along Bringelly Road to the south and south-east of the PAD indicating the potential for this area to contain intact archaeological deposits and Aboriginal objects.

Plate 1: TNRB PAD01 looking west towards drainage line

Plate 2: View north across TNRB PAD01
Figure 3: Location of TNRB PAD01 from the PACHCI Stage 2 assessment
5.2 TNRB PAD02

TNRB PAD02 is located on a raised flat landform next to an incised creek line within the property at (Plate 3-Plate 4 and Figure 4). The landform appears to be relatively intact with no evidence of ploughing or furrowing. This field observation was also supported by analysis of aerial photography from 1947 until the present. Disturbance appears to be limited to the initial vegetation clearance. A mature gum tree is located within the vicinity of the area of potential. An artefact has been recorded on the wall of the dam in the neighbouring property to the east of the PAD and an artefact scatter has been recorded to the south west of the PAD. This indicates the potential for the area to contain intact archaeological deposits and Aboriginal objects. It is likely that PAD02 would extend into neighbouring properties and beyond the study area boundaries.

Plate 3: View north across TNRB PAD02, note mature gum to the left of the photo

Plate 4: View east across TNRB PAD02 towards dam in neighbouring property where AHIMS site 45-5-4148 is located
Figure 4: Location of TNRB PAD02 from the PACHCI Stage 2 assessment
6.0 AIMS OF ARCHAEOLOGICAL TEST EXCAVATION

The archaeological test excavation program has been designed and undertaken in accordance with the OEH Code of Practice. The Code of Practice prescribes guidelines for archaeological test excavation that may occur without an AHIP under the NPW Act. Consultation by Roads and Maritime with registered Aboriginal stakeholders has been an integral part of the test excavation program.

6.1 Aims of Test Excavation

The archaeological field survey conducted for the current study observed very low surface visibility across the proposal site. This was largely due to dense grass cover. Due to this low surface visibility in most areas, landform observations and information from previous archaeological investigations were used to inform the selection of areas of PAD.

TNRB PAD01 is located on a crest landform overlooking a drainage line leading down slope towards Thompsons Creek. TNRB PAD02 is located on a raised flat area next to an incised creek line. This PAD is located down slope to the south of TNRB PAD01. The location of these PADs within two contrasting landforms presents the opportunity to further investigate these landforms within the archaeological context of the southern Cumberland Plain.

In accordance with the OEH code of practice the aims of archaeological test excavation are:

- To adequately identify the extent of TNRB PAD01 and TNRB PAD02
- To assess the scientific significance of TNRB PAD01 and TNRB PAD02 following an assessment of the test excavation results
- To provide an opportunity for registered Aboriginal stakeholders to comment on the Aboriginal cultural heritage values of the site
- To provide the proponent with recommendations on opportunities to avoid impact and future requirements for further archaeological investigation where required.

6.2 Excavation Methodology

Under the Code of Practice guidelines for test excavation, no more than 0.5 per cent of each investigated location can be excavated without an AHIP. A summary of the total of each area and total excavation area is outlined in Table 1 below.

**Table 1: Excavated area at each PAD**

<table>
<thead>
<tr>
<th>PAD</th>
<th>Total areal extent of PAD</th>
<th>Proposed excavation area (metres$^2$)</th>
<th>Proposed excavated percentage of total area</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRB PAD01</td>
<td>1708</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>TNRB PAD02</td>
<td>2775</td>
<td>8</td>
<td>0.3</td>
</tr>
</tbody>
</table>

6.2.1 Test excavation layout and excavation units

Test excavation involved hand excavation of 50 x 50 cm excavation units. Excavation units were spaced out on transects oriented to adequately test the extent of potential sub-surface Aboriginal objects at each location. An arbitrary X-Y grid was used to identify each pit location.
Where the ground conditions were considered to be unsuitable for excavation (i.e. flooded or covered by dense vegetation) the excavation units were offset of the original transects and the GPS coordinates recorded.

6.2.2 Excavation Procedure

Transects and excavation squares were laid out using long hand-tapes, flags and pegs. An initial baseline was laid out at each location, and trigonometry used to lay out parallel transects and offset excavation squares. A flag and peg was placed at northwest corner of each point to be tested, and hand tapes and pegs used to lay out the remaining pegs at each corner of the excavation units. A datum was established at the first excavation unit on the baseline. The location of each excavation unit was recorded using a hand-held non-differential GPS, and the magnetic bearing of the first transect recorded using a compass. An arbitrary site grid was established at the datum.

