

Appendix E

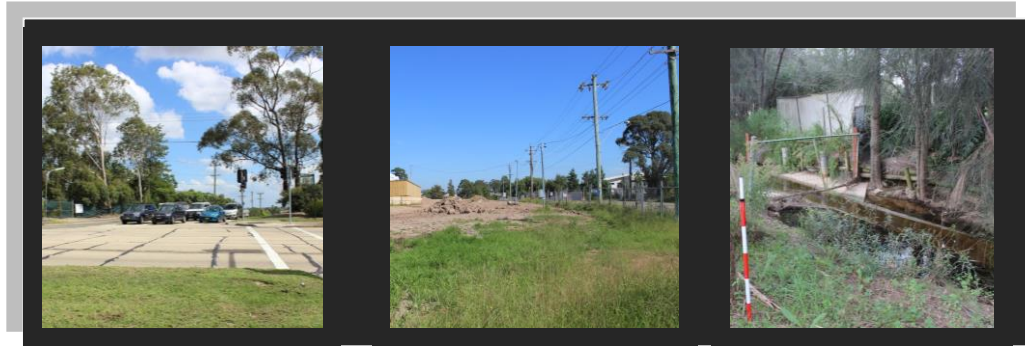
Cultural Heritage Assessment Report

Memorial Avenue, Kellyville

PACHCI Stage 2 Aboriginal Archaeological Report

Report to Roads and Maritime Services

May 2014



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Report Verification

Project Number	Issue	Note	Prepared By	Reviewed By	Issue Date
AJ140207	1	Draft Report	Joshua Madden	Sandra Wallace	22 April 2014
AJ140207	2	Final Draft	Josh Symons	Sandra Wallace	14 May 2014
AJ140207	3	Final Report	Sandra Wallace	Sandra Wallace	31 May 2014

Name of project: Memorial Avenue, Kellyville: PACHCI Stage 2 Aboriginal Archaeological Report

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Project Director and Document approval: Dr Sandra Wallace

Name of organisation: Artefact Heritage

Executive Summary

Roads and Maritime Services (Roads and Maritime) has engaged Artefact Heritage to prepare an Aboriginal heritage assessment for the proposed road upgrade works along Memorial Avenue, Kellyville (the study area). This report has been prepared in accordance with the requirements for an archaeological assessment as set out in the Office of Environment and Heritage (OEH) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) (The Code) and provides recommendations as to whether further archaeological investigation is required.

This investigation complies with Stage 2 of the Roads and Maritime *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI). If Aboriginal sites or archaeological deposits were to be impacted by the proposed works, Stage 3 PACHCI would be initiated by Roads and Maritime. Consultation for this assessment has been undertaken by Roads and Maritime in line with Stage 2 PACHCI requirements.

The study area is a linear transect approximately two kilometres in length along Memorial Avenue, Kellyville between Old Windsor Road and Windsor Road. The proposed design includes:

- Widening of the entire length of Memorial Avenue.
- Establishment of two new signalized intersections at Arnold Avenue West and at Severn Vale Drive.
- Upgrading of the existing intersections at Windsor Road and Old Windsor Road.

Severn Vale Drive the new road crossing the Memorial Avenue will be constructed as part of the Balmoral Road Release area precinct development.

This assessment found that:

- Duplicate AHIMS site recording 45-5-0981 / 45-5-0989 is registered within the study area. The site has been destroyed under Section 90 Consent to Destroy number 710.
- An intact portion of Aboriginal site 45-5-2652 is located within the study area. It is understood that intact portion of 45-5-2652 will not be impacted by the proposed works.
- One impacted portion of Aboriginal site 45-5-2652 is located within the study area. It appears that these impacts were conducted in accordance with permits 2002, 2013, 3636 and 3638.
- AHIMS site 45-5-3063, an area of Potential Archaeological Deposit (PAD), was located within the study area boundaries. This PAD has been disturbed under two Aboriginal Heritage Impact Permits (2241, 2319).
- AHIMS site 45-5-3844, an isolated find, was located within the study area boundaries. The site has been destroyed under the Part 3A development of a retirement facility.



- AHIMS site 45-5-3847 is located within the study area. The site has been destroyed under the Part 3A development of a retirement facility.
- The majority of the study area has been subject to high levels of ground disturbance.

This assessment recommends:

- There are no Aboriginal heritage constraints on the proposed upgrade works. This assessment has found that the Stage 3 PACHCI does not need to be implemented for the proposed Memorial Avenue upgrade.
- If it is determined during detailed design that there will be impacts to the intact portion of AHIMS site 45-5-2652, further advice from an archaeologist should be sought to determine appropriate recommendations.
- If Aboriginal objects or suspected human remains are located during works the Roads and Maritime Unexpected Finds Procedure would be adhered to.
- Site impact recording forms would be prepared for sites 45-5-3844 and 45-5-3063.



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1.0 Introduction and Background

1.1 Introduction

Roads and Maritime Services (Roads and Maritime) has engaged Artefact Heritage to prepare an Aboriginal heritage assessment for the proposed road upgrade works along Memorial Avenue, Kellyville (the study area). This report has been prepared in accordance with the requirements for an archaeological assessment as set out in the Office of Environment and Heritage (OEH) *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) (The Code) and provides recommendations as to whether further archaeological investigation is required.

This investigation complies with Stage 2 of the Roads and Maritime *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (PACHCI). If Aboriginal sites or archaeological deposits were to be impacted by the proposed works, Stage 3 PACHCI would be initiated by Roads and Maritime. Consultation for this assessment has been undertaken by Roads and Maritime in line with the Stage 2 PACHCI.

1.2 Study area

The study area is a linear transect approximately two kilometres in length along Memorial Avenue, Kellyville between Old Windsor Road and Windsor Road. The proposed design includes the widening of the entire length of Memorial Avenue and the establishment of three new junctions along Memorial Avenue and upgrades of the T-intersections at Windsor Road and Old Windsor Road (Figure 1).

For the purposes of the report the study area is defined as the area outlined in yellow shown in Figure 1. It is assumed that apart from the proposed new intersection locations, impacts would be limited to the existing road corridor.

Memorial Avenue is situated within the suburb of Kellyville and is within The Hills Shire Local Government Area and located within the Deerubbin Local Aboriginal Land Council (DLALC) boundaries.

1.3 The proposal

The proposed upgrade would involve the construction of two east bound and two west bound lanes, with one future lane allowed for in both directions. The upgrade will also include a footway on either side of the road and a large median strip between the east and west bound lanes. The proposed works will also include the creation of four way signalized intersections at Arnold Avenue West/ Free Settlers Drive/



Memorial Avenue junction and at Severn Vale Drive/ Memorial Avenue junction. The existing intersections at Windsor Road and Old Windsor Road will also be upgraded (Figure 1).

1.4 Objectives of the assessment

The objectives of this study are to comply with the Stage 2 PACHCI, and OEH regulations and guidelines, including the Code of Practice. The main objectives of this study include providing:

- 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 of Aboriginal sites and areas of PAD within the study area.
- Development of a significance assessment for these sites addressing archaeological values.
- Recommendations for management and mitigation measures for Aboriginal sites and PADs.

1.5 Report authorship

This report was written by Joshua Madden and Josh Symons, Heritage Consultants with Artefact Heritage. Dr Sandra Wallace, Principal Archaeologist at Artefact Heritage, has reviewed the report and provided management input.

1.6 Aboriginal consultation

Aboriginal consultation for this study has been conducted by Roads and Maritime in accordance with Stage 2 of the PACHCI. The study area lies within the boundaries of the DLALC. Under the PACHCI guidelines Roads and Maritime has undertaken all consultation with the DLALC.

A Native Title register search was conducted by Artefact Heritage on 10 March 2014 with 'no relevant entries' identified.

The DLALC was contacted by the Roads and Maritime Aboriginal Cultural Heritage Advisor. Mr Steve Randall of the DLALC attended the study area survey. DLALC will provide a site survey report to Roads and Maritime. All responses from DLALC will be appended to the final report.



Figure 1: Study area boundary and proposed concept design (background aerial © Google 2014).





2.0 Statutory Context

2.1 Legislative requirements

There are several items of State legislation and Guidelines that are relevant to the current study. A summary of these Acts and the implications for the proposed development follow.

National Parks & Wildlife Act (1974)

The *National Parks & Wildlife Act 1974* (the NP&W Act) 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 90. Aboriginal objects are afforded automatic statutory protection in NSW whereby it is an offence to:

'damage, deface or destroy Aboriginal sites without the prior consent of the Director-General of the National Parks and Wildlife Service (now the OEH)'.

The Act defines an Aboriginal 'object' as:

'any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal European extraction, and includes Aboriginal remains'.

