Schofields Road Upgrade and Extension: Tallawong Road to Veron Road

Review of environmental factors
Volume 3: appendices I to M

SEPTEMBER 2012
Appendix I

Aboriginal Archaeological Survey Reports
SCHOFIELDS ROAD UPGRADE
TALLAWONG ROAD TO VERON ROAD

Cultural Heritage Assessment Report

Prepared for Roads and Maritime Services

Blacktown Local Government Area

Draft Report
May 2012

Ref. 1118

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Executive Summary

The Roads and Maritime Services (RMS) is proposing to upgrade and extend 3.6 km of Schofields Road between Tallawong Road and Veron Road from a two-lane road to a four-lane divided road (the proposal).

Two Aboriginal archaeological sites have been identified within the boundaries of the proposal. The two sites comprise Aboriginal objects as defined under the National Parks and Wildlife Act 1974, and include open artefact scatter sites VR1 (45-5-4152) and SCR UPG2 (45-5-3356).

Despite trying to limit impact, both Aboriginal archaeological sites will be impacted by the proposal. An Aboriginal heritage impact permit (AHIP) is required for the land within the project boundary and specifically for Aboriginal objects within the impacted portions of sites:

VR1     AHIMS # 45-5-4152 includes AHIMS # 45-5-4087 and 45-5-4093
SCR UPG2  AHIMS # 45-5-3356

This cultural heritage assessment report has been prepared to support the application for an AHIP. It builds on the results of previous assessments and consultation regarding the proposal.
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1 Introduction

1.1 Proponent and consultants

The Roads and Maritime Services (RMS) is proposing to upgrade and extend 3.6 km of Schofields Road between Tallawong Road and Veron Road from a two-lane road to a four-lane divided road (the proposal). The study area is shown on Figures 1 and 2 (with coordinates).

A Review of Environmental Factors (REF) was prepared for the proposal (GHD 2012) which included assessment of Aboriginal heritage (KNC 2012a and 2012b). RMS engaged Kelleher Nightingale Consulting Pty Ltd (KNC) to assist in the preparation of an Aboriginal Cultural Heritage Assessment Report (CHAR) for Aboriginal objects that may be harmed by the proposed road upgrade. The CHAR for the REF must comply with the requirements of the RMS Procedure for Aboriginal Cultural Heritage Consultation and Investigation PACHCI (2011).

1.2 Location and scope of activity

The proposal forms part of a broader plan to upgrade the entire eight kilometre length of Schofields Road from Windsor Road to Richmond Road. The upgrade of Schofields Road is required due to the development of the North West Growth Centre. When extended to Richmond Road, Schofields Road would be a major east-west link between Windsor Road and Rouse Hill town centre in the east and the proposed Marsden Park and Marsden Park Industrial Precincts in the west. It would also service Schofields Railway Station and Schofields town centre.

The upgrade of Schofields Road has been divided into three stages:

Stage 1 – the Ponds development between Windsor Road and Tallawong Road
Stage 2 – Tallawong Road to Veron Road
Stage 3 – Veron Road to Richmond Road via South Street

The proposal forms Stage 2 of the Schofields Road upgrade. Key features of the proposal include:

- an upgrade from the existing two-lane road to a four-lane divided road with a wide central median allowing for further upgrade to six lanes if required in the future;
- extension of Schofields Road from Railway Terrace to Veron Road;
- provision of a tree lined transit boulevard to integrate pedestrians, bicycles, public transport and vehicles in an urban environment;
- new local road overpass at Bridge Street;
- a road underpass at Richmond Railway Line including a deep cutting;
- relocation of Railway Terrace intersection 50 m to the east and 30 m south of the existing intersection to allow the proposal to tie in with the Richmond Railway Line underpass;
- five culvert crossings across Schofields Road and two minor culverts across Junction Road and Veron Road;
- a diversion of the existing First Ponds Creek tributary channel around the proposed Hambledon Road northern leg;
- 40 m twin bridges at First Ponds Creek;
- 50 m twin bridges at the Railway Terrace tributary of Eastern Creek; and
- temporary site compounds and three temporary construction sedimentation basins.

1.3 Statutory controls and development context

The proposal is for road infrastructure carried out by RMS, it will be assessed under Part 5 of the Environmental Planning and Assessment Act 1979.

1.4 National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act) is the primary statutory control dealing with Aboriginal heritage in New South Wales. Items of Aboriginal heritage (Aboriginal objects) or Aboriginal places (declared under section 84) are protected and regulated under the NPW Act.

Amendments to the NPW Act came into effect on 1 October 2010. These included new offences and increased penalties relating to harm to or desecration object or declared Aboriginal place and new provisions relating to Aboriginal heritage impact permits issued under Part 6 of the NPW Act.
Under the Act, an "Aboriginal object" is defined as "any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains". As such, Aboriginal objects are confined to physical evidence and are commonly referred to as Aboriginal sites.

Aboriginal objects are protected under section 86 of the Act. It is an offence to harm or desecrate an Aboriginal object, either knowingly [section 86 (1)] or unknowingly [section 86 (2)].

There are offences and penalties relating to harm to, or desecration of, an Aboriginal object or declared Aboriginal place. Harm includes to destroy, damage or move. Penalties are tiered according to offences, which include:

- a person must not harm or desecrate an Aboriginal object that the person knows is an Aboriginal object;
- a person must not harm an Aboriginal object (strict liability offence);
- a person must not harm or desecrate an Aboriginal place (strict liability offence);
- failure to notify Office of Environment and Heritage of the location of an Aboriginal object (existing offence and penalty); and,
- contravention of any condition of an Aboriginal Heritage Impact Permit.

Section 87 (2) of the Act provides a defence against prosecution under section 86 (2) if “the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed”.