In accordance with the OEH code of practice, the initial excavation unit was excavated in 5 centimetre spits. Subsequent excavation units were excavated in 10 centimetre spits to the base of the artefact bearing deposit. Where time allowed and further investigation was required for particular areas, the Code of Practice allows for excavation units to be combined to open an area no larger than three square metres. This approach was utilised at TNRB PAD02.

A context sheet for each excavation unit was completed in the field. Details recorded include date of excavation, name of excavators, depth, number of buckets and soil description. Additionally, one representative section wall from each excavation unit was scale drawn, and photographs recorded of each section wall and base.

All retrieved deposit from each excavation unit was placed in buckets and transported to the sieve area using wheelbarrows. All retrieved deposit was sieved using nested 5 mm and 3 mm sieves.

All excavation units were back-filled with clean fill and sieve spoil following the completion of test excavation using a rubber tracked posi-track.

6.2.3 Procedure for the discovery of human remains

Under the Code of Practice and Roads and Maritime Unexpected Archaeological Finds Procedure 2015, excavation must cease should suspected human remains are encountered. In the event of the discovery of suspected human remains, work was to cease immediately and procedures enacted as outlined in Appendix F of the Roads and Maritime unexpected archaeological finds procedure.

No human remains or suspected human remains were identified during the test excavation program.

6.2.4 Aboriginal objects

All Aboriginal objects retrieved during the course of test excavation were washed and placed in re-sealable bags for further analysis and recording. Since the completion of test excavation, the artefact assemblage was recorded and has been stored as stipulated in the Code of Practice, awaiting consultation outcomes with the Aboriginal stakeholders. Recording included providence of the artefact, key attributes such as of raw material, artefact type, platform type, termination type, dimensions, weight, negative flake scars as well as photographic records of representative artefacts (see Table 2). All recorded information was entered into a Microsoft Excel table with detail linked to the provenance of each artefact. The complete artefact record is included in Appendix 1.

All artefacts have been given a unique number and stored in double re-sealable snap lock bags. A permanent marker was used to record the provenance and unique number of artefacts in each bag.
## Table 2: Recorded artefact attributes

<table>
<thead>
<tr>
<th>Artefact attributes</th>
<th>Recorded details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Details</td>
<td>Site name.</td>
</tr>
<tr>
<td>Excavation Unit</td>
<td>Location of the northwest corner of the excavation unit on the X Y grid.</td>
</tr>
<tr>
<td>Spit</td>
<td>Spit number.</td>
</tr>
<tr>
<td>Raw material</td>
<td>Raw material type and colour. Raw material type included: silcrete (SIL), Indurated Mudstone Tuff (IMDT), quartz (QZ), and Fine Grained Siliceous Stone (FSS).</td>
</tr>
<tr>
<td>Typological class/ reduction type</td>
<td>Flake; proximal flake fragment; medial flake fragment; distal flake fragment; bipolar flake; longitudinally broken flake; angular fragment; crenate fracture.</td>
</tr>
<tr>
<td>Formal tool type (if applicable)</td>
<td>Backed; retouched; core – unifacial, unifacial rotated, bifacial; core fragment</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Oriented length, width and thickness of complete flakes.</td>
</tr>
<tr>
<td>Size range</td>
<td>Maximum dimension in the following categories – 0-5 mm, 6-10 mm, 11-15 mm, 16-20 mm, 21-25 mm.</td>
</tr>
<tr>
<td>Cortex</td>
<td>Cortex coverage of whole artefact.</td>
</tr>
<tr>
<td>Weight</td>
<td>Measured to the 0.1gm. Artefacts less than 0.05gm were rounded up to 0.05 gm, whilst artefacts greater than 0.05 gm were rounded up to 0.1 gm.</td>
</tr>
</tbody>
</table>
7.0 RESULTS

7.1 Dates and Personnel

Test excavation was conducted over five days between Monday 1 and Friday 5 February 2015. Representatives of three registered Aboriginal stakeholder groups and archaeologists from Artefact Heritage took part in the test excavation program.