The Act was amended in 2010, with the legislative structure for seeking permission to impact on heritage items modified. A s90 permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and may only be granted by OEH if the conditions of the 'due diligence guidelines', and/or an 'archaeological investigation' have been met. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

The Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (the EP&A Act) establishes the framework for cultural heritage values to be formally assessed in the land use planning and development consent process. The EP&A Act requires that environmental impacts are considered prior to land development; this includes impacts on cultural heritage items and places as well as archaeological sites and deposits.



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.

Native Title Act (1994)

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

3.0 Environmental Context

The purpose of this environmental context section is to provide information for use in developing a predictive model of Aboriginal site locations associated with the study area.

3.1 Geology

The study area is located within the Cumberland Plain which is typified by an undulating landscape of rolling hills and prominent rises. The study area is underlain by the Triassic Wianamatta Liverpool Sub-Group. The Liverpool Sub-Group is comprised of the Bringelly Shale over Minchinbury Sandstone and Ashfield Shale and consists of shale and some sandstone beds and outcrops. Local relief is between ten and fifty metres with undulating slopes to below ten per cent (Bryan, 1966).

3.2 Soils

Soils across the study area consist of the residual Blacktown soil landscape (Bannerman and Hazelton 1990). The Blacktown soils are shallow (<100cm) hard setting mottled red and brown podzolic soils on crests and yellow podzolic soils on lower slopes and along drainage lines. The Blacktown soil landscape is generally associated with gently undulating rises. The soils are primarily poorly drained with very little erosional activity with minor sheet and gully erosion in zones stripped of vegetation.

3.3 Hydrology

Landforms across the local area consist of broad crests with gently sloping inclines. The study area is located within a gently sloping landform context. Strangers Creek (a third order stream), a tributary of Strangers Creek and Elizabeth Macarthur Creek all bisect the study area. Caddies Creek, a major higher order watercourse, is located approximately 550 metres west of the study area. Smalls Creek is located approximately 1.2 kilometres east of the study area. Numerous lower order creek and drainage lines are located within a 1.5 kilometres of the study area, many of which flow toward the aforementioned creek lines.

3.4 Vegetation and resources

Prior to the settlement of the area by Europeans, the study area and the surrounds would have been covered by Cumberland Plain Woodland, typical in areas underlain by the Wianamatta Group geological unit. Cumberland Plain Woodland was dominated by eucalypt species such as Forest Red Gum (*Eucalyptus tereticornis*) and Grey Box (*Eucalyptus moluccana*) with ground cover consisting primarily of



Kangaroo Grass (*Themeda australis*) (Benson and Howell 1990).

Aboriginal people were highly mobile hunter-gatherers utilising different landform units and resource zones. Varying resources are likely to have only been available seasonally, this limitation of the resources utilised may have necessitated the need for movement and trade of resources across the landscape (Attenbrow 2010: 78).

Plants were an important source of nutrition and were also used in the manufacture of tools. Gum and sap were used for binding or for hafting, such as in the manufacture of stone hatchets and plant fibres were used to make baskets, nets, ropes and hammocks (Saunders 2003). Plant products were also used in the manufacture of shelters, shields and other weapons, coolamons, used to carry food and water, and digging sticks.

3.5 Historical land-use context

Following European settlement of Sydney, the study area has been used chiefly for agricultural and pastoral activities. Settlement in the region took place during the early nineteenth century with the district flourishing as an agriculture region. Farming across the Cumberland Plain consisted primarily of grazing and cropping. Significant development did not occur in the local area until the early 1990s.

By 1860 the current study area was a series of five rural allotments located between Old Windsor Road and Windsor Road, with much of the surrounding farmland described as dairy farms and orchards. By the early 1930's the area between Windsor Road and Old Windsor Road was steadily being sold off as smaller allotments. By this stage Burns Road, that would later be known as Memorial Avenue, had been constructed, which allowed for the sub-division of the larger farm allotments. In 1924 Kellyville Memorial Hall was opened on the corner of Windsor Road and Memorial Avenue to honour those who served in WWI (Artefact Heritage 2014).

The study area has remained rural in character, with the small lot semi-rural subdivision and market gardens evident today established in the mid twentieth century.

4.0 Archaeological Context

4.1 Aboriginal material culture

Aboriginal people have lived in the Sydney region for up to 30,000 years, as indicated by radiocarbon dating undertaken in Parramatta (JMcd CHM 2005). Evidence of Aboriginal occupation has been found dated to 50-60,000 years before present (yBP) at Lake Mungo in NSW so it is likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates we have at present. The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

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

The Eastern Regional Sequence was first developed by McCarthy in 1948 to explain the typological differences he was seeing in stone tool technology in different stratigraphic levels during excavations such as Lapstone Creek near the foot of the Blue Mountains (McCarthy *et al* 1948). The sequence had three phases that corresponded to different technologies and tool types (the Capertian, Bondaian and Eloueran). The categories have been refined through the interpretation of further excavation data and radiocarbon dates (Hiscock & Attenbrow 2005, JMcdCHM 2005). It is now thought that prior to 8,500 yBP tool technology remained fairly static with a preference for silicified tuff, quartz and some unheated silcrete. Bipolar flaking was rare with unifacial flaking predominant. No backed artefacts have been found of this antiquity.

After 8,500 yBP silcrete was more dominant as a raw material, and bifacial flaking became the most common technique for tool manufacture. From about 4,000yBP to 1,000yBP backed artefacts appear more frequently. Tool manufacture techniques become more varied and bipolar flaking increases (JMcd CHM 2006a). It has been argued that from 1,400 to 1,000 years before contact there is evidence of a decline in tool manufacture. This reduction may be the result of decreased tool making, an increase in the use of organic materials, changes in the way tools were made, or changes in what types of tools were



preferred (Attenbrow 2010:102). The reduction in evidence coincides with the reduction in frequency of backed blades as a percentage of the assemblage.

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

4.2 Aboriginal ethno-historical context

Aboriginal tribal boundaries within Australia have been reconstructed, primarily based on surviving linguistic evidence, and are therefore only approximations. Social interaction, tribal boundaries and linguistic evidence may not always correlate and it is likely boundaries and interaction levels varied and fluctuated over time. The language group spoken on the Cumberland Plain is known as Darug (Dharruk – alternative spelling). This term was used for the first time in 1900 (Matthews & Everitt). The Darug language group is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow 2010:34). This area was home to a number of different clan groups throughout the Cumberland Plain.

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region, including the Darug speakers. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The process of colonisation saw the appropriation of resources such as pasture, timber, fishing grounds and water sources, often at the expense of the local Aboriginal peoples.

Overall the devastation of the Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. The small pox epidemic of 1789 had a profound effect on the population of the Sydney region, and would have decimated groups and it is likely that over half of the Aboriginal people of the Sydney region died. The disease spread across throughout the Sydney region including the Cumberland Plain, with evidence to suggest that it spread farther afield and possibly over the Blue Mountains (Butlin 1983). This loss of life meant that some of the Aboriginal groups who lived away from the coastal settlement of Sydney may have disappeared entirely or had been forced to move from traditional areas, before Europeans could observe them, or record their clan names (Karskens 2010: 452).

4.3 OEH Aboriginal Heritage Information Management System (AHIMS)

A search of the OEH AHIMS site register was conducted on 13 February 2014 (Client ID: 125145). The coordinates for the search were:



Table 1: AHIMS Search Coordinates

GDA 94	MGA 55	307260	312915
		6265408	6268589
Buffer (meters)		–	

The register search identified a total of 69 registered Aboriginal sites in the vicinity of the study area (Figure 2). The predominant site features within the search area are open camp sites which include open artefact sites and isolated artefact sites (Table 1).

Table 2: AHIMS Search Results

Site Feature	Total Frequency of Sites	Destroyed Sites/Not Sites
Open Camp Sites (Isolated Finds / Artefact Scatters)	50	1 Destroyed 1 Deleted
Potential Archaeological Deposits	10	1 Not a Site
Grinding Groove	5	–
Aboriginal Resource and Gathering	3	–
Modified Tree	1	–
Total	69	3

The AHIMS site register search identified that six recorded Aboriginal sites are located within the study area and one additional Aboriginal site is likely to overlap with the study area. A summary of those recorded Aboriginal sites either within or overlapping with the study area is outlined below (see Figure 3).

AHIMS site 45-5-0981 / 45-5-0989

Site Old Windsor Road Isolated Find 2 (OWR IF2) is recorded in duplicate on the AHIMS site register with register numbers 45-5-0981 and 45-5-0989. Information included with the site card indicates that this site was recorded as part of an archaeological survey along Windsor Road and Old Windsor Road in 1992 by Tessa Corkill. The site consisted of one broken silcrete flake which may have been brought into the area with introduced gravels. Information attached to the site card for 45-5-0981 indicates that a Consent to Destroy under Section 90 of the *NPW Act 1974* was issued in 1995.

