Lansdowne Bridge replacement, Goulburn

Aboriginal Archaeological Survey Report for a proposed bridge replacement

Report to RMS

March 2014
Executive summary

Artefact was commissioned by GHD and the Roads and Maritime Services (RMS) to conduct an assessment of Aboriginal heritage for the proposed replacement of the Lansdowne Bridge near Goulburn with a new concrete bridge (the proposal).

This Aboriginal Archaeological Survey Report (ASR) complies with Stage 2 of the RMS Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI), as well as the Office of Environment and Heritage (OEH) regulations, including the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (‘the Code of Practice’), and the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.

Lansdowne Bridge is located on Bungonia Road at the crossing of Mulwaree Ponds, around 1.6 kilometres southeast of Goulburn town centre, within the Goulburn Mulwaree local government area. The study area for this report included the area of the proposal footprint, as well as a buffer zone of around 10-20 metres surrounding the proposal footprint. Some parts of the study area were not accessible during the site survey due to the boggy and extremely overgrown terrain surrounding the Mulwaree Ponds.

The proposal would involve the demolition of the existing bridge and its replacement with a three span concrete bridge on the same alignment. The road would be realigned to the east of the bridge, and land acquisition would be required in two properties to the north of Bungonia Road. A compound site consisting of a meal room, toilets and a site shed would also be required. Areas may also be required for stockpiling during construction.

The proposal would impact the existing road reserve of Bungonia Road, as well as a small area of land immediately outside the road reserve. It would also involve impacts to the hill to the east of Lansdowne Bridge, part of which would be cut away to accommodate the changed alignment of Bungonia Road. Likely impacts to the study area would result from the construction of the new bridge, earthworks along the existing Bungonia Road alignment, the construction of the changed alignment to the east of the bridge, and the establishment and use of the temporary site compound and stockpile areas.

It was found that:

- No recorded Aboriginal sites were located within the study area.
- No areas of archaeological potential were located within the study area.
- High levels of disturbance were observed across much of the study area.
- In areas that had not been subject to high levels of disturbance the landform was either not suitable for Aboriginal occupation, or would be unlikely to contain intact archaeological deposits due to the effects of flooding or erosion.
• The study area was found to demonstrate low archaeological significance.
• No areas of particular cultural significance were identified during the survey by the Pejar Local Aboriginal Land Council (PLALC) sites officer.

It is therefore recommended that:

• No further investigation of Aboriginal heritage is required prior to the proposal commencing.
• If Aboriginal objects or suspected human remains are located during works the RMS *Unexpected Archaeological Finds Procedure 2012* would be implemented. Further archaeological work or permits may be required.
• As no known Aboriginal sites, areas of particular cultural significance, or areas of archaeological potential would be impacted by the proposal, Stage 3 of the PACHCI would not be initiated by RMS.
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1.0 Introduction and background

1.1 Background

Artefact was commissioned by GHD and Roads and Maritime Services (RMS) to conduct an assessment of Aboriginal heritage for the proposed replacement of the heritage listed timber-truss Lansdowne Bridge with a new concrete bridge (the proposal).

This Aboriginal Archaeological Survey Report (ASR) complies with Stage 2 of the RMS Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI), as well as the Office of Environment and Heritage (OEH) regulations, including the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 2010 (Code of Practice), and the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.

1.2 The study area

Lansdowne Bridge is located on Bungonia Road at the crossing of Mulwaree Ponds, about 1.6 kilometres southeast of Goulburn town centre, within the Goulburn Mulwaree local government area (Figure 1). The study area (Figure 2) included the area of the proposal footprint (shown in Figure 3), as well as a buffer zone of around 10-20 metres surrounding the proposal footprint.

Some parts of the study area were not accessible during the site survey due to the boggy and extremely overgrown terrain surrounding the Mulwaree Ponds.