Table 3: Excavation attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Josh Symons</td>
<td>Artefact Heritage</td>
</tr>
<tr>
<td>Claire Rayner</td>
<td>Artefact Heritage</td>
</tr>
<tr>
<td>Stephanie Moore</td>
<td>Artefact Heritage</td>
</tr>
<tr>
<td>Mike Spate</td>
<td>Artefact Heritage</td>
</tr>
<tr>
<td>Jayden van Beek</td>
<td>Artefact Heritage</td>
</tr>
</tbody>
</table>

7.2 TNRB PAD01

Test excavation of TNRB PAD01 involved the excavation of 12 excavation units distributed 15 metres apart on five parallel transects spaced 7.5 metres apart (Figure 6). The test excavation methodology had originally indicated that six test pits would be excavated within TNRB PAD01. Following Aboriginal stakeholder feedback from the AFG held on 7 December 2015 it was decided that further test pits should be excavated to fully explore the potential archaeological resource at the PAD.

7.2.1 Soils, disturbances and features

TNRB PAD01 encompasses a crest landform overlooking a drainage line to the rear of the property at [coordinates]. Five transects were established in a north-easterly direction across the PAD area. The soil profile across the PAD consists of a dark brown silty-clay A1 horizon with some rounded shale and ironstone inclusions throughout. These inclusions varied in size with some recorded larger than five centimetres in excavation unit X2015 Y2035. There was no clear transition between the A1 and A2 horizons and much of the PAD appeared to be within a plough zone. The test excavation units were excavated to the basal B horizon which consists of a dense, sticky reddish brown clay with some orange mottling. The transition between the A and B horizons was generally easily identifiable and clearly defined. The depth of the excavation units varied from 10 cm (X1990 Y2005) to 30 cm (X2000 Y2030, X2015 Y2005) with the average excavated depth measuring 17 centimetres below the ground surface. The shallow deposit appears to have been subject to heavy disturbance and erosion caused by run off into the drainage channel to the west. Figure 5 and Plate 5 illustrates a standard unit excavated at PAD01 showing the shallow, homogenous deposit.
Example soil profile from PAD01

**TNRB PAD01**

*Excavation Unit X1992.5 Y2025*

- Unit 1 (A Horizon) – homogenous dark brown clayey silt
- Unit 2 (B Horizon) – Red/brown clay

**Figure 5: X1992.5 Y2025 North Section**

**Plate 5: Photo of X1992.5 Y2025 North Section**

### 7.2.2 Artefact assemblage

All test excavation units at TNRB PAD01 were found to be void of artefacts.
Figure 6: Excavated units, TNRB PAD01
7.3 TNRB PAD02

Test excavation of TNRB PAD02 involved the excavation of 32 excavation units distributed 15 metres apart on two parallel transects.

7.3.1 Excavation unit layout

Some areas of TNRB PAD02 were inundated with water at the time of excavation. In cases where the water was deemed to be too deep to excavate these excavation units were offset from the X axis due east or west to drier ground. These units include X3000 Y3030, X3000 Y3060, X3015 Y3005 and X3015 Y3020. The units were assigned new X,Y coordinates depending on the offset method. Excavation unit X3000 Y3105 was originally located within an area of dense bushes, after consultation with the Aboriginal stakeholder representatives present it was decided to offset this unit also. The offset excavation units and their coordinates are summarised in Table 4.

Excavation units X3000, Y3090 and X3015, Y3095 were located within a drainage channel and it was not possible to offset them as the entire locality of the units was under over 100mm of water. After consultation with the Aboriginal stakeholder representatives present it was decided not to excavate these units.

Table 4: Original excavation units and offset excavation units

<table>
<thead>
<tr>
<th>Original XY</th>
<th>Original GDA94 MGA56 coordinates</th>
<th>Offset XY</th>
<th>Offset GDA94 MGA56 coordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3000 Y3030</td>
<td>291145, 6241379</td>
<td>X2998 Y3030</td>
<td>291143, 6241379</td>
</tr>
<tr>
<td>X3000 Y3060</td>
<td>291150, 6241409</td>
<td>X2995 Y3060</td>
<td>291145, 6241409</td>
</tr>
<tr>
<td>X3000 Y3105</td>
<td>291158, 6241453</td>
<td>X3005 Y3105</td>
<td>291163, 6241453</td>
</tr>
<tr>
<td>X3015 Y3005</td>
<td>291155, 6241352</td>
<td>X3025 Y3005</td>
<td>291165, 6241352</td>
</tr>
<tr>
<td>X3015 Y3020</td>
<td>291158, 6241367</td>
<td>X3020 Y3020</td>
<td>291162, 6241367</td>
</tr>
</tbody>
</table>