Site OWR IF2 (AHIMS site 45-5-0981 and 45-5-0989) has been destroyed.



AHIMS site 45-5-2365

The coordinates provided for site KV/CD1 (AHIMS site 45-5-2365) on the AHIMS site register indicate that the site is located approximately 75 metres east of Old Windsor Road and 20 metres east of residential house which has since been demolished. However, the aerial map provided with the site card recording indicate that the site indicate that the site was recorded approximately 209 metres to the northeast and approximately 225 metres east of Old Windsor Road. This is confirmed by a site update recording form submitted to the AHIMS site register by Paul Irish in 2010.

Site KV/CD1 (AHIMS site 45-5-2365) is located approximately 200 metres east of the current study area.

AHIMS site 45-5-2652

PAD 33 (AHIMS site 45-5-2652) was a Potential Archaeological Deposit (PAD) identified by Jo McDonald Cultural Heritage Management (JMcD CHM) in 2002. The site recording form indicates that PAD 33 comprised three distinct areas on both the western and eastern sides of Strangers Creek. The map attached the site card shows three areas of PAD, whereas the text in the site recording form suggests four areas.

The description on the site recording form suggests the PAD was associated with large extant trees which indicate areas of lower surface disturbance than the surrounding area. The trees were visible on 1947 aerial photos analysed by JMcD CHM for the site recording.

Attached to the site recording form on AHIMS is an Aboriginal Site Impact Recording Form submitted in 2010 by Mary Dallas Consulting Archaeologists (MDCA). The impact recording form provides information on archaeological test excavation that was conducted within PAD 33 by MDCA. The impact recording form indicates that the MDCA study area was on the eastern side of Strangers Creek and incorporated one of the three areas of PAD 33 shown on the original site recording form. Associated reporting for the test excavation was not available during preparation of the current document.

According to the impact recording form, MDCA completed five excavation squares within a portion of PAD 33. A sixth excavation square was abandoned due to large tree roots. One artefact was retrieved from archaeological test excavation. MDCA note on the impact recording form that no further archaeological investigation was considered necessary in the investigated portion of PAD 33.



There are four permits listed with AHIMS site 45-5-2652 on the AHIMS site register. These are permits 2002, 2013, 3636 and 3638. No information on these permits could be obtained from OEH during preparation of this report.

AHIMS site 45-5-3063

Burns Road Compound PAD (AHIMS site 45-5-3063) was recorded by Megan Mebberson. The area was used as a compound location during construction works for the T-Way along Old Windsor Road. Permits 2241 and 2319 are listed against the site on the AHIMS site register. These permits could not be obtained from OEH during the preparation of this report.

AHIMS site 45-5-3844

Site MA-1 (AHIMS site 45-5-3844) was recorded by JMcD CHM (2010: 20) during archaeological investigations in Lot 41 DP 10702 and Lot 401 DP 1125136. Site MA-1 was recorded on a driveway and consisted of one silcrete artefact. JMcD CHM (2010: 20) suggest that the artefact may have been introduced to the area with imported gravels for the driveway. This site has since been destroyed under a Part 3A approval.

AHIMS site 45-5-3847

Site MA-4 (AHIMS site 45-5-3847) was recorded by JMcD CHM (2010: 20) during archaeological investigations in Lot 41 DP 10702 and Lot 401 DP 1125136. Site MA-4 was recorded on a small surface exposure on an artificial earth mound associated with a motorcross track. Four artefacts were identified at site MA-4. This site has since been destroyed under a Part 3A approval.



Figure 2: AHIMS Map with approximate location of the study area in red.

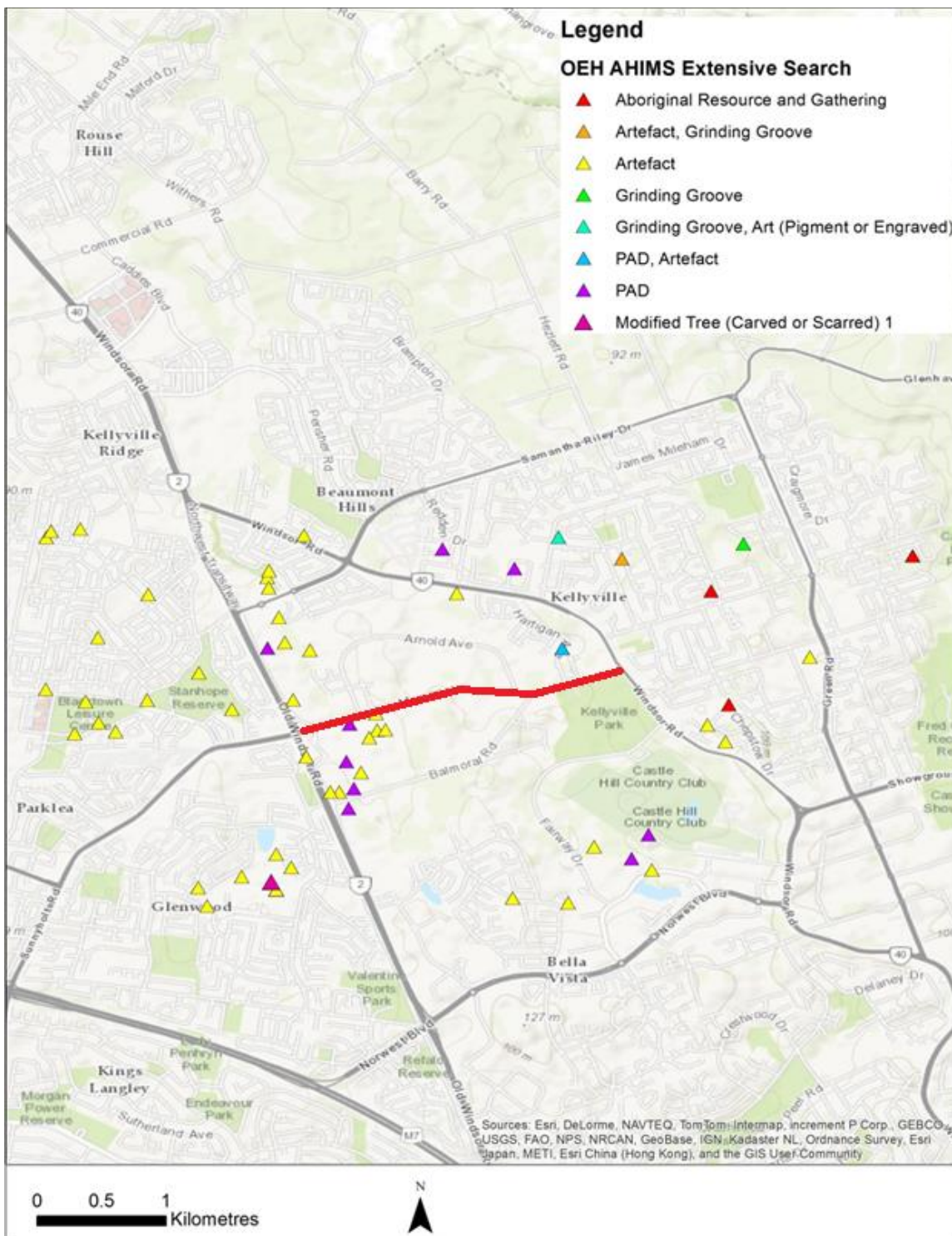
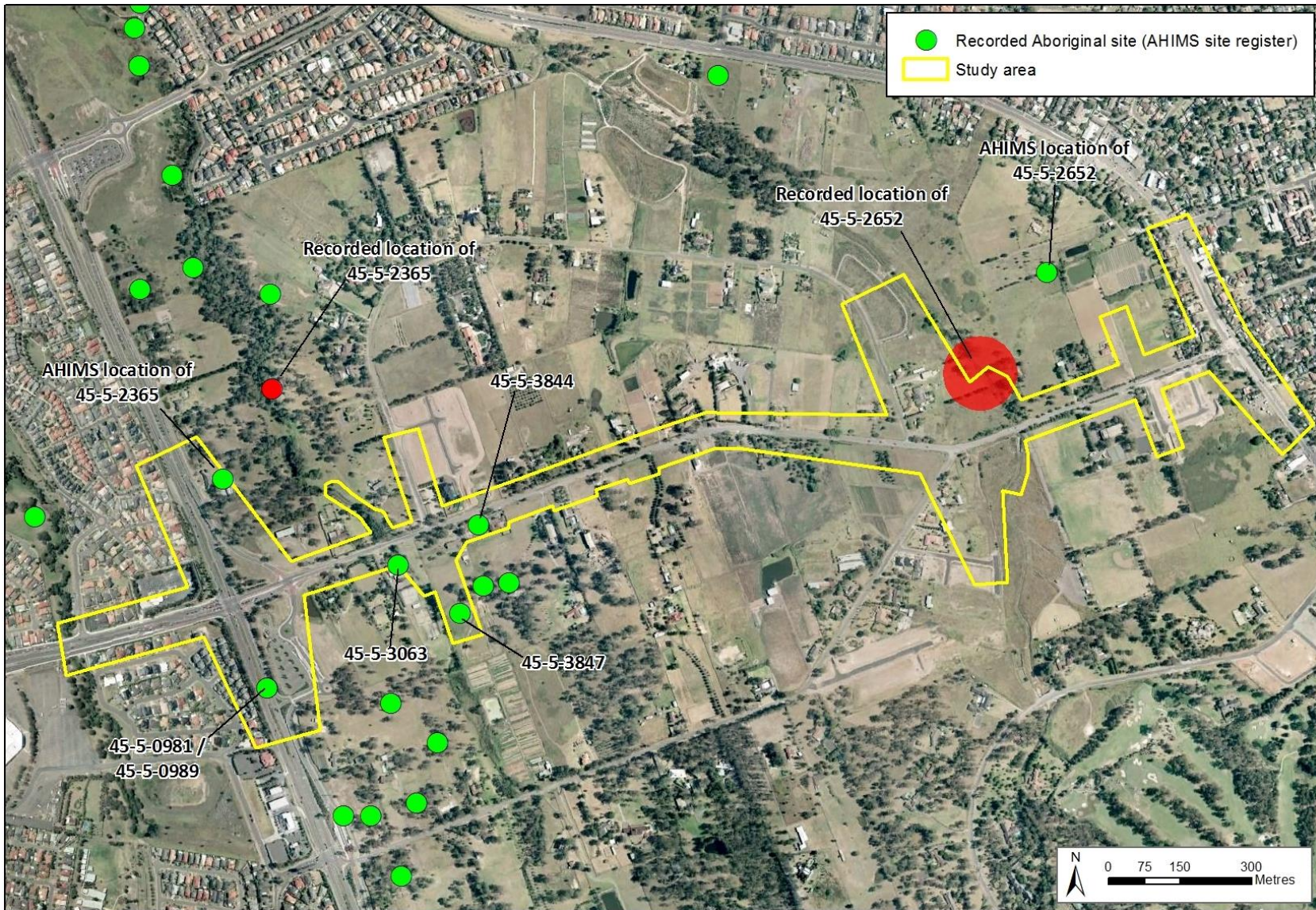