Under section 87 (1) it is also a defence if “(a) the harm or desecration concerned was authorised by an Aboriginal heritage impact permit, and (b) the conditions to which that Aboriginal heritage impact permit was subject were not contravened”.

Section 89A of the Act relates to the notification of sites of Aboriginal objects, under which it is an offence if the location of an Aboriginal object is not notified to the Director-General in the prescribed manner within a reasonable time.

Under section 90 (1) of the Act “the Director-General may issue an Aboriginal heritage impact permit”. The regulation of Aboriginal heritage impact permits is provided in Part 6 Division 2 of the Act, including regulations relating to consultation (section 90N). An Aboriginal Heritage Impact Permit (AHIP) is required for an activity which will harm an Aboriginal object.

1.5 Objectives of the Aboriginal cultural heritage assessment report

The proposed road upgrade has been subject to an Aboriginal heritage assessment for the REF (KNC 2012). The proposed road upgrade does contain some Aboriginal objects (sites) which will be impacted by the proposed activities. Approval obtained under the National Parks and Wildlife Act 1974 is required for these Aboriginal objects prior to any impact or harm. The proponent is applying for an Aboriginal heritage impact permit under section 90A of the Act.

Recent amendments to the National Park and Wildlife Act 1974 and National Parks and Wildlife Regulation 2009 have resulted in a number of changes to the process of applying for an Aboriginal heritage impact permit.

Clause 80D of the Regulation requires that an application for an Aboriginal heritage impact permit is accompanied by a cultural heritage assessment report. The cultural heritage assessment report is to provide information on:

- the significance of the Aboriginal places that are the subject of the application;
- the actual or likely harm to those Aboriginal objects or Aboriginal places from the proposed activity that is the subject of the application;
- any practical measures that may be taken to protect and conserve those Aboriginal objects or Aboriginal places; and,
- any practical measures that may be taken to avoid or mitigate any actual or likely harm to those Aboriginal objects or Aboriginal places.

The OEH Guide to Investigating, assessing and reporting on Aboriginal, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, April 2011) provides further guidance on the preparation of a cultural heritage assessment report. This report has been prepared in accordance with the requirement of the Regulation and the OEH guidelines.

This cultural heritage assessment report has been prepared to accompany an application for an Aboriginal heritage impact permit made by the Roads and Maritime Services (RMS) for Aboriginal objects within the proposed road upgrade corridor.
Figure 1. Study area
Figure 2. GPS coordinates of study area
2 Description of the Area

2.1 Landform, geology and soils

The study area was located on gently undulating slopes and crests intersected by one water course with moderate flood margins and two low intensity water courses with only limited flood margins. The highpoint within the study area is the ridgeline that runs roughly north-south on the same axis as Alex Avenue and Boundary Road.

The primary water course is Eastern Creek – a major drainage line of the Cumberland Plain that drains north to the Hawkesbury River and measures approximately 35 km in length. This waterway lies at the western boundary of the study area. The two low intensity water courses are First Ponds Creek near Hambledon Road and a tributary of Eastern Creek near the junction of Schofields Road and Railway Terrace.

Underlying geology consisted predominantly of Bringelly Shale, with Quaternary alluvium deposited in association with Eastern Creek and First Ponds Creek. Soils were predominantly from the Blacktown Landscape soil type, with South Creek Landscape soil profiles bordering Eastern Creek and First Ponds Creek. Blacktown soils are characterised as red podzolic soils on a siltstone/mudstone substrate. Soils are strongly acidic, hard setting and comprised of loam overlying clay/silty clay soils with moderate erosion susceptibility. The South Creek soil profile is comprised of alluvial sediment, loams and clays, with high erodibility and flooding capacity.

Three general landform features are found within the study area: crest, simple slope and open depression. The junction of Alex Avenue is the crest. Simple slopes dominate the majority of the study area and the drainage lines account for the open depressions.

Due to the considerable urbanisation of the surrounding area, vegetation species are varied. The majority of the study area consisted of introduced grass species bordering Schofields Road, while most of the native vegetation was concentrated near the Alex Avenue Precinct (bordering south west of the study area). Small pockets of shale and/or alluvial woodland exist along the road corridor.

2.2 Ethnohistoric context

The proposed upgrade corridor is part of a significant past Aboriginal settlement of the undulating hills associated with the ponding creeks between Eastern Creek and Cattai Creek (east of the study area). These relatively elevated and well-resourced lands form a corridor from the Hawkesbury River to the upper reaches of the Parramatta River. Archaeological investigations within this corridor have shown the area was extensively occupied with key locations representing at-times specialised activities (e.g. ceremonies, quarries).

Kohen (1986:77) records that Aboriginal people living between Parramatta and the Blue Mountains were not as dependant on fish and shellfish as groups closer to the coast, but relied on small animals and plant foods in addition to seasonally available freshwater mullet and eels. Tench (1793:230) observed that ‘they depend but little on fish, as the river yields only mullets, and that their principal support is derived from small animals which they kill, and some roots (a species of wild yam chiefly) which they dig out of the earth’. These wild yams were found in considerable quantities along the banks of the Nepean and Hawkesbury Rivers. Berries, Banksia flowers and wild honey were also recorded as foods of the local inhabitants (Collins 1798 [Kohen 1985:9]). A particularly important plant food was the Burrawong (Macrozamia communis), which provided a nutritious nut that was pounded and soaked in running water to leach out toxins before the flour-like extract was made into small cakes and baked over a fire (Kohen 1993:8).