7.3.2 Soils, disturbances and features

The soil profile was generally consistent across TNRB PAD02. A clayey silty A1 Horizon generally formed the first 10 cm of the deposits overlying a dark greyish brown A2 Horizon. The clay content of the deposit increased with depth. Excavation ceased at the B Horizon which consisted of a mottled yellowish brown silty clay and generally occurred around 20-30 cm below ground surface. There appeared to be little disturbance to the deposit across the site with only minimal bioturbation caused by insect activity recorded. The transition between the soil horizons was generally clearly delineated (see Figure 7 and Plate 6).

The average pit depth was 20 cm below ground surface with the deepest pit (X3015 Y3140) excavated to 34 centimetres below ground surface located at the northern end of the PAD area closest to the creek (Figure 8).
**TNRB PAD02**

_Excavation Unit X3000 Y3075 Open Area_

- Unit 1 (A1 Horizon) – Dark brown clayey silt/top soil root zone
- Unit 2 (A2 Horizon) – Dark grey brow clayey silt
- Unit 3 (B Horizon) – Medium yellow brown silty clay

![Figure 7: Drawing of northern section excavation unit X3000 Y3075 expansion](image)

Plate 6: Northern section excavation unit X3000 Y3075 expansion
Figure 8: Depth of excavation, TNRB PAD02
7.3.3 Artefact assemblage

The artefact assemblage retrieved from PAD02 consists of 61 artefacts retrieved from a total of 34 excavation units resulting in an average of 1.8 artefacts per unit. The assemblage consisted of a range of raw materials including silcrete, fine-grained siliceous, indurated mudstone/tuff (IMDT) and quartz (see Section 7.3.3.2). The total excavated area measured eight metres squared resulting in an extrapolated artefact density of 7.6 artefacts/m².

7.3.3.1 Stone artefact density and distribution

Stone artefacts were recovered from 10 of the 20 original excavation units (Figure 9). High concentrations of artefacts were identified at four of these excavation units which were then expanded to investigate these concentrations further (X3000 Y3015, X2998 Y3030, X3000 Y3075 and X3015, Y3140). Three of the four expanded test units are located along the western transect in the southern half of the site, with only one of the expanded units located on the eastern transect at the northern end of the site (X3015 Y3140). This indicates a general trend observed in the distribution of artefacts across the site with the majority of excavation units containing artefacts located in the southern half of the site and a clear separation between excavation units containing artefacts at the northern end of the site.

Excavation unit X3000 Y3075 contained the highest number of artefacts (n=12, 19.67%). This unit was expanded into a 1.5 by one metre open area. A further 25 artefacts were retrieved from the expansion units resulting in 37 artefacts in total. This accounts for over half of the assemblage retrieved from PAD02 (60.65%). These units were located on the southern side of the property fence that bisects PAD02. The units with the highest number of artefacts were located closest to the fenceline (X3000 Y3075 A, B and F, see Figure 9). The high number of artefacts retrieved from X3000 Y3075 and the expansion units clearly distinguishes it from the rest of the PAD area however further investigation would be required to identify the types of activities taking place here other than general stone tool manufacture and discard.

Most artefacts were retrieved from the first two spits (0-20 centimetres, n=54, 88.52%, Table 5). The highest frequency of artefacts was found in spit 2 (n=34. 55.73%) corresponding with the A2 soil horizon.

Table 5: Artefact frequency and excavation unit depth

<table>
<thead>
<tr>
<th>Spit</th>
<th>Artefact Frequency</th>
<th>Percentage of assemblage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (0-10 cm)</td>
<td>20</td>
<td>32.79</td>
</tr>
<tr>
<td>2 (11-20 cm)</td>
<td>34</td>
<td>55.74</td>
</tr>
<tr>
<td>3 (21-30 cm)</td>
<td>7</td>
<td>11.47</td>
</tr>
</tbody>
</table>
Figure 9: Distribution of artefacts, TNRB PAD02
7.3.3.2 Raw material and artefact characteristics

The assemblage predominantly consists of silcrete raw material (n=47, 77.05%). Other raw materials recorded include, fine-grained siliceous (n= 6, 9.84%), IMDT (n=5, 8.20%) and quartz (n= 3, 4.92%, Plate 7). Silcrete occurs in various colours including red (n=29, 61.70%), brown (n= 8, 17.02%), pink (n=7, 14.89%), grey (n= 1, 2.13%), cream, (n= 1, 2.13%) and yellow (n= 1, 2.13% see Plate 8).