Figure 3: Detail of AHIMS results in relation to the study area (background aerial © Google 2014)





4.4 Previous archaeological investigations

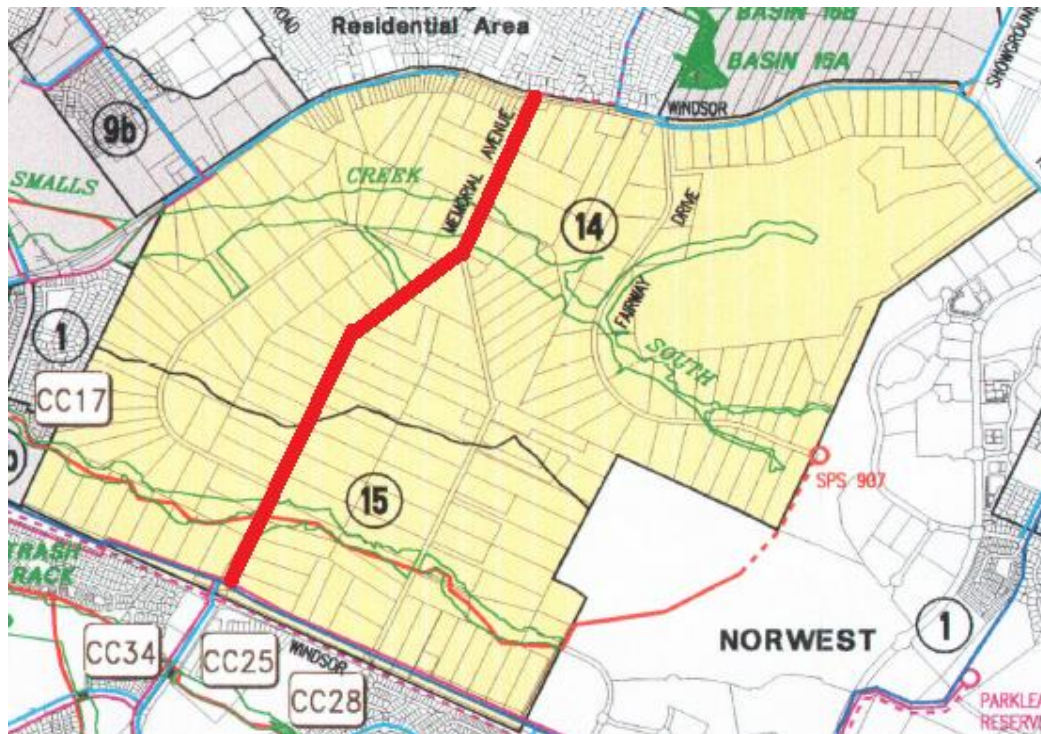
Over the last four decades a number of archaeological investigations have been conducted along the Cumberland Plain, some of which have been undertaken in close proximity to, or within, the current study area. A brief summary of the findings of key archaeological assessments and investigations is outlined below.

Jo McDonald Cultural Heritage Management (JMcd CHM) 2002:

In 2002 Jo McDonald Cultural Heritage Management Pty Ltd (JMcd CHM) undertook an assessment of the Indigenous and European Heritage values of the Rouse Hill Infrastructure Project (Stage 3), Balmoral Road Release Area. The current study area is located within the central portion of the JMcd CHM area of investigation (Figure 4).

JMcd CHM's investigation of the Balmoral Road release area identified one previously unrecorded Aboriginal site and one previously unrecorded PAD. Site 45-5-2653 is located on the northeastern side of Strangers Creek and approximately 750 metres north of the study area and is recorded as an open site and PAD. PAD 45-5-2652, called PAD 33, was likewise located along Strangers Creek and situated approximately 280 metres north of the study area. The PAD was identified along both sides of Strangers Creek and associated with alluvial flats that had been altered for channelling the creek line.

Figure 4: Location of JMcd CHM (2002:4) with the boundary of the current study area in red.





Based primarily on landscape analysis the JMcD CHM (2002) assessment identified various archaeological sensitivity zones across the wider Balmoral Road Release study area. The current study area was identified as having predominately high levels of disturbance (Figure 4) and low archaeological sensitivity. Two small zones of moderate disturbance and moderate sensitivity were identified bordering Memorial Avenue outside the road corridor, highlighted in blue (Figures 5 and 6). These areas have since been disturbed and were observed during the current site survey to be of low sensitivity. Areas of low archaeological sensitivity, like the majority of the current study area, were identified as having no constraints associated with the proposed release area.

Figure 5: JMcD CHM (2002:14) disturbance levels.