Small animals provided the protein component of the Aboriginal diet on the Cumberland Plain, with hunting comprising a major economic role of the men. Along the river, traps and snares were set for bandicoots and wallabies, while decoys for snaring birds were also a commonly employed technique, ‘these are formed of underwood and reeds, long and narrow, shaped like a mound raised over a grave, with a small aperture at one end for the admission of the prey’ (Tench 1793 [Kohen 1985:9]). Possums and gliders were particularly common in the open woodland across the Cumberland Plain, and probably formed the main sources of animal food. These were hunted in a number of ways, including smoking out the animal by lighting a fire in the base of a hollow tree, burning large tracts of land and gathering the stranded animals, as well as cutting toe-holds in trees mentioned above (Kohen 1993:10; Tench 1793:82).

The specific hills / ponds associated with the study area are naturally demarcated topographic features and facilitate a separation in archaeological activities. Aboriginal people have a long settlement history with the area, the pertinent questions to explore are the nuances of this settlement life.
3 Archaeological context

Several archaeological investigations have been conducted within and in the immediate vicinity of the study area. A summary of the pertinent studies is presented in this section.

Jo McDonald Cultural Heritage Management (JMCHM) undertook an Aboriginal archaeological survey (2007) of the proposed Stage 1 upgrade of Schofields Road (Windsor Road to Hambledon Road). The investigation identified five archaeological features:

- 2 sites (SCR/UPG1 and SCR/UPG2)
- 1 previously identified PAD (SPC-PAD33)
- 2 new areas of PAD (SCR/PAD1 and SCR/PAD2)

Most of the Stage 1 survey area was heavily disturbed and it was determined that the lands outside of these five features contained little or no archaeological potential. The exception is site SCR/UPG 2 which is an intact deposit on First Ponds Creek located at the junction of Hambledon Road.

A revised report was undertaken by JMCHM in 2011 for a portion of the land assessed in 2007. (The revised assessment focused on the revised Stage 1 area between Windsor Road and Tallawong Road.) The revised report identified two potential archaeological deposits requiring further investigation:

- 1 isolated find with PAD (SCR/UPG3 + PAD)
- 1 PAD (SCR/PAD3)

Godden Mackay Logan and Jo McDonald Cultural Heritage Management (GML+JMcD CHM) subsequently undertook a test excavation of one of the potential archaeological deposits as part of Stage 1 works for the upgrade of Schofields Road. The area excavated was east of the current study area. Site SCR/PAD 3 (ISF SCR/UPG 2) was excavated and one artefact was found. The area was determined to be of low archaeological significance.

In sum, archaeological assessment of Stage 1 Schofields Road upgrade has shown the area exhibits high amounts of disturbance and low archaeological significance.

ENSR Australia conducted an archaeological investigation of the Alex Avenue and Riverstone Precincts within the North West Growth Centre. The precincts border Schofields Road and are located north and south of the current study area. The investigations identified 23 Aboriginal sites in addition to 14 previously recorded sites, making a total of 37 recorded Aboriginal sites within the two precincts. The site types included isolated finds, low-level (background) artefact scatters, artefact scatters, archaeological deposits, natural silcrete outcroppings, scarred trees and PADS (ENSR 2008:50-51). Of the 37 sites, 27 were assessed to be of low significance, four of moderate significance and six of high significance.

The archaeological investigation found that the larger sites with higher archaeological significance tended to be concentrated within 100 m of First Ponds Creek. The highest density of archaeological material identified by ENSR was called the A7 Complex and consisted of several artefact scatters and two areas of PAD within an area covering approximately 1,000 m north-south and 400 m east-west along both sides of First Ponds Creek (ENSR 2008:71).

An Aboriginal heritage impact assessment for proposed water services crossing the study area east of Eastern Creek identified several archaeological sites and PADS (Archaeological Heritage Management Solutions, 2011). Pertinent to this report are: one archaeological site 1026-46 (AHIMS site # 45-5-4087) and one PAD 1035-6 (AHIMS #45-5-4093) which touch the boundaries of the current study area (near site VR1). Artefact scatter 1026-46 contained an estimated 1,000 surface artefacts and PAD 1035-6 was recorded as the southern extension of the same landform. Although areas of disturbance were recorded due to heavy tilling for market gardens within site 45-5-4087, soils were generally sandy and displayed a moderate to high potential for intact deposit. The site was assessed as demonstrating moderate archaeological potential. Subsequent survey identified site VR1 (AHIMS # 45-5-4152), see Section 5, a new site within the proposed road corridor which incorporates small portions of the northerly 1026-46 and southerly 1035-6.
4 Consultation Process

The RMS is committed to effective consultation with Aboriginal communities regarding RMS activities and their potential for impact on Aboriginal cultural heritage. The RMS PACHCI has been developed to provide a consistent means of effective consultation for RMS activities across NSW. The RMS PACHCI complies with all relevant OEH requirements.

4.1 Stakeholder identification and consultation

The RMS advertised (Appendix A) for Aboriginal stakeholders in compliance with the Office of Environment and Heritage (OEH) Aboriginal cultural heritage consultation requirements for proponents 2010. RMS also contacted potential Aboriginal stakeholders identified from government agency notification responses. All consultation is consistent with the 2010 OEH requirements.

Registered stakeholders for the Schofields Road upgrade between Tallawong Road and Veron Road are listed in the table below.

Table 1. Registered Aboriginal Stakeholders

<table>
<thead>
<tr>
<th>Group / Individual</th>
<th>Representative / Contact</th>
</tr>
</thead>
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<tr>
<td>Deerubbin Local Aboriginal Land Council</td>
<td>Kevin Cavanagh</td>
</tr>
<tr>
<td>Darug Tribal Aboriginal Corporation</td>
<td>Sandra Lee</td>
</tr>
<tr>
<td>Darug Custodian Aboriginal Corporation</td>
<td>Leanne Watson</td>
</tr>
<tr>
<td>Darug Aboriginal Cultural Heritage Assessments</td>
<td>Gordon Morton</td>
</tr>
<tr>
<td>Darug Land Observations</td>
<td>Gordon Workman</td>
</tr>
<tr>
<td>Yarrawalk</td>
<td>Scott Franks</td>
</tr>
<tr>
<td>Darug Aboriginal Land Care</td>
<td>Des Dyer</td>
</tr>
</tbody>
</table>

The formal consultation process has included:
- advertising for registered stakeholders in local and Indigenous media (refer Appendix A);
- government agency notification letters;
- notification of closing date for registration;
- ongoing compilation of registrants list, through continuing to register individuals and groups for consultation on the project;
- Aboriginal Focus Group (AFG) meeting held at the RMS offices Argyle Street on 16 February 2010, at which the results of the preliminary archaeological and Aboriginal cultural heritage assessments and methodologies for a further archaeological and Aboriginal cultural assessment were presented and discussed;
- provision of draft CHAR for review; and
- ongoing consultation with the local Aboriginal community.