Recorded artefact reduction types predominantly consist of flaked debitage with complete flakes the most frequent type (n=32, 52.46%) followed by medial flake fragments (n=11, 18.03%). Other reduction types include distal flake fragments (DFF), proximal flake fragments (PFF), longitudinally broken transverse flake fragments (LBTF), angular fragments and a core (Figure 10). Only one small single platform core was retrieved from the site (SPC, see Plate 9). Parallel arises and margins were recorded on four artefacts. These artefacts generally consist of proximal and medial flake fragments and may indicate some form of blade tool technology. Several artefacts showed evidence of partial retouch and backing along the lateral margins although this evidence was inconclusive (Plate 10).

The artefacts composing the assemblage are generally small in size. The minimum length recorded measured 4.01 millimetres, the maximum length recorded measured 23.99 millimetres and the average artefact length recorded measured 12.28 millimetres. The majority of artefacts fall within the 6-10 millimetre size range. Of the 32 complete flakes recorded within the assemblage 13 (40.63%) of these flakes fall within this size range (Figure 11, Plate 11). Only three complete flakes measure larger than 20 millimetres. The majority of complete flakes consist of silcrete (n=25, 78.13%).

All artefacts within the assemblage were devoid of cortex.
Plate 8: Range of silcrete colours. Artefacts #8, 10, 13, 15, 37 & 59

Plate 9: Banded IMDT SPC artefact # 17
Plate 10: Artefacts with evidence of possible worked edges and retouch on the lateral margins. Artefacts #3, 14, 26, 29, 36 & 44

Plate 11: Selection of small complete flakes. Artefacts #13, 25, 40
Figure 10: Frequency of reduction types recorded within assemblage
AF = angular fragment, CF = complete flake, DFF = distal flake fragment, LBTF = longitudinally broken flake, MFF = medial flake fragment, PFF = proximal flake fragment, SPC = single platform core

Figure 11: Size range and raw material of complete flakes
FGS = fine grained siliceous, IMDT = indurated mudstone/tuff, QZ = quartz, SIL = silcrete
CF = complete flake
8.0 ANALYSIS AND DISCUSSION

8.1 Levels of Disturbance

Excavations at PAD01 identified shallow deposits across the PAD area that had been heavily impacted by previous agricultural activities. Mixing of the natural soil horizons was indicated by the absence of a clear transition between the A1 and A2 horizons. A plough zone was identified across the site with large ironstone inclusions recorded in excavation units such as X2015 Y2035. Given that there were no archaeological features or Aboriginal objects identified at the site indicates that previous agricultural activities and natural disturbances such as erosion have heavily impacted the integrity of the PAD.

In contrast no significant impacts were identified within PAD02. Excavations identified a generally consistent intact soil deposit across the PAD area with clearly a clearly discernible transition between the A1, A2 and basal clay soil horizons. Test excavations confirmed observations made during the initial survey that found the area to be generally intact.

8.2 The Artefact Assemblage

The artefact assemblage retrieved from TNRB PAD02 consists of predominantly small silcrete flaked artefacts with no cortex. Reduction types present within the assemblage include angular fragments, complete flakes, broken flakes and one core. Attempts of backing and unidirectional retouch were noted on some of the artefacts.

The artefact assemblage generally conforms to the Australian small-tool tradition. Artefact associated with the small-tool tradition would generally have been halted for use and were small in size (Holdaway & Stern 2004: 224). This places the age of the assemblage within the late Holocene, it should be noted however in the absence of absolute dates statements about assemblage age remain assumptions based on the results of previous studies.

The concentration of artefacts within excavation unit X3000 Y3075 and expansion units is a significant feature of the site. The surrounding excavation units were generally void of artefacts with the exception of X3015 Y3080 and X2995 located to the north east which contained one artefact. Excavation unit X3000 Y3075 and expansion units also contained the greatest variety of raw materials with the only IMDT artefacts retrieved from this area. The one core retrieved from the site were located within X3000 Y3075 expansion A and C. Artefacts with evidence of attempts of backing and retouch were also all retrieved from X3000 Y3075 and expansion units. These observations indicate that this area of the PAD was the main site of knapping activities.