1.3 The proposal

The proposal would involve the demolition of the existing bridge and its replacement with a three span concrete bridge on the same alignment. The road would be realigned to the east of the bridge, and land acquisition would be required in two properties to the north of Bungonia Road and a small area of land to the west of the bridge near Goulburn Brewery. A site compound consisting of a meal room, toilets and a site shed would also be required and will be located to the south of Bungonia Road near the racetrack.
Lansdowne Bridge replacement, Goulburn

Figure 1: Bridge location shaded in red (Base map – Department of Lands 2012)
Lansdowne Bridge replacement, Goulburn

Figure 2: The study area, outlined in yellow (Base map - Department of Lands 2012)
Lansdowne Bridge replacement, Goulburn

Figure 3: The proposal footprint (RMS)
1.4 Objectives of the assessment

The objectives of this study are to comply with the OEH Code of Practice and the RMS PACHCI. The main objectives of this study are to provide:

- A description of the proposal and the extent of the study area.
- A description of Aboriginal community involvement and Aboriginal consultation.
- Discussion of the environmental context of the study area.
- Discussion of the Aboriginal historical context of the study area.
- A summary of the archaeological context of the study area including a discussion of previous archaeological work in the area.
- Development of an archaeological predictive model.
- Description and analysis of any Aboriginal sites located within the study area.
- Development of a significance assessment for the study area.
- Impact assessment.
- Recommendations for management and mitigation measures for the study area in the context of the proposal.

1.5 Investigator and contributions

Dr Sandra Wallace (Principal Archaeologist) and Adele Anderson (Archaeologist) of Artefact Heritage undertook this study. Agnes Donovan (Aboriginal Cultural Heritage Advisor at RMS) and Justin Boney (representative of Pejar Local Aboriginal Land Council - PLALC) attended the site survey. Adele Anderson prepared this report with management input from Sandra Wallace.

1.6 Aboriginal community involvement

Aboriginal consultation has been conducted in accordance with Stage 2 of the RMS PACHCI. A Native Title search was conducted on the 7 December 2012 by the RMS Aboriginal Cultural Heritage Advisor, which indicated that there was a Native Title claim by Gundungurra Tribal Council Aboriginal Corporation (GTCAC) active within the study area. The study area is within the boundary of PLALC.

Representatives from PLALC and GTCAC were contacted by the RMS Aboriginal Cultural Heritage Advisor and were invited to participate in the Stage 2 PACHCI survey. Justin Boney from PLALC attended the site survey. Representatives from GTCAC were booked in for the site survey but did not attend on the day. PLALC provided a report to RMS outlining their survey results (Appendix A). No areas of particular cultural significance were identified in their report.
2.0 Landscape context

2.1 Landform and geomorphology

The landform within the study area consists of alluvial river flats associated with the Mulwaree River. The underlying geology consists of Quaternary alluvial gravel, sand, silt and clay. It is located in an area where two soil landscapes overlap. These are as follows:

- The Goulburn soil landscape, which consists of Quaternary age alluvial deposits and includes a large number of individual landforms which have formed as a result of the deposition of alluvium around water courses.
- The Collector Creek soil landscape, which is located within the narrow floodplains of a number of local creeks and the Mulwaree River, and consists of Permian age yellow solodic deposits (DSCA 2005:12).

2.2 Hydrology

The Mulwaree River, a major watercourse, flows north – south through the study area, while the Wollondilly River is located about three kilometres to the north.

2.3 Vegetation

The study area was cleared following European colonisation and is now dominated by introduced plant species. Originally, vegetation may have consisted of dry and wet tussock grasslands or savannah woodland communities dominated by yellow box, Casuarina and Melaleuca species adjacent to the Mulwaree Ponds (Hird 1991: 62 & 91).

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 estuarine environments Aboriginal people caught fish and collected shellfish.

Plants were an important source of nutrition and it is known that in the Goulburn area, bulrushes (Typha sp.) were collected from river and stream banks during spring. The starchy roots were baked, and the outer skin removed before eating (AMBS 2012:15).
2.4 Land use history

The land to the north and south of Lansdowne Bridge was used for grazing from the early 19th century until recent years, and has never been subject to development. Some disturbance would have occurred through grazing, and the construction and maintenance of Bungonia Road and Lansdowne Bridge, as well as associated drainage construction.