4.2 Response to stakeholder submissions

A copy of the draft Cultural Heritage Assessment Report (CHAR) will be provided to Aboriginal stakeholders for review and comment. Comments received will be attached in full in Appendix B.
4.3 Aboriginal cultural values

As part of the cultural assessment, registered Aboriginal stakeholders were invited to identify individuals they regarded as knowledge holders for the area at the AFG. Identified knowledge holders would be invited to participate in the cultural assessment process. To date no specific knowledge holders have been identified for the study area although the Aboriginal community has identified cultural heritage values for the study area.

It has been clearly identified that the study area has cultural heritage value to the local Aboriginal community. Some of the Aboriginal cultural heritage values expressed by stakeholders include:

- strong association with the land;
- responsibility to look after the land, including the heritage sites, plants and animals, creeks and the land itself;
- scarred trees;
- artefact sites and landscape features;
- creek lines;
- Indigenous plants and animals; and
- general concern for burials, as their locations are not always known and they can be found anywhere.
5 Summary and Analysis of Background Information

The archaeological and cultural heritage values of the study area have been previously assessed as part of the REF (KNC 2012a and 2012b). The assessment included a review of background information, including identification of previously recorded Aboriginal sites registered on the Aboriginal Heritage Information Management System (AHIMS), sites known to the local Aboriginal community or others, and any archaeologically sensitive landforms or areas or potential archaeological deposit in the study area. A full coverage survey of the proposed road upgrade route between Tallawong Road and Eastern Creek was conducted as part of the REF assessment.

Two locations of Aboriginal cultural heritage value are known to occur within the study area (Table 1). Locations of recorded sites within the study area are shown on Figure 3.

![Table 2. Identified Aboriginal cultural heritage values within the study area](image)

<table>
<thead>
<tr>
<th>Site Name</th>
<th>AHIMS #</th>
<th>AMG coordinates (AGD)</th>
<th>MGA coordinates (MGA)</th>
<th>Site Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR1 (includes small portions of AHIMS sites 45-5-4087, 45-5-4093)</td>
<td>45-5-4152</td>
<td>302067E 6268383N</td>
<td>302172E 6268573N</td>
<td>Open artefact scatter</td>
</tr>
<tr>
<td>SCR UPG2</td>
<td>45-5-3356</td>
<td>304796E 6269272N</td>
<td>304900E 6269461N</td>
<td>Open artefact scatter</td>
</tr>
</tbody>
</table>

**VR1 (45-5-4152)**

VR1 was an artefact scatter situated between the 17 m and 18 m contour on a slightly sloping terrace above Eastern Creek. The terrace would likely have experienced some fluvial activity in the past, however, the possibility of in situ material is high. The site was accessible from the southern end of Veron Road along a fence line running west towards Eastern Creek. Two silcrete flakes were identified along the fence line on eroded soils associated with a small clump of trees. The landform has been impact in part by market gardens, however a moderate level of integrity exists in the less disturbed portion of the site.

Two AHIMS recordings, 45-5-4087 and 45-5-4093 were located at the western end of the study area (Section 3). The locations of those recordings were inspected and it was determined that the AHIMS recordings slightly intersect with the study area. The terrace landform is continuous between the two AHIMS recordings with some elevation change. The area of ground between the two AHIMS recordings is the location of site VR1. For this reason, site VR1 incorporates the small portions of AHIMS recordings 45-5-4087 and 45-5-4093 within the study area.

**SCR UPG2 (45-5-3356)**

Site 45-5-3356 was originally recorded by JMcD CHM (2007) as part of an investigation for Stage 1 Schofields Road upgrade. The site was located on both sites of Hambledon Road at the junction with Schofields Road. The site was bisected by Hambledon Road and bounded to the north by Schofields Road, to the south by the maximal break in slope, to the east by an unnamed 1st order water course and to the west by the edge of the terrace. Topographically, the archaeological site rests on a terrace above First Ponds Creek.

Ten artefacts were recorded at the site. The site extended over the entire remaining terrace with concentrations of artefacts recorded across surface exposures. Some portions of the site, outside of the existing road corridor, have localised disturbance and the northern edge has suffered erosion. Overall the soils across the site were intact.

**Cultural Values**

The study area has cultural value for the local Aboriginal community. The identified cultural value is a feeling of attachment and responsibility for the land. These values become tangible when tied to identified Aboriginal objects found at the archaeological sites. In this way, the Aboriginal objects can be seen as exhibiting both scientific information and cultural meaning, knowledge about the past tied with social values and belief systems.
Figure 3. Identified Aboriginal sites within study area
6 Cultural Heritage Values and Statement of Significance

There are two locations of recorded Aboriginal cultural heritage values within the study area, both of which contain Aboriginal objects as defined under the *National Parks and Wildlife Act 1974*. These two sites are:

Open artefact scatter sites – VR1

SCR UPG2

**Statement of significance**

The previous significance assessments of sites VR1 and SCR UPG2 focussed on the intactness and location of each site in the landscape. Based on that information, two levels of significance were established within the study area – moderate and moderate to high:

<table>
<thead>
<tr>
<th>Site</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR1</td>
<td>Moderate significance</td>
</tr>
<tr>
<td>SCR UPG2</td>
<td>Moderate to high significance</td>
</tr>
</tbody>
</table>

At site VR1, fluvial activity and market gardens had impacted on portions of the site, but a moderate level of subsurface integrity exists, especially for those portions of the site above 17.3 m AHD. Raw materials of quality stone exist in the Eastern Creek alluvium adjacent to the site. Site VR1 exhibited moderate archaeological significance and incorporated small portions of two AHIMS recordings: 45-5-4087 and 45-5-4093 – where they intersect the study area (KNC 2012a).