8.2.1 Aboriginal settlement history

Analysis of the test excavation results indicates that the TNRB PAD02 assemblage is likely representative of intermittent use and discard rather than targeted and sustained occupation. The high frequency of flakes and flake fragments and low frequency of cores, formal tools and utilised flakes indicates that whilst flaking may have occurred at the site, the finished products were likely taken away and used elsewhere. Excavation unit X3000 Y3075 featured the highest frequency of artefacts however, the variety of raw materials within the excavation unit and expansion units does not suggest evidence of a singular knapping event or knapping floor. The extent of the artefact concentration retrieved from X3000 Y3075 and the expansion units was not fully determined during the test excavation. It was noted that the artefact frequency appeared to be increasing to the north of X3000 Y3075.
The absence of cortex within the assemblage indicates that the raw materials used were likely transported to the site and knapped heavily until they were exhausted. Such behaviour would suggest that raw materials were rare and therefore had to be conserved. The location of known raw material sources up to 12 to 25 kilometres away provides some support for these assumptions.

8.2.2 TNRB PAD02 and the Local Context

The mean density retrieved from TNRB PAD02 is relatively high in comparison with other excavations on the southern Cumberland Plain (Table 6).

Table 6: Artefact densities in the local region

<table>
<thead>
<tr>
<th>Site Area (reference)</th>
<th>Mean Density (/m2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRB PAD02</td>
<td>7.6</td>
</tr>
<tr>
<td>Menangle Park</td>
<td>8.6</td>
</tr>
<tr>
<td>SFPAD5, Spring Farm</td>
<td>8.5</td>
</tr>
<tr>
<td>Menangle Park West</td>
<td>4.7</td>
</tr>
<tr>
<td>Elderslie 2</td>
<td>3.1</td>
</tr>
<tr>
<td>Hoxton Park PAD 2</td>
<td>2.8</td>
</tr>
<tr>
<td>Oran Park and Turner Road</td>
<td>2.3</td>
</tr>
<tr>
<td>Spring Farm Areas 1-3</td>
<td>1.1</td>
</tr>
<tr>
<td>HPK9 (KNC 2009)</td>
<td>4</td>
</tr>
<tr>
<td>MC1 (AMBS 2000)</td>
<td>1.9 – 2.1</td>
</tr>
<tr>
<td>Locality LB1</td>
<td>1.25</td>
</tr>
</tbody>
</table>

The TNRB PAD02 assemblage appears to be very similar in composition with other stone tool assemblages excavated in south western Sydney. The assemblages excavated at Oran Park and Turner Road, HPK9, Menangle Park and Maxwell’s Creek share characteristics such as very small artefact size, low percentage of cortex and high frequency of silcrete artefacts. These characteristics are generally attributed to the scarcity of good quality silcrete and importance of raw material conservation. Compared with north western Sydney there are few known silcrete quarry sites in south western Sydney. The closest recorded silcrete quarry site to PAD02 was recorded by Steele at the confluence of Cosgrove and South Creeks, Luddenham, approximately 12 kilometres north of the site (Steele 2007 in AMBS 2009).

The ubiquitous nature of silcrete distribution across the entirety of the Cumberland Plain indicates that it was an important component of Aboriginal subsistence and cultural activities. The procurement of silcrete would likely have involved the movement of people into and through different group boundaries and/or the exchange of materials between groups. Site TNRB PAD02 is located near an
area generally considered to be transitional between the Dharawal, Darug and Gandangara peoples (JMcDCHM 2007:21 after Haglund 1989). The artefact assemblages recovered from excavations within the southern Cumberland Plain are physical markers in the landscape of these cultural interactions between groups.

The distribution of artefacts across TNRB PAD02 indicates a dispersed low density artefact scatter with two areas of artefact clusters and one area of dense artefact concentration. This fits with the model put forward by AECOM (2009) based on their excavations at Oran Park and Turner Road. This model suggests that the stream order model does not strictly apply to southern Cumberland Plain sites (AECOM 2009: 50). Rather, the evidence suggests a more even spread of archaeological deposits comprising predominantly low density distribution with occasional campsite concentrations within areas with a good outlook over watercourses in locations up to several hundred metres away from watercourses (AECOM 2009: 50).

8.3 Conclusion

A total of 61 artefacts were retrieved during the test excavation program. A total area of eight metres squared was excavated with an average of 1.8 artefacts per 50 x 50 cm excavation unit and an artefact density of 7.5 artefacts/m². The majority of artefacts were recovered from artefacts on the western transect and within the first two spits.