The immediate supply of fresh water would have meant that land in the vicinity of the study area was a suitable location for Aboriginal occupation. However, the study area itself is a low-lying area and is known to be affected by flooding, which is likely to have reduced the chances of encountering evidence for Aboriginal occupation.
3.0 Previous archaeological work

3.1 Aboriginal material culture

Aboriginal people have lived in the Goulburn area for more than 20,000 years. The oldest securely dated site in the vicinity of the Goulburn Mulwaree LGA is the Birrigai rock shelter in the northern foothills of the Australian Alps (around 80 kilometres south-east of Goulburn), which dates to 21,000 years before present (yBP). 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 Goulburn region for even longer than indicated by the oldest recorded dates available at present. However, the majority of excavated sites in the region date to within the last 3,000-5,000 years, when the local climate and environment would have become similar to modern conditions (AMBS 2012:12).

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. After European colonisation Aboriginal people of the Goulburn region often continued to manufacture tools, sometimes with new materials such as bottle glass or ceramics (Attenbrow 2010:124).

3.2 Aboriginal histories of the locality

Aboriginal people traditionally lived in small family or clan groups that were associated with particular territories or places. According to the anthropologist Norman Tindale, two major language groups were located within the Goulburn Mulwaree region at the time of European contact: the Gandangara to the north of Goulburn, and the Ngunnawal to the south. Charles MacAlister, who grew up in the region in the 1830s, observed that the increased mingling of different Aboriginal groups and communication between them as a result of the European invasion led to a wider adoption of various words and phrases. He noted that there were fairly numerous tribes in the region (MacAlister 1907:89, 82, cited in AMBS 2012:12). It has been suggested that Tindale’s tribal boundaries may have included a number of distinct Aboriginal communities with different dialects, who would probably have had shared kinship networks, belief systems, customs and ceremonies (Jackson-Nakano 2001:xxi-xxiii, cited in AMBS 2012:12).
As there were no major physical barriers in the region, travel and contact between various groups was relatively easy. Large gatherings took place in Goulburn, with corroborees at Rocky Hill near the East Goulburn Church of England, at the site of the old railway quarry on the Wollondilly River, at the site of Goulburn railway station and the site of All Saints’ Church in Eastgrove, as well as at Mulwaree Flats near Lansdowne Bridge. Gatherings at Goulburn included Aboriginal people who travelled from as far away as the Lachlan River and the Shoalhaven district (AMBS 2012:13).

European exploration in the region began in the late 18th century, and introduced diseases such as smallpox rapidly affected the Aboriginal population. In 1845, a resident of Bungonia to the east of Goulburn wrote that the previously large Aboriginal population had declined to around 20-100 people, who had joined other people from throughout the Goulburn district. By 1848, it was estimated that local Aboriginal population consisted of only 25 people (AMBS 2012:13).

There were also a number of violent conflicts between Aboriginal people and European settlers during the 1820s. Oral traditions passed down from Gandangara elders indicate that there are undocumented massacre sites at Narrambulla Creek and the Eastgrove sporting ovals (to the north of the study area) (D. Freeman 25/05/2011, cited in AMBS 2012:14). Further information on Aboriginal histories of the study area may be provided by the PLALC and GTCAC in their reports.

3.3 Site types

Material traces of Aboriginal occupation exist throughout the landscape and are known as Aboriginal sites. The primary site types are as follows.

- Stone Artefacts – Flaked and ground stone artefacts are the most common trace of Aboriginal occupation in the Sydney region. Aboriginal people used particular techniques to flake stone and these changed over time. The approximate age of a tool can often be diagnosed by the way that it was made. Stone artefacts are most often found in scatters that may indicate an Aboriginal campsite was once present. Stone artefacts may also be found as isolated finds. Stone tools in the Goulburn region are most often made from raw materials known as chert, silcrete, quartz, quartzite and fine-grained volcanic rocks. These are all easily flaked and form sharp edges, which can be used for cutting or barbing spears. It is possible that stone artefacts, either on the surface, or buried, exist within the study area.