Site SCR UPG2 was located on a terrace above a junction in First Ponds Creek. Topographic junctions are important archaeologically because they naturally define and funnel related cultural activity. The soils within the site were relatively intact and contain identified archaeological material. For these reasons, site SCR UPG2 was assessed as demonstrating moderate to high archaeological significance.
7 The Proposed Activity and Avoiding Harm

The proposed activity within the study area is to upgrade and extend 3.6 km of Schofields Road between Tallawong Road and Veron Road from a two-lane road to a four-lane divided road.

Practical measures taken to protect, conserve and avoid harm to Aboriginal objects

The final upgrade alignment took into consideration the location of known Aboriginal cultural heritage sites and values. The close proximity of the two identified Aboriginal sites within the study area to the existing road and a water crossing meant that they will be impacted by the proposed road upgrade. This CHAR evaluated the potential harm of the development on Aboriginal archaeological heritage in terms of Ecologically Sustainable Development (ESD). The ESD assessment of Aboriginal heritage evaluated: long-term and short-term considerations, precautionary environmental impacts, maintenance and enhancement for future generations and cost/benefit of impacting on archaeological objects. Alternative designs and conservation principles have been considered by the RMS to limit the cumulative harm of Aboriginal heritage. Where significant sites or places were identified, where possible the design has been modified to avoid or limit the impact to the identified cultural places and archaeological sites. Some level of impact is unfortunately unavoidable for such a large road project. Best practice is to try to limit impacts and where appropriate mitigate impacts.

Although two archaeological sites would be impacted according to the detailed design, in most cases the impacts amount to only a relatively small portion of the actual site or place. Overall, it can be argued that this represents a positive outcome for Aboriginal heritage. In this light, the Schofields Road upgrade is an opportunity for increasing our understanding, strengthening our interpretation and bettering our recognition of Aboriginal culture and heritage within culturally and archaeologically significant portions of greater Sydney.

8 Mitigating Harm

A mitigation strategy is provided in Table 3. For archaeological sites, this is based on consideration of surface surveys and extensive knowledge regarding the parameters of subsurface archaeological assemblages within the north west Cumberland Plain.

Table 3. Impact of concept design and mitigation measures

<table>
<thead>
<tr>
<th>Site</th>
<th>Type</th>
<th>Description</th>
<th>Significance</th>
<th>Impact Assessment</th>
<th>Mitigating Harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR1 (includes small portions of 45-S-4087 and 45-S-4093)</td>
<td>Open artefact scatter</td>
<td>Open artefact scatter on low slope and terraces above the 1:100 flood zone</td>
<td>Moderate</td>
<td>Will be impacted</td>
<td>Given the moderate significance of the site and degree of proposed impact, an AHIP should be obtained to salvage a representative sample of the site prior to impact. The scope of works would be dependent on the degree of impact by detailed design. AHIP required prior to commencement of works affecting the site.</td>
</tr>
<tr>
<td>SCR UPG2</td>
<td>Open artefact scatter</td>
<td>Open artefact scatter on terrace resting on First Pond Creek junction</td>
<td>Moderate to high</td>
<td>Will be impacted</td>
<td>Given the moderate to high significance of the site and degree of proposed impact, an AHIP should be obtained to salvage a representative sample of the site prior to impact. The scope of works would be dependent on the degree of impact by detailed design. AHIP required prior to commencement of works affecting the site.</td>
</tr>
</tbody>
</table>
9 Summary of Aboriginal sites for which an AHIP is being sought

Two sites of Aboriginal objects are situated within the Schofields Road upgrade study area. An Aboriginal heritage impact permit (AHIP) is being sought for Aboriginal objects within the boundaries of the road upgrade:

<table>
<thead>
<tr>
<th>Site Name</th>
<th>AHIMS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR1</td>
<td>45-5-4152 includes small impacted portions of 45-5-4087 and 45-5-4093</td>
</tr>
<tr>
<td>SCR UPG2</td>
<td>45-5-3356</td>
</tr>
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10 Recommendations

AHIP

An application for an AHIP should be made under section 90A of the National Parks and Wildlife Act 1974 for four Aboriginal site recordings. These sites are:

VR1  45-5-4152  45-5-4087  45-5-4093
SCR UPG2  45-5-3356

An AHIP is sought for the land associated with the boundaries of the road upgrade (Figure 2) and specified Aboriginal objects contained within and all Aboriginal objects associated with sites: VR1 (45-5-4152, included impacted portions of 45-5-4087 and 45-5-4093) and SCR UPG2 (52-2-3346).

Salvage Excavation

The AHIP will include mitigation for an archaeological salvage excavation at sites VR1 and SCR UPG2 and should be completed prior to any activities which may harm Aboriginal objects at these site locations.

The archaeological salvage activities should be undertaken in accordance with the methodology developed in consultation with Aboriginal stakeholders attached as Appendix D.