A 1 metre by 1.5 metre open area was excavated around excavation unit X3000 Y3075. This area contained the highest density of artefacts (n=37, 60.65%). The excavation units surrounding this open area were generally void or only contained one artefact (Figure 9). Two other lower density artefact clusters were identified at X3000 Y3015 and X2998 Y3030. These units were opened into 1 metre x 1 metre areas.

Overall the assemblage consists of a mix of raw materials with silcrete the predominant material present (see Section 7.3.3.2). Reduction types recorded include complete flakes, angular fragments, flake fragments and cores. Some artefacts showed evidence of partial backing and retouch. The assemblage has been interpreted as representative of general stone reduction and discard with no evidence to suggest TNRB PAD02 was subject to sustained occupation by Aboriginal people in the past. The absence of cortex within the assemblage and the small size of the artefacts indicates that raw materials were likely to be scarce within the region and therefore highly curated.

The assemblage is considered to be representative of stone artefact assemblages within the southern Cumberland Plain. The results support the model proposed by AECOM (2009) which suggests a low density background scatter of artefacts across the landscape with higher density clusters generally occurring in areas associated with watercourses.

Following the test excavation results TNRB PAD02 has been renamed TNRB Artefact Scatter 01 (TNRB AS01). This is because the test excavation identified that the site does contain Aboriginal objects and intact archaeological deposits.
9.0 SIGNIFICANCE ASSESSMENT

9.1 Assessment Criteria

This significance assessment has been undertaken in accordance with the OEH Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales 2011.

Archaeological significance refers to the archaeological or scientific importance of a landscape or area. This is characterised by using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state’s natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

9.2 Archaeological Significance Assessment

9.2.1 TNRB PAD01

There were no Aboriginal objects retrieved from the test excavation program within TNRB PAD01 therefore this site does not have any archaeological significance. TNRB PAD01 is not considered further by this significance assessment.

9.2.2 TNRB Artefact Scatter 01 (TNRB AS01 AHIMS #Pending)

The archaeological test excavation at TNRB AS01 identified a dispersed scatter of artefacts largely concentrated across the western half of the site with over half the artefacts retrieved from excavation unit X3000 Y3075 and the additional expansion units.

Assessment of the scientific significance of TNRB AS01 considered the following aspects of the test excavation results:

- A moderate density artefact scatter with a clear high density concentration of artefacts in X3000 Y3075 and expansion units. Whilst artefact scatters are not considered to be rare in the local archaeological context, the density of the subsurface deposit identified within the site is considered to be unusual.
- The test excavation results add to the limited information available in south-western Sydney in regards to raw material use, artefact manufacture and discard.
Site TNRB AS01 has been assessed as demonstrating moderate archaeological significance. This site is not considered to be rare however, TNRB AS01 is considered to be representative of Cumberland Plain archaeology. TNRB AS01 has the potential to contribute to research questions concerning Aboriginal land use and exploitation of resources in the past. With the archaeological excavations conducted at TNRU6 to the west and BRP-IF-16 it to the north it would be possible to compare and contrast reduction strategies and land use across different landforms employed at these sites. TNRB AS01 is considered to have moderate education values.

Table 7: significance assessment

<table>
<thead>
<tr>
<th>Site</th>
<th>Research potential</th>
<th>Representativeness</th>
<th>Rarity</th>
<th>Education potential</th>
<th>Overall significance assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRB AS01</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
10.0 IMPACT ASSESSMENT

The proposed works would directly impact TNRB AS01 resulting in total loss of value. This assessment is summarised in the table and Figure 12 below.

Table 8: Impact assessment

<table>
<thead>
<tr>
<th>Site number/name</th>
<th>Type of harm</th>
<th>Degree of harm</th>
<th>Consequence of harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNRB AS01</td>
<td>Direct</td>
<td>Total</td>
<td>Total loss of value</td>
</tr>
</tbody>
</table>

Figure 12: Proposed impacts to TNRB AS01
11.0 MITIGATION AND MANAGEMENT

11.1 Guiding Principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is based on the assessed significance of the sites. The final recommendations would also be informed by cultural significance, which will be discussed by the Aboriginal community in their responses during the next stage of consultation.