- Rock shelters with deposit – Rock shelters were used by Aboriginal people for habitation, rest places and as art or ceremonial sites. Deposits can build up on the floor of these shelters over time and bury traces of Aboriginal occupation. If these deposits are not disturbed, rock shelters can provide an intact stratigraphy that can tell us about the way Aboriginal occupation changed through time. It is unlikely that rock shelters are located within the study area.
Shell middens – Shell middens are remains of campsites in which the primary traces are shell and/or bones of fish. Shell middens are often found close to rivers or streams and are either along banks or within enclosed shelters. Many shell middens were destroyed when they were mined for lime in the early days of the European settlement. It is unlikely that shell middens occur within the study area.

Rock engravings/Rock art – Rock engravings are often found in sandstone geologies on flat sandstone platforms. Shapes of animals, ancestor figures or other symbols were carved into the sandstone. Weathering has affected the visibility of many rock engravings. Other forms of rock art include stencils, charcoal drawings and paintings. Rock art is relatively rare, but is more common on sandstone geologies. It is unlikely that engravings exist in the study area due to the absence of sandstone.

Axe grinding grooves – Axe grinding grooves are created when axe blanks (often basalt cobbles) are shaped by rubbing the stone across an abrasive rock such as sandstone, often using water. Sharpening axes and other tools also forms them. Axe grinding grooves are often found on the banks of streams or rock pools. It is unlikely that axe grinding grooves will be found within the study area, as they are most common on sandstone.

Scarred trees – Aboriginal people practiced tree marking or scarring for a variety of reasons. Large scars are often the result of a tree being debarked for a canoe blank and smaller scars may have been the result of making shields or coolamons (storage vessels). Tree marking may have been the result of ritual practices, or associated with burial. Scarred trees that remain today would be over 150 years old and the scar would retain certain characteristics that enable its identification as cultural. It is highly unlikely that scarred trees remain in the study area, as intensive clearing would have removed any trees old enough to bear cultural scars.

Post-contact sites – Sites where evidence of early interaction between Aboriginal people and Europeans are known as contact sites. Artefacts found at contact sites may include flaked glass or ceramic.

Potential Archaeological Deposit (PAD) – Areas are classified as PADs if there is a likelihood of archaeological material existing below the ground surface or on the ground surface but obscured from view. An Aboriginal object does not need to be recorded for an area of PAD to be specified.

The primarily site type in the vicinity of the study area are scatters of stone artefacts (see discussion of AHIMS search results in Section 3.4).
3.4 AHIMS search results

An extensive search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on the 3 December 2012 for sites registered within the following coordinates:

- GDA 1994 MGA 55: 748200 – 750200
- 6148050 - 6150150
- Buffer: 50 metres
- Number of sites: 8
- AHIMS Search ID: 86834

The distribution of recorded sites within the AHIMS search area is shown in Figure 4. The location of Aboriginal sites is considered culturally sensitive information. It is advised that this information, including the AHIMS data appearing on the heritage maps for the proposal, be removed from this report if it is to enter the public domain.

An updated AHIMS search was conducted on 18 March 2014 (client number 128763). One additional Aboriginal site has been recorded in the AHIMS search area since the 2012 search. This site was located 350 meters north west from the bridge in a paddock off Forbes Street. The site is well outside the impact area for this project.

There are no previously recorded Aboriginal sites listed on the AHIMS site register which are located within the study area. Artefact sites, open camp sites and artefact scatters, were the most frequent recorded site type in the vicinity of the study area. One burial site was recorded to the east of the study area, and one Potential Archaeological Deposit (PAD) site was recorded to the south-east of the study area. Table 1 shows the frequency of site types from the AHIMS data.

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open camp site</td>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>Artefact scatter</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>Isolated find</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>Artefact, PAD</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>Burial</td>
<td>1</td>
<td>12.5</td>
</tr>
</tbody>
</table>
The most relevant sites to the current study are site G17 (AHIMS #51-06-0021) and the Wollondilly Graves site (AHIMS #51-6-0100). G17 was identified by Koettig (1983) during a survey for the proposed highway by-pass to the south and east of Goulburn and is adjacent to the Mulwaree River to the south of the study area. It is therefore on a relatively similar landform to the current study area. Most of the 22 artefact scatters identified during the entire survey were of low density, however, G17 was found to be a high density site with stratified deposit. The site was located on a low sandbar on the eastern bank of Mulwaree River, near its junction with Gundary Creek (around 1.3 kilometres south of the study area). Koettig (1983) recovered 650 artefacts from test pits, and further excavations in 1990 recovered 15,000 artefacts. Of these 85 per cent were of quartz, with silcrete the next most common material at 10 per cent (Paton 1990). It should be noted, that although G17 was adjacent to the river, it was on a low sandbank, a landform which did not occur in the current study area. The Wollondilly Graves site is located on a hill around 200 metres north-east of the study area and is associated with the Lansdowne Homestead. The site is a burial ground and has been identified based on documentary resources and oral history, however its exact location is not known.
This page has been removed as it contains culturally sensitive information.
3.5 Previous archaeological work in the local area