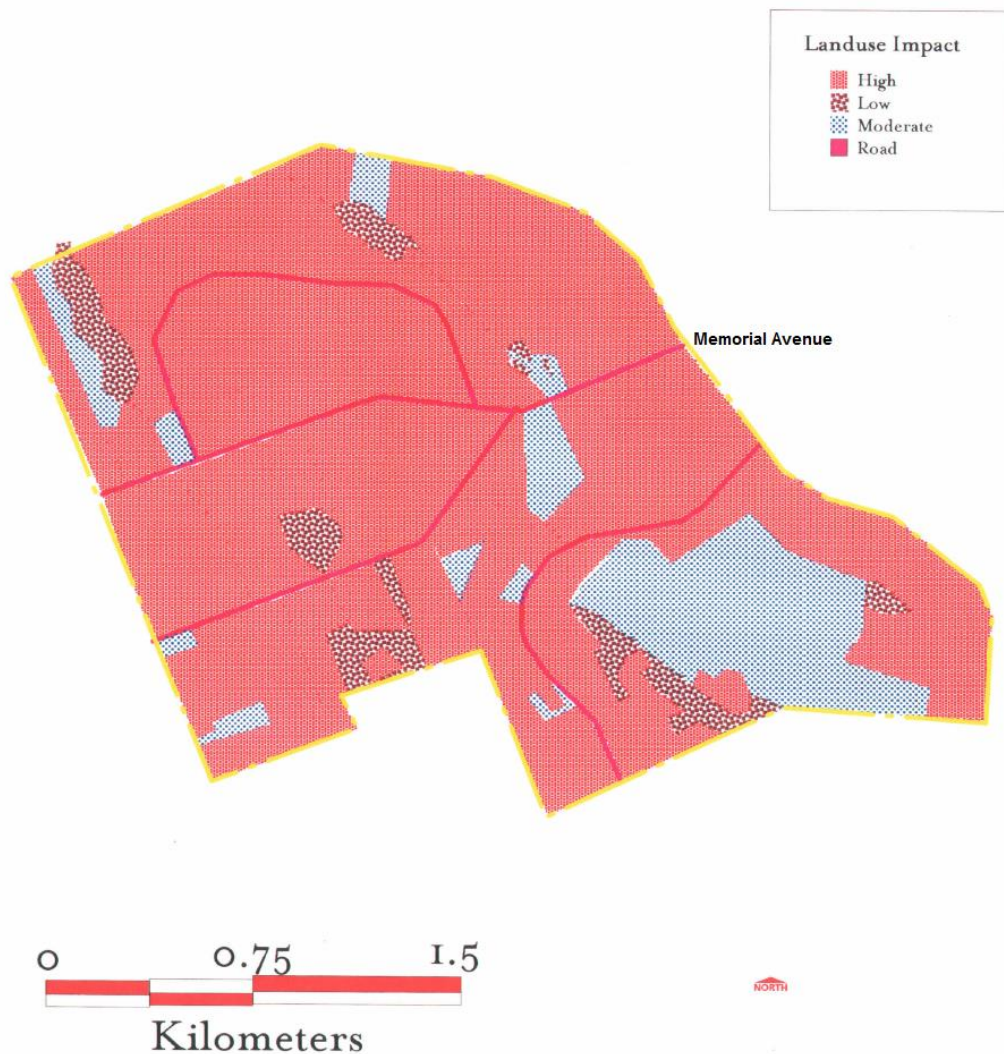
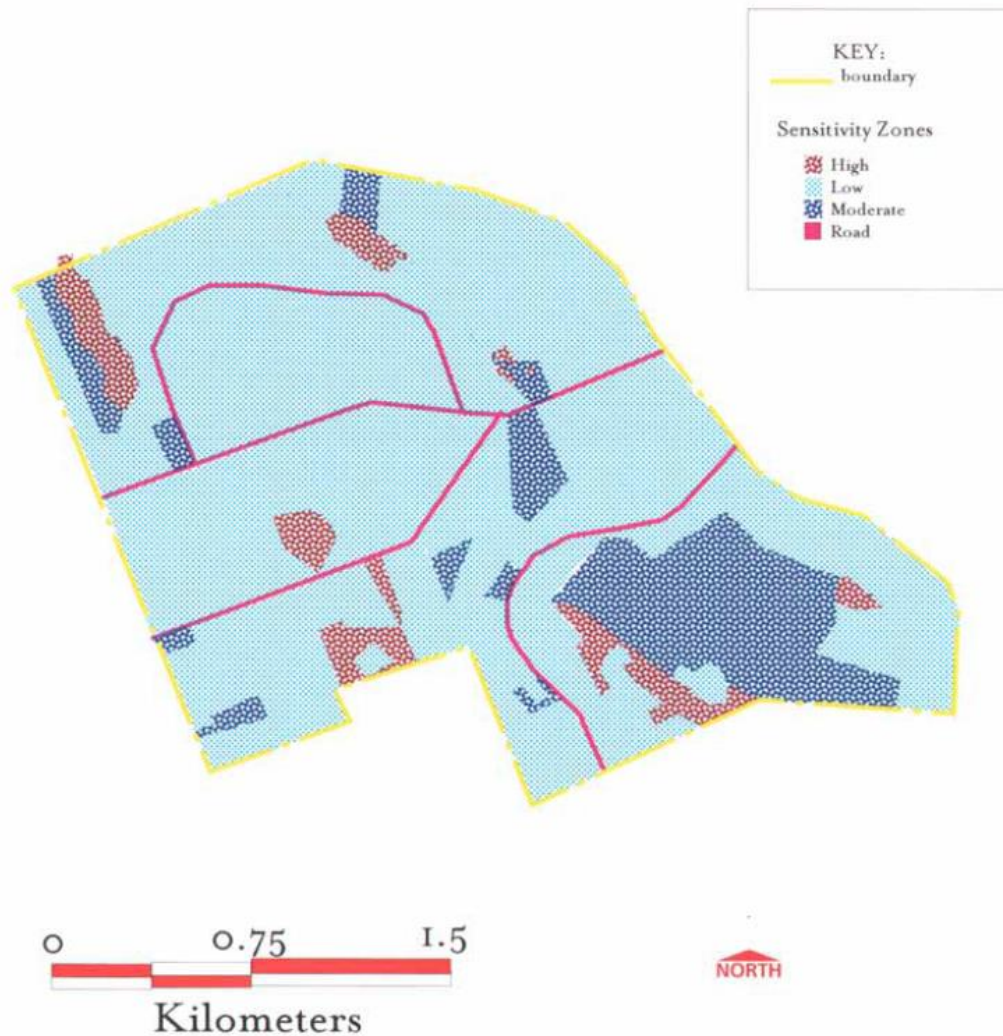




Figure 6: JMcD CHM (2002:34) Balmoral Rd Release area sensitivity zones.



JMcDCHM 2010

In 2010 JMcDCHM undertook an Aboriginal Heritage Assessment of Lot 41 DP10702 and Lot 401 DP1125136 at Memorial Avenue Kellyville, the site of a proposed retirement village. The assessment identified four Aboriginal sites, one isolated find and three artefact scatters. Two of these sites (MA-1 registered as 45-5-3844 and MA-4 registered as 45-5-3847) were located within the current study area.

The assessment recommended that a portion of the proposed development area should be conserved for its Aboriginal heritage values. If this conservation outcome was achieved the report recommended that destruction of the sites outside this conservation zone was acceptable. Site MA-1 was therefore approved



for impacts under the Part 3A approval for the retirement village. The current study area does not include the area recommended for conservation in the JMcDCHM 2010 assessment.

JMcDCHM 2002b and 2005:

JMcDCHM undertook an Aboriginal cultural heritage study for the Rouse Hill Development Area along the Second Ponds Creek Corridor. The assessment was undertaken for the proposed works which included the proposed installation of water, sewage and other sub-surface drainage related to the Rouse Hill Development Area. A total of twenty two archaeological sites and eight PADs were identified, many of which were previously recorded. The assessment area is located approximately 1.9 kilometres west of the current study area.

In 2005 JMcDCHM undertook excavations at a total of ten PADs surrounding Second Ponds Creek across representative landform units along the Cumberland Plain. The excavations were undertaken across undisturbed PADs that were located, usually, within 150 metres of Second Ponds Creek.

The study found that Aboriginal occupation of the Second Ponds Creek area dates back to at least 8000 yBP. Typological dating of the archaeological material asserted that greater intensity of occupation was undertaken in the last 3000 years. The assessment identified that the Second Ponds Creek area was characterised by 'background scatter' evident of transient movement across the landscape and low levels of activity over time. It was noted that this density of artefacts is typical of the Cumberland Plain. 'Knapping floors' were evident within the study area with the assessment classifying a knapping floor as a density of twenty lithics per square metre. The study also found that much of the silcrete found had been subject to 'heat treatment' prior to transport and knapping.

Kelleher Nightingale (KNC) 2010:

In 2010 Kelleher and Nightingale prepared an Aboriginal cultural heritage assessment for 'Area 20 Precinct' for the North West Growth Centre. The current study area is located approximately 3.7 kilometres south east of the KNC study area.

The assessment identified nineteen Open Campsites, eleven of which were identified as isolated finds with eight artefact scatters. Eight PADs were likewise identified during the survey for the assessment. A number of the sites and PADs identified were previously recorded and the assessment altered the boundaries of these where necessary.

It was concluded that the majority of the sites and PADs were located within the Second Ponds Creek corridor however; artefacts were observed — albeit in low densities — along raised areas and along ridgelines away from the creek corridor. It was noted that these areas had lower visibility than zones closer to the creek line.



JMcDCHM 2011:

In 2010 JMcDCHM was commissioned by RPS, on behalf of Rawson Homes, to undertake an Aboriginal cultural heritage assessment of Lots 2/1103861 and 4/126309, approximately 700 metres to the north of the study area. The assessment re-located one Aboriginal site (45-5-2653). The assessment identified an area of PAD associated with the surface expression which extended beyond the third order section of Strangers Creek. It was identified that further archaeological works under an AHIP be undertaken to test and salvage the site and associated PAD.

The PAD and site were excavated by GML + JMcDCHM in January 2012 for RPS on behalf of Rawson Homes.

Artefact Heritage 2013:

In 2013 Artefact Heritage was engaged by Brown Consulting to undertake an Aboriginal Heritage Due Diligence assessment for a proposed subdivision of Lot 46 DP 224917, part Lot 2 DP 1103329 and part Lot 2 DP 1103318, approximately 450 metres northwest of the study area. Although the study area was located within 100 metres of Strangers Creek and along a gently sloping landform unit, the assessment found that the study area had been subject to high levels of historical disturbance. No Aboriginal objects and / or cultural material were identified during the site investigation. The assessment concluded that no further archaeological works were required.