Collected Aboriginal Objects

The long term management of collected Aboriginal objects is as follows:

1. Aboriginal objects will be transferred to the Australian Museum in accordance with legislative requirements, Australian Museum Archaeological Collection Deposition Policy v1.0 January 2012;
2. In the event the Australian Museum is unable to accept the objects, the objects will be transferred in accordance with a Care Agreement or similar agreement to an Aboriginal community;
3. In the event that neither the Australian Museum nor the Aboriginal community are able to accept the archaeological objects, KNC will seek a Care Agreement or similar agreement to curate the objects;
4. If long term storage is not possible, the objects will be reburied in accordance with OEH policy.
References


Jo McDonald Cultural Heritage Management (JMcD CHM), 2011. Revised Assessment Schofields Road Upgrade, Stage 2 and 3 PACHI. Report prepared for the RTA.


Appendix A  Advertisement for registration of interest
Appendix B  Aboriginal stakeholder comments
Aboriginal Focus Group Meeting
16th February 2012

Schofields Road Upgrade
Stages two (Tallawong Road to Veron Road) and stage three (Veron Road to Richmond Road)

Attendees:
Barry Gunther – RMS
Jim Campbell – RMS
Matthew Kelleher – Kelleher Nightingale
Gordon Workman – Darug Land Observations
Leanne Watson – Darug Custodian Aboriginal Corporation
John Reilly – Darug Tribal Aboriginal Corporation
Gordon Morton – Darug Aboriginal Cultural Heritage Assessments
Des Dyer – Darug Aboriginal Land Care
Rick Fields – Tocornal/Yarrawalk
Susan Bestwick – RMS
Art Siritamalwe – RMS
Hannah Shuttleworth – RMS

Apologies:

<table>
<thead>
<tr>
<th>Participant</th>
<th>Meeting Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meeting opened</td>
</tr>
<tr>
<td>Gordon M</td>
<td>Performs the welcome to country</td>
</tr>
<tr>
<td>All</td>
<td>Introductions by all.</td>
</tr>
<tr>
<td>Jim</td>
<td>Brief project description</td>
</tr>
<tr>
<td>Barry</td>
<td>Outline of agenda and meeting objectives</td>
</tr>
<tr>
<td>Matthew</td>
<td>General project description for the whole corridor and summary of the investigations completed to date. Overview on project aerial and discussion of each feature and the potential impact of the proposal, including registered features and those identified during survey. Discussion of geology, flood hazard and landform features of the study area and surrounds including mention of nearby Plumpton Ridge. Discussion of the investigations done previously within the general locality. Open for questions.</td>
</tr>
<tr>
<td>Barry</td>
<td>Query whether anyone had any questions (no response).</td>
</tr>
<tr>
<td>Matthew</td>
<td>Discussion of likely actions for the identified features.</td>
</tr>
<tr>
<td>Jim</td>
<td>Noted that stage two extended to approximately 50m beyond the intersection with Veron Road which would likely place the identified PAD just beyond the boundary of the stage 2 works.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Outlines the process for REF and obtaining an AHIP from this point.</td>
</tr>
<tr>
<td>Jim</td>
<td>Provides further detail on REF assessment process and the potential...</td>
</tr>
<tr>
<td>Participant</td>
<td>Meeting Minutes</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes that the Hambledon Road and Veron Road features will likely require mitigation. The process from here will require two AHIPs due to the separate project staging and environmental assessments. One for stage two and one for stage three. These AHIPs will reference a single CHAR.</td>
</tr>
<tr>
<td>Barry</td>
<td>Queries whether anyone has any questions.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Asks what is to be done with any artefacts found.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes the new museum policy which is much more selective and has increased in cost. Discusses the uncertainty at this early phase regarding the number of artefacts however that general feedback will be captured in the interim.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Queries whether there is opportunity to embed artefacts in the outer face of the bridge structure.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes this would be subject to OEH approval as per a Care and Control Permit.</td>
</tr>
<tr>
<td>Leanne</td>
<td>Notes that reburial is an option.</td>
</tr>
<tr>
<td>Des</td>
<td>Queries whether any artefacts found could be stored in smaller more local museums. Opportunity for use in demonstration/educational purposes.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Requests consideration whether artefacts could be provided to local schools for educational purposes.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes the potential legal risks if they are harmed whilst in care. Comments that use of replicas is possible for educational purposes without the risks. Something to consider and provide feedback on.</td>
</tr>
<tr>
<td>Des</td>
<td>Comments on the potential for display in local libraries.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Notes that the proposed Blacktown Cultural Centre is also a public display option.</td>
</tr>
<tr>
<td>Barry</td>
<td>Queries whether there may be any issues associated with the use of replicas.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Comments that replicas of this sort would not be subject to this protection similar to modern art for sale. (Examples also provided of exceptions such as modern practise of culturally modified trees).</td>
</tr>
<tr>
<td>Matthew</td>
<td>Summary assessment progress. Surveys completed. CHAR will be developed using the information obtained and will be distributed to stakeholders. Noted that standard methodologies are proposed. CHAR would require stakeholder review and feedback is welcomed and incorporated. The information from the CHAR would be fed into the REF and then and AHIP would be sought.</td>
</tr>
<tr>
<td>Des</td>
<td>Query on the road corridor size.</td>
</tr>
<tr>
<td>Jim</td>
<td>Notes generally a 43m wide corridor including wide median. (Reference to design maps on aerial images provided on table).</td>
</tr>
<tr>
<td>Matthew</td>
<td>Sum up on the way forward and notes more information can be made available as the design is refined.</td>
</tr>
<tr>
<td>Jim</td>
<td>Query regarding local cultural heritage areas.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes presence of Colebee and Blacktown Native Institute nearby on Richmond Road.</td>
</tr>
<tr>
<td>Participant</td>
<td>Meeting Minutes</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Leanne</td>
<td>Highlights presence of Plumpton Ridge nearby and Eastern Creek. Within the study area.</td>
</tr>
<tr>
<td>Des</td>
<td>Notes overall cultural significance of all land not merely lands like Colebee.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Supports that it is not clear cut. Colebee and Blacktown Native Institute are protected under legislation however other areas should not be considered to have any less significance merely because they are not similarly captured / listed.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Notes presence of turtles within the local waterways.</td>
</tr>
<tr>
<td>Des</td>
<td>Supports Gordon’s statement and notes the large flood prone area along Eastern Creek.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Discusses the impact of the history of floods on the archaeology of the surrounds.</td>
</tr>
<tr>
<td>Barry</td>
<td>Brief recap and review of the proposed staging and timeframes and that this will lead to some actions occurring sooner for stage two upgrade and later for stage 3. Notes that the cultural information collected from the consultation process to date will assist in refining the proposal design.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Recaps that the generous 50 metre corridor either side of the road alignment. This will be used in the AHIP application and allows flexibility in the design process.</td>
</tr>
<tr>
<td>Des</td>
<td>Notes support for this approach.</td>
</tr>
<tr>
<td>Barry</td>
<td>Matthew to prepare the CHAR and then it will be distributed to stakeholders with the required 28day timeframe allowed for review and to provide feedback. Notes the Aboriginal Action Plan and that this provides an opportunity to name bridges on the project.</td>
</tr>
<tr>
<td>Jim</td>
<td>Notes another two major bridges on the project with an opportunity for naming.</td>
</tr>
<tr>
<td>Gordon Morton</td>
<td>Suggests consideration of Colebee or Narranging or similar to reflect local cultural heritage.</td>
</tr>
<tr>
<td>Gordon Workman</td>
<td>Suggests consideration of Maria Locke.</td>
</tr>
<tr>
<td>Matthew</td>
<td>Notes that this involvement in the early stage of the proposal development provides good opportunity for feedback.</td>
</tr>
<tr>
<td>Barry</td>
<td>Query whether any questions (no answer). Meeting officially closed.</td>
</tr>
</tbody>
</table>