3.5.1 Regional studies

Koettig and Lance (1986) carried out a preliminary Aboriginal resources planning study for the City of Goulburn, in which they identified areas of known or potential Aboriginal archaeological and cultural significance, and analysed site distribution. They proposed a number of regional trends in relation to site distribution:

- Artefact scatters are the most common site type and are most likely to occur on gentle, well-drained lower slopes within 100 metres of water. Artefact scatters where watercourses meet tend to be large, with high artefact densities.
- Quarries may be present on outcrops of suitable stone for tool manufacture. Types of stone used for manufacture include chert, silcrete, quartz, quartzite and fine-grained volcanic rocks.
- Burial sites are rare and are most likely to be located on ridges and hill tops, in hollow trees, and in caves. As the features used to mark graves are unlikely to have survived to the present, burials can be difficult to identify.
- Modified trees are rare due to widespread clearing in the region.
- Bora grounds are rare and are most likely to be located on hill tops.
- Shelters with art or deposits only occur in areas with suitable rock overhangs.
- Grinding grooves are found near creek lines with suitable sandstone outcrops.

**Table 2: Table showing the predicted archaeological sensitivity of landform types in Goulburn (from AMBS 2012:25)**

<table>
<thead>
<tr>
<th>Landform</th>
<th>Potential Archaeological Sensitivity</th>
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<tbody>
<tr>
<td></td>
<td>Koettig and Lance (1986:29-32)</td>
</tr>
<tr>
<td></td>
<td>Fuller (1989:31-34)</td>
</tr>
<tr>
<td>Alluvial flats adjacent to major watercourses</td>
<td>High</td>
</tr>
<tr>
<td>Lower slopes adjacent to watercourses</td>
<td>High</td>
</tr>
<tr>
<td>Gently undulating land, or plains</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Hills – low (&lt;700 metres above sea level (asl))</td>
<td>Medium</td>
</tr>
<tr>
<td>Hills – moderate (700-750 metres asl)</td>
<td>Low</td>
</tr>
<tr>
<td>Hills – high (&gt;700 metres asl)</td>
<td>Low</td>
</tr>
<tr>
<td>Hill tops</td>
<td>Low</td>
</tr>
<tr>
<td>Built-up areas (residential areas, Sooley Dam)</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Fuller (1989) tested Koettig and Lance’s site distribution model through a field investigation that surveyed a representative sample of environmental zones within Goulburn. Seventeen artefact scatters and five isolated finds were identified during the survey, while two sites which were located within 150 metres of...
an intermittent watercourse also contained fragmented midden material. Sites occurred in all environmental zones.

AMBS (2012:25) collated the findings of both Koettig and Lance (1986) and Fuller (1989) with regard to archaeological sensitivity in Table 2.

AMBS prepared the Goulburn Mulwaree Local Government Area Aboriginal Heritage Study (2012) to inform future management of Aboriginal cultural heritage. The study aimed to identify and record places of significance and develop recommendations for their management and conservation. It included a review of previous archaeological investigations within the local government area and a thematic history based on historical research and community consultation. This research enabled a list of places of Aboriginal significance within the local government area to be compiled.

Many small scale archaeological studies have since been undertaken in the Goulburn region in response to planned development. The findings of these investigations have generally conformed to the site location predictions made by Koettig and Lance (1986), with artefact scatters remaining the most common site type (AMBS 2012:26).