Burns Road Compound PAD site

It should be noted that a survey and excavation programme has been undertaken at Burns Road Compound Site PAD along Memorial Avenue. This work is assumed to have been in relation to the construction of the T-Way. OEH has given advice that the PAD (AHIMS site 45-5-3063) was impacted under a section 87 test excavation permit and a section 90 consent to destroy permit. If these documents are obtained they will be discussed in the final version of this report.

4.5 Local archaeological context

During the last four decades, the Cumberland Plain has been subject to a large number of archaeological assessments both research and consultant based. As such, over 4000 Aboriginal sites are registered across the Cumberland Plain on the OEH AHIMS database. During the last twenty years, Cumberland Plain predictive modelling has been developed and refined as new data is collected. Beth White and Jo McDonald have recently contributed to the debate over site prediction in their discussion on the nature of Aboriginal site distribution (White and McDonald 2010). The paper provides a spatial and distributive analysis of Aboriginal objects in relation to freshwater resources and along varying landform units. The



findings of this study highlighted the relationship between proximity to freshwater and landscape with Aboriginal occupation.

This stream order model also identifies that the confluences of creek lines across the Cumberland Plain will likely have evidence of a foci of activity with archaeological expressions likely to have stratified deposits. It was found that artefacts were most likely within 50-100m of higher (fourth) order streams, within 50m of second order streams, and that artefact distribution around first order streams was not significantly affected by distance from the watercourse (White and McDonald 2010: 33).

The study also found that artefact density were most likely to be greatest on terraces and lower slopes within 100m of freshwater resources. The predictive model also identified that ridgelines and crests located between drainage lines will contain archaeological evidence though usually representative of background scatter similar to that identified for first and / or second order creek lines.

4.6 Archaeological implications for the study area

The study area is comprised of primarily crests, slopes, flats and open depressions. The study area is primarily located within a disturbed landform within the boundaries of the Memorial Avenue and associated road corridors. Two substantial creek lines bisect the study area to the west and east with the study area located within close proximity to a number of creek and drainage lines. The study area is located within close proximity to freshwater resources and approximately eight kilometres east of Plumpton Ridge, a significant silcrete quarry within the Cumberland Plain and Sydney Basin.

The vast majority of the sites identified within close proximity to the study area are “Open Campsites” which consist of Isolated Finds and Artefact Scatters. Other site types within close proximity to the study area include PAD’s and PAD’s with artefacts. Six previously recorded Aboriginal sites have been recorded within the study area boundaries (outlined in Section 4.3). The location of AHIMS sites 45-5-3844 and 45-5-3847 have since been developed under a Part 3A application. AHIMS site 45-5-3063 was recorded as Burns Road Compound PAD and has been previously impacted under section 87 and section 90 permits. Duplicate recording AHIMS site 45-5-0981 / 45-5-0989 has been impacted by works associated with development of Old Windsor Road. AHIMS site 45-5-2652 includes a portion of recorded PAD located within the study area.

5.0 Predictions

5.1 Aboriginal land use

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

As Aboriginal people were mobile hunter-gatherers, it is likely that they moved across the landscape between resources, movement across the landscape is also likely have been related to socio / cultural factors such as gatherings and ceremonial obligations. Campsites would have provided temporary residences such as the bark structures noted by Tench (Tench, 1793). 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 is likely that knapping would have occurred at a campsite, it is also likely that knapping would have occurred during movement across the landscape, as tools were prepared or repaired during hunting and gathering activities.

5.2 Predictive model

Predictive models are important and provide assessment on the most likely areas of archaeological potential within a given study area. These models also indicate the likely types of archaeological evidence, if present, within a given location and / or study area.

This predictive model 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.
- Historical disturbance and landscape modification.
- Results of previous archaeological work in the vicinity of the study area.
- Historical accounts of Aboriginal occupation, and landscape character.
- Predictive modelling proposed in previous archaeological investigations, particularly White and McDonald 2010.

A predictive statement for Aboriginal site types in the local area is as follows:



- 'Open Campsites' which consist of Artefact Scatters and / or Isolated Finds are the most likely Aboriginal site type within the study area.
- *In situ* artefacts would be located in areas of least ground disturbance.
- Areas along the road alignment will be disturbed. Artefacts with contextual evidence are unlikely to be located within these zones.
- Using the White and McDonald Cumberland Plain Predictive model (White and McDonald, 2010), archaeologically sensitive landforms are generally associated with terraces and lower slopes. Crests and ridgelines between drainage lines are likewise identified as archaeologically sensitive. The study area is a typical Cumberland Plain undulating landscape with crests, broad crests and slope landforms.
- The study area is likely to have been subject to high levels of disturbance and it is likely that sensitive landforms are located within the area but that any potential will have been removed by modern and European land use.
- Intact sub-surface archaeological deposits are only likely in areas that have not been subject to moderate and / or high levels of disturbance. Surface finds in highly disturbed areas are unlikely to be in their original context.
- Where old growth woodland remains there is a possibility that scarred trees will be identified.
- Visibility is likely to be low, obstructed by dense grass cover. Sites on the ground surface will be most obvious in exposed areas where vegetation has been cleared and/or on tracks.
- Other Aboriginal site types such as shell middens, rock art and shelters are unlikely to occur within the study area.

6.0 Study Area Survey Methods

6.1 Site definition

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

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

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

For the purposes of this study sites were defined as obvious physical boundaries.

6.2 Survey methodology

The aim of the study area survey was to establish the significance and integrity of the previously recorded sites located within the current study area. Further, the survey was undertaken to identify if Aboriginal cultural material and / or objects are present within the study area and, to establish the likelihood of Aboriginal objects occurring beneath the ground surface.

The survey was undertaken in accordance with the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010). All areas were covered on foot. A handheld Global Positioning System (GPS) was used to track the path of the surveyors, and to record the co-ordinates of sites, features and location of landform units within the study area. An aerial map of the study area was also carried by members of the survey team in the field. GDA94 coordinates for sites and PADs were taken with a handheld GPS.

All ground exposures were examined for stone artefacts, shell, or other traces of Aboriginal occupation. Old growth trees were examined for signs of cultural scarring or marking.



A photographic record was kept of representative sections of the study area. Photographs were taken to record the landform units within the study area, vegetation, levels of disturbance, and Aboriginal sites and PADs. Scales were used for photographs where appropriate.

Due to the size, varying levels of disturbance and landform units across the study area, the study area was broken down into nineteen survey units (see Figure 7). Many of the survey units were of a comparable nature in regards to disturbances, landform, visibility and exposure. As such some of the survey units are discussed and outlined concurrently. All survey units, where possible, were traversed in three survey lines with the survey team spaced between two and four metres apart.

The survey of the study area was undertaken on Wednesday 18 March and Thursday 19 March 2014. Table 3 provides the names of the individuals who undertook the survey.