Meeting closed.
Appendix C  Consultation Log
Appendix D  Methodology

Methodology
Research Aims
The main aims of the proposed salvage excavation program are:

- To salvage a representative sample of the identified archaeological sites prior to development impact.
- Analysis of the salvaged archaeological material to gain and conserve knowledge and understanding of the scientific and cultural information exhibited by the activities associated with First Ponds Creek and Eastern Creek terraces.

The further scientific aim of the salvage excavation program will be to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposit and the specific types of associated archaeological/cultural activities.

- Determining the integrity of the deposit involves assessing the degree of disturbance which is present.
- Determining the statistical extent of the sites and/or activity areas involves identifying the boundaries associated with the identified archaeological deposit.
- Assessing the spatial distribution involves identifying the presence/absence of archaeological material across the identified archaeological sites.
- The nature of the sites refers to the type of activities indicated by the artefactual material (e.g. primary production, domestic knapping, hunting camps). The goal would be to retrieve entire assemblages from specific activities if such activities were present.
- Retrieved assemblages would be compared with the results from other relevant archaeological projects (e.g. Colebee, Schofields, St Marys and Rouse Hill) in order to assess significance.

Two archaeological sites are the focus of the proposed salvage excavation program: VR1 and SCR UPG2. Both of these sites rest on creek terraces. Each site exhibits archaeological deposit on the margin of the 100 year flood zone, indicating possible intact soil structure. The two sites differ in soils with VR1 containing increased fluvial sands and structured clayish loam, SCR UPG2 contains a residual soil notable for its cyclical pedogenesis. While both soils have the ability to curate archaeological objects, the fluvial sands offer additional chronologic potential embedded in the sands and possible stratification (rare). Chronology is important in understanding archaeological landscape and both sites offer at least moderate potential to offer datable material. Obtaining reliable dates from these mid catchment locations will extend our interpretation of Aboriginal land use. Finally, large quantities of scientifically valuable artefacts have been found in context similar to these two sites, specifically RH/SP12 South (Rouse Hill) located c.2000m south of SCR UPG2 and SA23 (Colebee) located c.2000m south of VR1. For these reasons the two sites offer an opportunity to further explore an important archaeological landscape.

Research Question
We know the upper catchments in both creek systems contain substantial archaeological information. The pertinent question is:

Are the artefacts and associated activities at SCR UPG2 and VR1 similar or different to known archaeological sites higher in the catchment?

What can we expect to find? The range of raw materials in the region is unlikely to change (silcrete, tuff, chert, quartz), but the frequencies of specific raw material and how each material is being used will offer insight into site based activities. Both sites should contain at least moderate numbers of artefacts. In addition it will be interesting to see if large quantities of silcrete are retrieved from VR1 due to its proximity to sources of silcrete near Colebee (Plumpton Ridge) or are most raw materials being sourced from the creek. Comparisons between SCR UPG2 and VR1 themselves will also be revealing in how past activities changed (or not) between larger and smaller creek systems. Are we seeing areas dedicated to: production, domestic activity (use) or perhaps a special purpose. We can expect the range of lithics to reflect at least in part the activity they were derived from. However, outright variations in the tool kit are not an expected outcome of the salvage program, in other words no new tool types are expected. So how will we see change? The answer: change will be identified by intersite spatial variation. Intersite variations will be defined by the comparative ratios of artefact types. For example, does VR1 have significantly more backed artefacts, for example, than SA23 and/or SCR UPG2?

Archaeological Salvage: SCR UPG1 and VR1
Salvage excavation will focus on the identified archaeological sites SCR UPG1 and VR1. Salvage excavation of these sites will focus on the extraction of collections of artefacts related to activity areas.