3.5.2 Previous investigations in the study area

Dominic Steele Consulting Archaeology (DSCA) (2005) conducted a survey overlapping with, and in the immediate vicinity of, the current study area for an earlier RMS proposal for a new bridge over the Mulwaree Ponds. The bridge was proposed to be located to the north of the existing Lansdowne Bridge.

Four transects were walked by DSCA: three to the north of Lansdowne Bridge, and one to the south on the west bank of the river. Archaeological visibility was poor throughout the study area at the time of the survey. The survey did not identify any artefacts, rock outcrops suitable for artefact manufacture or axe grinding, or trees old enough to support cultural scarring.

Three areas of Potential Archaeological Deposit (PAD) were identified in the vicinity of Lansdowne Bridge. One of these was assessed to be moderately disturbed and was located immediately north of the bridge, to the west of the river. The remaining two PADs were assessed to be relatively intact and were located further north on either side of the river (DSCA 2005:22-27).

In 2006, DSCA reviewed their findings following the reduction of the proposed area of impact. The original survey had been conducted at a time when the land surrounding Lansdowne Bridge was dry. However, subsequent to the survey, periods of heavy rain inundated the area, leading to the realisation that the previously identified areas of PAD were low-lying and therefore were likely to have been affected by repeated flood action processes over time. It was concluded that this would probably have served to disperse or obscure any potential archaeological deposits that may previously have been present along the banks of the river (DSCA 2006). This was confirmed during the site survey for the current...
assessment, when it was noted that the areas originally classified as PAD by DSCA (2005) were boggy and covered in reeds.

The PLALC was reported to have agreed with DSCA’s revised findings and recommendation that test excavation was not warranted due to “the inundated nature of the land that occurs adjacent to the existing Mulwaree Ponds crossing” (DSCA 2006).

3.6 Archaeological implications for the study area

The results of previous surveys and sub-subsurface investigations in the region suggest that alluvial flats and lower slopes adjacent to watercourses are likely to be of high archaeological sensitivity, with the potential for high artefact densities. However, low-lying areas beside watercourses may have been affected by flooding events which can act to disperse archaeological material. Hill tops are likely to be of low archaeological sensitivity.
4.0 Predictions

4.1 Aboriginal land use

Assumptions about Aboriginal land use patterns are made on the basis of archaeological information gained from the local area, from observations made by 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 varying densities with higher densities near watercourses. The main limitation to the survivability of archaeological material in the area is impacts associated with urban development and the construction of infrastructure.

The use of the river banks by local Aboriginal people was discussed by the PLALC sites officer during the site survey.

4.2 Predictive model

The predictive model used for this assessment 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 are 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 (Koettig and Lance 1986).

Predictive statements are as follows:
• Stone artefacts/artefact scatters will be the most likely Aboriginal site type.
• Artefact densities will be highest on elevated areas (terraces or gentle hill slopes) near watercourses.
• Artefacts will be located in areas of least ground disturbance.

4.3 Material traces of occupation

It is probable that the only material traces of Aboriginal occupation remaining will be stone artefacts. The potential for shelter sites, rock engravings and grinding grooves is limited by the nature of the landform. Areas of potential archaeological deposit (PAD) would be dependent on levels of disturbance, landform and the degree of surface visibility along with a propensity of the landform to be subject to scouring as a result of flooding.
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.

In this case it was assumed that the spatial extent of visible objects would be used to identify sites.

5.2 Survey methodology and survey coverage

A survey of the study area was conducted on 13 December 2012. The survey was conducted on foot, with all areas of ground exposure examined for traces of Aboriginal occupation, and the landscape examined for evidence of disturbance or areas of potential archaeological sensitivity. No mature trees remain in the study area and therefore cultural scarring or marking that may have been the work of Aboriginal people was not expected.

A handheld Global Positioning System (GPS) was used to record the path taken by the surveyors. A photographic record was kept to record different aspects of the landform units within the study area, vegetation, and levels of disturbance. Scales were used for photographs where appropriate.

Some parts of the study area were not accessible due to the boggy and extremely overgrown terrain surrounding the Mulwaree Ponds. The remainder of the study area was divided into two survey units. Survey unit 1 included land within the floodplain, while Survey unit 2 included the hill slope landform to the east of the floodplain (Figure 5).
Table 3 provides an estimation of the effective survey coverage.