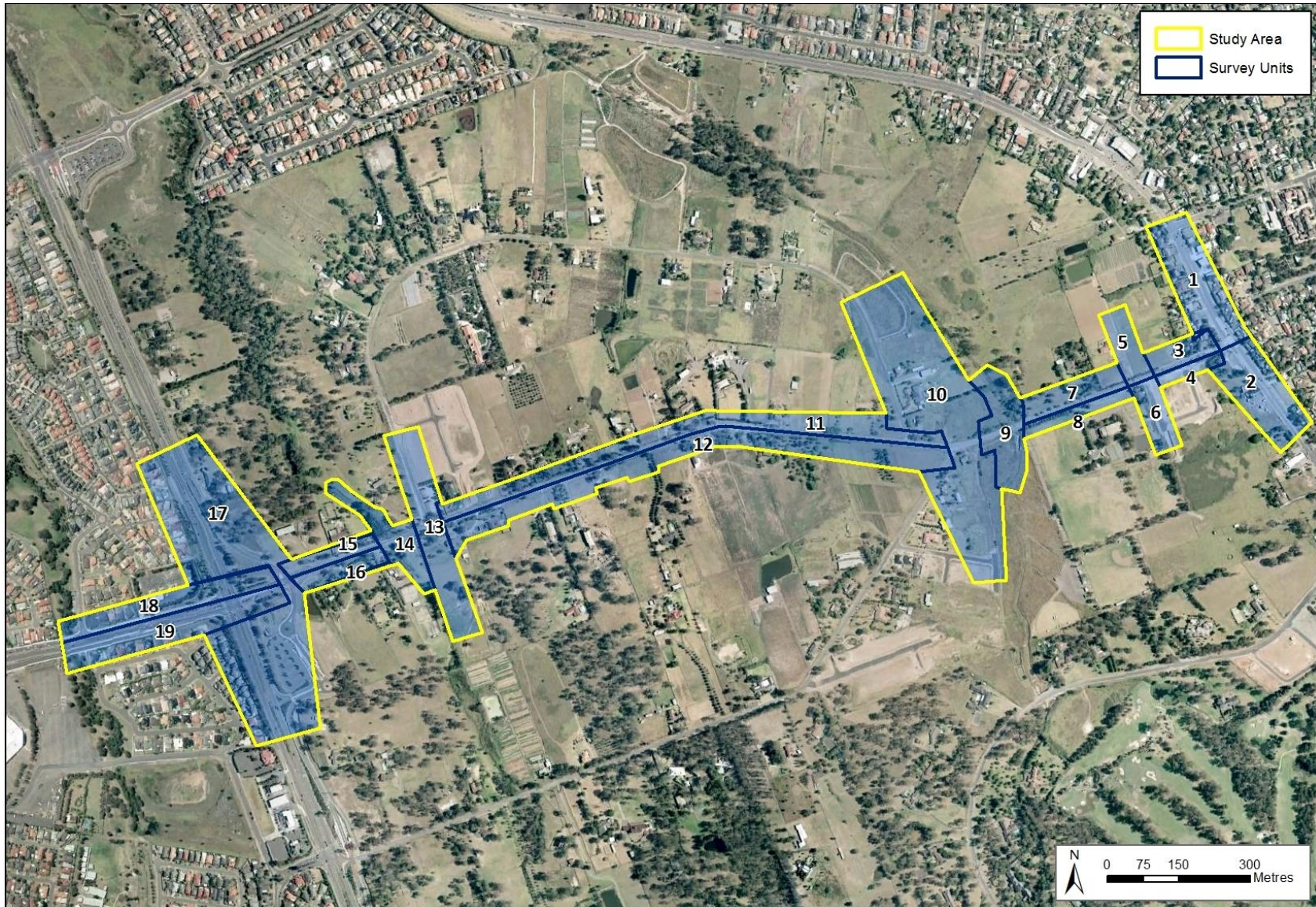
Table 3: Site Survey Register

Organisation	Individual	Date
DLALC	Steve Randall	Wednesday 19 and Thursday 20 March
Artefact Heritage	Joshua Madden	Wednesday 19 and Thursday 20 March
Artefact Heritage	Lyndon Patterson	Wednesday 19 and Thursday 20 March

The study area results are identified below in Section 7.



Figure 7: Survey Units (background image © Google 2013)





7.0 Study Area Survey Results

7.1 Survey observations

7.1.1 Survey Unit 1 and Survey Unit 2

Survey Units 1 and 2 incorporated the T-intersection between Memorial Avenue and Windsor Road (Figure 7). Survey Unit 1 is located on the northern side of Memorial Avenue while Survey Unit 2 is located along the southern side. Surface visibility was below ten per cent with overall exposure assessed below ten per cent.

The survey units are located along crest landform units with views to the west. Both survey units have been subject to severe disturbances which included landform alteration in the form of cutting and re-deposition of soils for a public park, a concrete slab (and a now demolished building) and above ground and sub-surface services. The survey units have been subject to high disturbance levels.

No Aboriginal objects or areas of PAD were identified in Survey Units 1 and 2.

Table 4: Survey Unit 1 and 2.

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Crest	7654	10	10	76.5	1

Plate 1: View W overlooking Memorial Avenue and park Survey Unit 1.



Plate 2: View S overlooking Survey Unit 1 toward T-Intersection of Memorial Avenue and Windsor Road.





Plate 3: View W overlooking Memorial Avenue at the T-intersection Survey Unit 2.



Plate 4: View S overlooking Survey Unit 2.



7.1.2 Survey Unit 3 and Survey Unit 4

Survey Unit 3 is located on the northern side of Memorial Avenue and Survey Unit 4 is located along the southern side (Figure 7). Surface visibility is only evident in areas of exposure with visibility below ten per cent with overall exposure assessed below ten per cent.

The survey units are located along an upper slope landform. Both survey units have been subject to severe disturbances which included landscape modification in the form of cutting and redistribution of soils, the construction of houses, roads, footpaths above ground and sub-surface services with evidence of older residential driveways. There is evidence of soil redistribution with blue metal observed throughout the area. The survey units have been subject to high levels of ground disturbance.

No Aboriginal objects and / or areas of PAD were identified in Survey Units 3 and 4 during the survey.

Table 5: Survey Units 3 and 4 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Upper Slope	7714	10	10	77.1	1



Plate 5: View E Survey Unit 3 undulating landform with zero visibility.



Plate 6: View E Survey Unit 3 of house frontage.



Plate 7: View W of Survey Unit 4 zero visibility.



Plate 8: View E of cut, road and service infrastructure Survey Unit 4.



7.1.3 Survey Unit 5 and Survey Unit 6

Survey Unit 5 is located on the northern side of Memorial Avenue and Survey Unit 6 is located along the southern side (Figure 7). Surface visibility is evident in areas of exposure with visibility below ten per cent with overall exposure assessed below ten per cent.

The survey units are located along a slope landform. Both survey units have been subject to severe disturbances which included; landscape modification in the form of cutting and soil benching / mounding, the construction of houses, roads, footpaths above ground and sub-surface services. In areas of visibility gravels were evident throughout. The survey units have been subject to high levels of ground disturbance.

No Aboriginal objects and / or areas of PAD were identified in Survey Units 5 and 6 during the survey.



Table 6: Survey Units 5 and 6 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Slope	11473	10	10	114.7	1

Plate 9: View S on W side of Survey Unit 5.



Plate 10: View S on E side of Survey Unit 5.



Plate 11: View S overlooking Survey Unit 6.



Plate 12: View N overlooking Survey Unit 6.



7.1.4 Survey Unit 7 and Survey Unit 8

Survey Unit 7 is located on the northern side of Memorial Avenue and Survey Unit 8 is located along the southern side (Figure 7). Surface visibility is evident in areas of exposure with visibility below five per cent with overall exposure assessed below ten per cent.

The survey units are located along a flat landform. Both survey units have been subject to ground disturbances which included; landscape modification in the form of cutting and soil benching / mounding, the construction of houses, roads, footpaths above ground and sub-surface services. In areas of visibility



gravels were evident throughout. The survey units have been subject to high levels of ground disturbance.

No Aboriginal objects and / or areas of PAD were identified in Survey Units 7 and 8 during the survey.

Table 7: Survey Unit 7 and 8 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	17577	5	10	87.9	0.5

Plate 13: View E overlooking soil and builder’s rubble dump Survey Unit 7.



Plate 14: View E overlooking Memorial Avenue and area with services.



Plate 15: View E overlooking car park in Survey Unit 8.



Plate 16: View W overlooking football oval and services by Memorial Avenue.



7.1.5 Survey Unit 9

Survey Unit 9 is located on both sides of Memorial Avenue with Strangers Creek running north-south through the survey unit (Figure 7). No surface visibility was noted in areas outside of Strangers Creek.



The survey unit is located along flat and open depression landform units. The survey unit has been subject to severe disturbance which included; landscape modification in the form of cutting and soil benching / mounding, creek modification, the construction of roads, footpaths above ground and sub-surface services. The survey units have been subject to high levels of ground disturbance.

No Aboriginal objects and / or areas of PAD were identified during the survey.

Table 8: Survey Unit 9 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	12000	0	0	0	0
Open Depression	7140	5	10	35.7	0.5

Plate 17: View E overlooking Creekline on N side of Memorial Avenue.



Plate 18: View N overlooking creekline and bank.



Plate 19: Strangers Creek modification S side of Memorial Avenue.



Plate 20: View W of Survey Unit with services evident.





7.1.6 Survey Unit 10

Survey Unit 10 is located on both sides of Memorial Avenue (Figure 7). No surface visibility was noted due to residential dwellings, gravels, soil dumps, long grasses and tree cover.

The survey unit is located along a slope landform. Sections of the survey unit have been subject to severe disturbance which included; landscape modification in the form of cutting and soil benching / mounding, the construction of roads, footpaths, the construction and demolition of residential dwellings, the construction of above ground and sub-surface services.

No Aboriginal objects and / or areas of PAD were identified during the survey.

Table 9: Survey Unit 10 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Slope	20690	0	0	0	0

Plate 21: View N overlooking N side of Memorial Avenue.



Plate 22: View E overlooking N side of memorial Avenue.





Plate 23: View W overlooking S side of Memorial Avenue.



Plate 24: View S overlooking Survey Unit.



7.1.7 Survey Unit 11

Survey Unit 11 is located on the northern side of Memorial Avenue (Figure 7). Surface visibility was below ten per cent with overall exposure assessed below ten per cent.

Landform units across the survey unit consisted of slopes, flats and open depressions. A tributary of Strangers Creek bisected the survey unit and had been subject to bank alterations in close proximity to the road. Disturbance across the survey unit include landscape modification, cutting and soil mounding, the construction of roads, footpaths, the construction of residential dwellings, fences and brick walls, the construction of above ground and sub-surface services. The survey unit has been subject to high levels of disturbance.