Conservation is a primary goal of all Aboriginal heritage management. All archaeological excavation undertaken during the proposed program will be restricted to the actual construction corridor (construction clearing area) associated with the impacted sites. The construction corridor includes the actual roadwork and all associated impacts such as support vehicle tracks or drainage works.
Figure 4. Location of excavation areas within sites VR1 and SCR UPG2
Field Methods
The goal of the field excavation program is to recover significant assemblages of artefacts and to investigate the geomorphic context intrinsic to the archaeological deposit. The field methods reflect these goals.

Salvage Program
In order to achieve the most robust and comparable result, KNC advocates an open area salvage excavation. The first step in open area salvage is to establish the statistical boundaries of the previously identified archaeological deposit. This approach is designed to salvage the spatial properties of the site as shown in the lithic continuum. In other words, we are recording the spread of activities across the site/landscape. In practice a series of 1m$^2$ squares are excavated on a grid overlain on the site to mark the spread of lithics and related geomorphic activity. The MGA coordinates will be recorded for each square to enable three dimensional modelling. Statistical salvage following this method is highly beneficial because it creates a robust inter-site sample, sufficiently random, critical for regional comparative analysis. No other method is as efficient or effective.

Next open area salvage will be undertaken where one or more of the following indicators of potential information bearing deposits: significant quantities of artefacts, variations in raw material, unusual artefacts, chronologic material and/or taphonomic indicators.

Open area salvage of significant deposit will expand to encompass entire activity areas. It is anticipated that around 150m$^2$ will be excavated during the salvage program (c.75m$^2$ SCR UPG2 and c.75m$^2$ VR1).

Individual excavation squares measuring 1m$^2$ will be hand excavated in stratigraphic units (Unit A and Unit B, etc). Squares will be excavated until the basal layer or culturally sterile deposit is reached (usually 25-35cm for podzolic soils and 50cm or more for fluvial/solodic soils). Excavation of the podzolic soils (SCR UPG2) associated with the area indicates no archaeological stratigraphy within units. As such the A1 and A2 soil layers are culturally one layer (suffering from cyclical soil transfer resulting in a mixed cultural profile within the soil) and can be salvaged as one unit where possible. Possible fluvial soils (VR1) will be excavated stratigraphically.

The location of each excavated square will be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would be drawn and all squares would be photographed. Carbon or other samples for dating will be collected and analysed if appropriate. Soil samples as well as thin section profiles (where feasible) would also be collected. The stratigraphy of all excavated areas will be fully documented and appropriate records will be archived.

Surface Collection
Prior to commencing construction activities the surface artefacts from sites SCR UPG2 and VR1 will be collected. These artefacts will be labelled and bagged with location information. The artefacts will be documented in the salvage excavation report.

Analysis
Artefacts would be analysed on a comparable level with previous analyses of excavated assemblages (KNC 2008, AMBS 2000, Jo McDonald Cultural Heritage Management 2004, 2006; Attenbrow 1981). Information derived from this analysis; in particular the identification of specific artefact types, and their distributions and associations; will be used to put together interpretations about how sites were used, where sites were located across the landscape, the age of sites, and to assess cultural heritage values. By comparing different areas it will be possible to determine whether there were differences in the kinds of activities carried out and if different activities were related to different landforms.

The geoarchaeological assessment will focus on the integrity of the deposit and the ramifications of geomorphic change for: artefact survivability, interspatial assessments and scientific significance.

A range of stone artefacts may be present across the salvage areas and the analysis would expand accordingly to account for artefact variability. All information would be recorded in database form (MS Excel). Various types of evidence would be used to determine the kinds of activities that were carried out. A short description of the proposed analysis in outlined below.

- Field analysis would record basic data, such as material type, number, and any significant technological characteristics, such as backing or bipolar techniques; added to this would be any provenance data such as pit ID and spit number. The purpose of the field recording is twofold: 1) establish a basic recording of artefacts retrieved and 2) to allow on-going assessment of the excavation regime (e.g. whether higher stratigraphic resolution is required while digging).
- Detailed (laboratory) analysis would entail recording a larger number of characteristics for each individual artefact. These details would be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis.
• Lithic characteristics to be recorded cover a range of basic information but are not limited to these categories (see example below). For transparency, terms and category types would in large part be derived from Holdaway and Stern (2004).

<table>
<thead>
<tr>
<th>Sample Categories</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Record Number</td>
<td>% Cortex</td>
<td>Flake Type</td>
</tr>
<tr>
<td>Pit ID</td>
<td>Length</td>
<td>Termination Type</td>
</tr>
<tr>
<td>Spit Number</td>
<td>Width</td>
<td>Core Type</td>
</tr>
<tr>
<td>Count</td>
<td>Thickness</td>
<td>Number of Scars (Core)</td>
</tr>
<tr>
<td>Raw Material</td>
<td>Weight</td>
<td>Scar Type (Core)</td>
</tr>
<tr>
<td>Colour</td>
<td>Modification</td>
<td>Shape of Flake</td>
</tr>
<tr>
<td>Quality</td>
<td>Reduction Type</td>
<td>Platform Type</td>
</tr>
</tbody>
</table>

• A detailed explanation and glossary would be provided with the final excavation report.
• Minimum Number of Flake (MNF) calculations formulated by Hiscock (2000, 2002) will be undertaken where applicable (although past experience indicates MNF calculations will not be required for this excavation program).

The analysis of artefacts recovered during the excavation program would be undertaken in a transparent and replicable fashion so as to permit the comparison of the entire excavated assemblage with data from other areas. This would also allow for an interpretation of the study area’s archaeological significance.

**Field Team**

KNC directors, Dr Matthew Kelleher and Alison Nightingale, would be responsible for the salvage excavation program. Dr Matthew Kelleher would direct the excavation component of the Aboriginal archaeological assessment. Matthew has extensive experience in managing archaeological excavations and research projects, especially in the Cumberland Plain. The geoarchaeological assessment will be undertaken by a suitably qualified geomorphologist (e.g. Sam Player) and Dr Matthew Kelleher.