<table>
<thead>
<tr>
<th>Survey area (estimate)</th>
<th>Landform</th>
<th>Visibility (%)</th>
<th>Exposure (%)</th>
<th>Effective coverage area (m²)</th>
<th>Effective coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6397m²</td>
<td>Floodplain</td>
<td>40</td>
<td>30</td>
<td>1919m²</td>
<td>30%</td>
</tr>
<tr>
<td>7655m²</td>
<td>Hill slope</td>
<td>50</td>
<td>60</td>
<td>3827m²</td>
<td>50%</td>
</tr>
</tbody>
</table>
6.0 Results

6.1 Survey observations

Observations made during the field survey suggest that the area within the existing road corridors of Bungonia Road and Forbes Street has already been subject to significant disturbance through the construction and maintenance of the roads and associated drainage lines (Plate 1). The land beneath the bridge and immediately to the north and south of it is low lying and is known to be subject to flooding (Plate 2). Disturbance has also occurred in this area through activities associated with the maintenance and repair of the bridge and Bungonia Road.

The land to the south of Bungonia Road, to the west of the bridge, has been levelled and landscaped for the creation of the Goulburn Recreational Area, and has been further disturbed through the installation of services.

The proposal would involve cutting away part of the hill to the east of the bridge to accommodate a change in road alignment. This hill is part of the historic ‘Lansdowne’ estate and is likely to have been used for grazing for much of the 19th and 20th centuries. Although the area appears to be largely undisturbed, there is little to no top soil and it is therefore unlikely that archaeological deposits would be present on this hill (Plate 6 and Plate 7).

The site compound location is proposed for an area west of the bridge adjacent to the racecourse (Figure 3). The area has been disturbed through levelling, landscaping and the installation of services (Plate 3). It is unlikely to have been a suitable site for Aboriginal occupation.

6.2 Summary of findings

No previously recorded Aboriginal sites were located within the study area, and no previously unidentified Aboriginal sites were recorded during the field survey.
Lansdowne Bridge replacement, Goulburn

Plate 1: Bungonia Road reserve, looking east from beyond the western end of the proposal footprint

Plate 2: Flood prone land on northern side of bridge

Plate 3: Possible location for site compound, west of bridge

Plate 4: View along the bridge from south

Plate 5: Inaccessible area to the west of Forbes Street

Plate 6: Hill to east of bridge that would be cut away
Lansdowne Bridge replacement, Goulburn

Plate 7: Absence of top soil on hill to east of bridge

The high levels of ground disturbance and landscape modification that were evident throughout most of the proposal footprint during the survey, as well as the flood prone nature of the area immediately surrounding Mulwaree Ponds and the lack of top soil on top of the hill to the east of the bridge indicate that the study area has low potential for intact archaeological deposits associated with Aboriginal occupation.
7.0 Statutory requirements

This study has been undertaken in the context of several items of legislation that relate to Aboriginal heritage and its protection in New South Wales.

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

The *National Parks & Wildlife Act 1974*, 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 Act was recently amended (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 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 recently been 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 *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. Guidelines are also in place for the processes of due diligence - *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010*, and for investigation of Aboriginal objects - *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales 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.

**Heritage Act (1977)**

The *Heritage Act 1977* is administered by the Department of Premier and Cabinet and protects the natural and cultural heritage of NSW. Generally this Act only pertains to Aboriginal Heritage if it is listed on the State Heritage Register, or subject to an interim heritage order.
There are no Aboriginal heritage items listed on the State Heritage Register within the study area.

**Aboriginal Land Rights Act (1983)**

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.

There are no lands held, or currently claimed, by the Local Aboriginal Land Council under the *Aboriginal Land Rights Act 1983* within the study area.

**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 Native Title claim by Gundungurra Tribal Council Aboriginal Corporation (GTCAC) is active within the study area.
8.0 Significance assessment

8.1 Assessment criteria

Archaeological significance refers to the archaeological or scientific importance of a landscape 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?