11.2 Mitigation Measures

TNRB AS01 has been assessed as demonstrating moderate archaeological significance. As the impacts of the proposed works would result in the total loss of value further archaeological investigation of this site is recommended. This investigation would consist of targeted salvage of X3000 Y3075 conducted as part of PACHCI Stage 4. Targeted salvage would allow for the removal of all or a large portion of the areas of moderate archaeological significance. Archaeological salvage would provide further information on the types of activities that took place at the site as well as mitigating against impacts to the remainder of the site area.

11.2.1 Long term management of test excavation artefact assemblage

Further information on the long-term care and management of the retrieved artefact assemblage is included in the CHAR.
12.0 RECOMMENDATIONS

The following recommendations are based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended
- The recommendations of the ASR
- The interests of the Aboriginal stakeholder groups
- The likely impacts of the proposed development

It was found that:

- No Aboriginal objects were retrieved from TNRB PAD01.
- A dispersed artefact scatter was identified at TNRB AS02 (previously TNRB PAD02). A total of 61 artefacts were excavated from this site. Stone artefact scatters are considered to be common on the Cumberland Plain however, the high concentration of artefacts within a small area of the site presents the opportunity to further investigate the nature of use of the site by Aboriginal people in the past.

It is therefore recommended that:

- TNRB PAD01 is not considered to be an Aboriginal site and there are no heritage constraints in regards to this area for the proposed works.
- If impacts to TNRB AS01 cannot be avoided, archaeological salvage excavation would be required in order to adequately investigate the subsurface deposits of this site.
- Long term care of excavated artefacts, such as reburial would be undertaken in accordance with the Code of Practice and the recommendations of registered Aboriginal stakeholders.
- A site recording form has been submitted to AHIMS for TNRB AS01.
13.0 REFERENCES

AECOM 2010 Oran Park West Sewer Infrastructure Aboriginal Heritage Impact Assessment. Report to South West Priority Growth Area.


Attenbrow, V. 2010 Sydney’s Aboriginal Past: Investigating the archaeological and historical records. UNSW Press.

Artefact Heritage 2012 The Northern Road upgrade from The Old Northern Rd, Narellan, to Mersey Rd, Bringelly Archaeological Survey Report. A Report to Roads and Maritime Services

Artefact Heritage 2015a The Northern Road / Bringelly Road Grade Separated Interchange PACHCI Stage 2 Archaeological Survey Report. Report to GHD

Artefact Heritage 2015b The Northern Road / Bringelly Road Grade Separated Interchange Addendum PACHCI Stage 2 Archaeological Survey Report. Report to GHD


Austral Archaeology Pty Ltd (Austral) 2010. MR 647 Bringelly Road Upgrade Aboriginal Archaeological Survey, Camden Valley Way, Leppington to the Northern Road, Bringelly. Report to the Roads and Traffic Authority of NSW (Draft report, August 2010).


Biosis 2008 The Northern Road upgrade: Preliminary Aboriginal archaeological assessment. Report to RTA.


Butlin, N. 1983 Our original aggression: Aboriginal populations in southeastern Australia 1810-150, Melbourne, Cambridge University Press.


Jo McDonald CHM Pty Ltd. 2005. *Archaeological salvage excavation of site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW*. Report for Meriton Apartments Pty Ltd.


Jo McDonald CHM Pty Ltd. 2010. *Archaeological Assessment of the proposed sewer and water mains associated with the Marsden Park Industrial Precinct, Stage 1*. Report to APP.


KNC 2008 *Oran Park and Turner Road Precincts: Aboriginal Heritage Investigation for Proposed Infrastructure Service Routes and Site Options*. Report to Landcom.

KNC 2010 *Bringelly Road upgrade: Camden Valley Way to The Northern Road Aboriginal cultural heritage Cultural Heritage Assessment Report* Prepared for the Roads and Traffic Authority.


Department of Environment, Climate Change and Water (now OEH), 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.*

Roads and Maritime Services, 2011 *Procedure for Aboriginal Cultural Heritage Consultation and Investigation.*


Tench, W. 1789, 1793. *Sydney’s first four years: being a reprint of A narrative of the expedition to Botany Bay and A complete account of the settlement at Port Jackson.* Reprinted in 1961 (Angus and Robertson in association with RAHS).

Turbet, P. 2010 *The First Frontier: The Occupation of the Sydney Region: 1788 to 1816.* Rosenberg Press.