8.2 Archaeological significance assessment

The study area does not provide good research potential as there are no areas of archaeological potential to be investigated. Representativeness values are low within the study area and it is not rare within the local context. The area does not have potential to be used for education in Aboriginal heritage or archaeology. The study area is therefore assessed as having a low archaeological significance.
9.0 Impact assessment

9.1 Potential impacts

The proposal would have impacts on the existing road reserve of Bungonia Road, as well as a small area of land immediately outside the road reserve. It would also involve impacts to the hill to the east of Lansdowne Bridge, part of which would be cut away to accommodate the changed alignment of Bungonia Road.

The proposal would also involve impacts at the location of a temporary site compound and stockpile, south of Bungonia Road, to the west of Mulwaree Ponds. The site compound location would impact known Aboriginal sites or areas of archaeological potential.

Likely impacts to the study area would result from the construction of the new bridge, earthworks along the existing Bungonia Road alignment, the construction of the changed alignment to the east of the bridge, and the establishment and functioning of the temporary site compound. No Aboriginal sites, areas of particular cultural significance, or areas of archaeological potential would be impacted by the proposal.

Although an Aboriginal burial site is recorded in the AHIMS database around 200 metres north-east of the study area (AHIMS #51-6-0100), it is highly unlikely that other burial sites would occur within the vicinity of the study area. Burials in the Goulburn region tend to be located on ridges and hill tops and would not be expected to occur within the floodplain that makes up the western part of the study area. The proposed change in road alignment to the east of Lansdowne Bridge would involve cutting away part of the hill between Bungonia Road and Forbes Street, however, the steep slope landform and very thin soil on this slope would have been unsuitable for burial. The PLALC representative who attended the site survey stated that the recorded burial site was located on the other side of the ‘Lansdowne’ property, and that he did not think that there were likely to be burials within the study area.
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 practical, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is primarily based on an assessment of archaeological significance. The recommendations will also be informed by cultural significance as discussed by the Aboriginal stakeholder groups.

10.2 Mitigation measures

Mitigation measures recommended vary depending on the assessment of archaeological significance of the area and are based on its research potential, rarity, representativeness and educational value. In general the following mitigation measures would be employed:

- Low archaeological significance – No further work required. No archaeological constraints on development.
- Moderate archaeological significance – Test excavation may be required to investigate whether significant archaeological deposits were retained within the area of moderate potential.
- High archaeological significance – Conservation as a priority. Test excavations would be required if the areas of high potential were to be impacted. Further mitigation measures such as salvage excavations or heritage interpretation may also be necessary.

As the entire study area has a low archaeological potential and a low archaeological significance no specific mitigation measures are required. There are no archaeological constraints on development. If unexpected Aboriginal objects are located during works the RMS *Unexpected Archaeological Finds Procedure 2012* would be implemented. Further archaeological investigations and/or permits may be required before works can commence.
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 proposal.

It was found that:

- No recorded Aboriginal sites were located within the study area.
- No areas of archaeological potential were located within the study area.
- High levels of disturbance were observed across much of the study area.
- In areas that had not been subject to high levels of disturbance the landform was either not suitable for Aboriginal occupation, or would be unlikely to contain intact archaeological deposits due to flooding or erosion.
- The study area was found to demonstrate low archaeological significance.
- No areas of particular cultural significance were identified during the survey by the Pejar Local Aboriginal Land Council (PLALC) sites officer.

It is therefore recommended that:

- No further investigation of Aboriginal heritage is required prior to the proposal commencing.
- If Aboriginal objects or human remains are located during works the RMS *Unexpected Archaeological Finds Procedure 2012* would be implemented. Further archaeological work or permits may be required.
- As no known Aboriginal sites, areas of particular cultural significance, or areas of archaeological potential would be impacted by the proposal, Stage 3 of the PACHCI would not be initiated by RMS.
12.0 References


Department of Environment, Climate Change and Water [now OEH] (2010) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.


MacAlister, C. (1907) *Old Pioneering Days in the Sunny South* (Chas MacAlister Book Publication Committee, Goulburn).


Paton, R. (1990) *Archaeological excavations at Site G17, Goulburn, NSW.* Report to the RTA.