Table 10: Survey Unit 11 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	10000	10	10	100	1
Slope	19000	10	10	190	1
Creek Line	4000	10	10	40	1



Plate 25: View W overlooking Survey Unit leading up to tributary of Strangers Creek.



Plate 26: View E from crest overlooking Memorial Avenue and Survey Unit 11.



Plate 27: View W overlooking houses within Survey Unit 11.



Plate 28: View W overlooking modifications to tributary of Strangers Creek.



7.1.8 Survey Unit 12

Survey Unit 12 is located on the southern side of Memorial Avenue (Figure 7). Surface visibility was below ten per cent with overall exposure assessed as approximately twenty per cent.

Landform units across the study area consisted of crests, slopes, a creek line and areas of severe landform modification. The survey unit has been subject to disturbance which include mass landscape modification, the construction of roads and footpaths, the construction of residential dwellings, fences concrete, and brick walls, the construction of above ground and sub-surface services.

One previously registered site (45-5-3844) is located within the boundaries of the survey unit (Section 7.3).



Table 11: Survey Unit 12 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Crest	10500	10	20	210	2
Slope	21000	10	20	220	2
Creek Line	4500	10	20	90	2

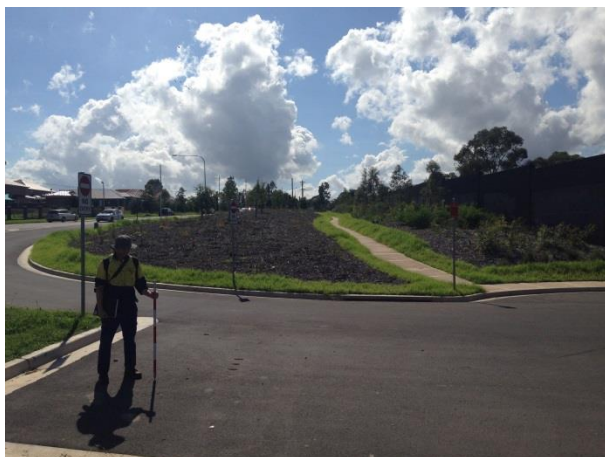
Plate 29: View W overlooking new development.

Plate 30: View E overlooking soil benching, new road, Memorial Avenue and new housing development.



Plate 31: View W from Survey Unit 13 overlooking recent disturbance of Survey Unit 12.

Plate 32: View E overlooking area of disturbance in Survey Unit 12.



7.1.9 Survey Unit 13

Survey Unit 13 is located on the northern and southern side of Memorial Avenue (Figure 7). Surface visibility was identified at five per cent with exposure to ten per cent.



The survey unit is located along a flat and has been subject to severe landform modification. The survey unit has been subject to disturbances which include mass landscape modification, the construction of roads and footpaths, the construction of residential dwellings, fences and the construction of above ground and sub-surface services.

No Aboriginal objects and / or areas of PAD were identified during the survey.

Table 12: Survey Unit 13 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	23000	5	10	115	0.5

Plate 33: View S overlooking Survey Unit 13.



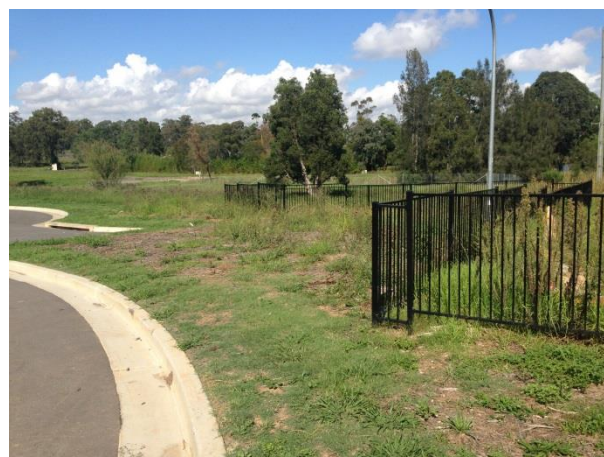
Plate 34: Close up of the number of services within Survey Unit 13.



Plate 35: View S of southern area of Survey Unit 13.



Plate 36: View S of southern area of Survey Unit 13.





7.1.10 Survey Unit 14

Survey Unit 14 is located on both side of Memorial Avenue and incorporates Elizabeth Macarthur Creek and associated creek banks (Figure 7). Surface visibility was to twenty per cent with exposure identified as being thirty per cent.

The survey unit was located along flat and creek bank landform units. The survey unit has been subject to severe disturbances which included; landscape modification in the form of cutting and soil rotating (which was undertaken during the current survey), creek modification, the construction of roads, footpaths above ground and sub-surface services.

One previously recorded PAD (45-5-3063) was identified during the survey.

Table 13: Survey Unit 14 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	16000	20	30	960	9.6
Creek Line	10000	20	30	600	6

Plate 37: Elizabeth Macarthur Creek modifications.



Plate 38: Area of disturbance which was subject to soil rotation while the survey was being undertaken.





Plate 39: Soil dumping along the creek flat.



Plate 40: View S overlooking survey unit.



7.1.11 Survey Unit 15 and Survey Unit 16

Survey Unit 15 is located on the northern side of Memorial Avenue and Survey Unit 16 is located along the southern side (Figure 7). Surface visibility is evident in areas in areas of exposure with visibility below five per cent.

The survey units are located along flat and slope landform units. Disturbances across the survey units included; landscape modification in the form of cutting and soil benching / mounding, the construction of roads, footpaths above ground and sub-surface services and the construction and demolition of residential properties and associated fences. In areas of visibility gravels and iron stones were evident throughout.

No Aboriginal objects and / or areas of PAD were identified in Survey Units 15 and 16 during the survey.

Table 14: Survey Unit 15 and 16 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Flat	7000	5	10	35	0.5
Slope	6200	5	10	31	0.5



Plate 41: View W overlooking Survey Unit 15.



Plate 42: Area of exposure around sub-surface services in Survey Unit 15.



Plate 43: View E overlooking areas of disturbance in Survey Unit 16.



Plate 44: View of soil benching within Survey Unit 16.



7.1.12 Survey Unit 17

Survey Unit 17 is located on both side of Memorial Avenue and incorporates the northern and southern bus T-Way entrances and exits from Memorial Avenue to Old Windsor Road (Figure 7). Surface visibility was below ten per cent with exposures below five per cent.

The survey unit was located along slope and crest landform units. The survey units has been subject to severe disturbances which included; landscape modification in the form of cutting and benching, the construction of roads, footpaths above ground and sub-surface services.

No Aboriginal objects and / or areas of PAD were identified during the survey.



Table 15: Survey Unit 17 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Slope	4000	10	5	20	0.5
Crest	2490	10	5	12.5	0.5

Plate 45: View N overlooking Northern T-Way.



Plate 46: View S overlooking Northern T-Way.



Plate 47: View S overlooking southern T-Way.



Plate 48: View E overlooking southern T-Way entrance.



7.1.13 Survey Unit 18 and Survey Unit 19

Survey Unit 18 is located on the northern side of Memorial Avenue and Survey Unit 19 is located along the southern side (Figure 7). Surface visibility is evident in areas in areas of exposure with visibility below five per cent.

The survey units are located along a heavily disturbed crest landform unit. Disturbances across the survey units included; landscape modification in the form of cutting and soil benching, the construction of



roads, footpaths above ground and sub-surface services and the construction of gardens. Both survey units have been subject to extensive landform modifications that are likely to have impacted topsoil which may have contained archaeological deposits.

No Aboriginal objects and / or areas of PAD were identified in Survey Units 18 and 19 during the survey.

Table 16: Survey Unit 18 and 19 Survey Coverage

Landform	Survey Unit Area (sq. m)	Visibility (%)	Exposure	Effective Coverage (sq. m)	Effective Coverage (%)
Crest	6800	5	5	17	0.5

Plate 49: View S overlooking Survey Unit 18 at the T-Intersection between Memorial Avenue and Old Windsor Road.



Plate 50: View W overlooking T-intersection and soil benching and cutting in Survey Unit 18.



Plate 51: Intersection of Old Windsor Road and Memorial Avenue and disturbances in Survey Unit 19.



Plate 52: Intersection of Old Windsor Road and Memorial Avenue and disturbances in Survey Unit 19.





7.2 Effective survey coverage

In accordance with the OEH code of practice, a summary of survey coverage is outlined in Table 17 below.

Table 17: Landform Summary.

Landform	Survey Unit Area (sq. m)	Landform effectively surveyed (sq. m)	% of landform effectively surveyed	Number of sites	Number of artefact features
Creek Line	18500	730	3.9	1	–
Flat	87577	1298	1.5	–	–
Slope	82363	576	0.7	1	–
Crest	27444	316	1.2	–	–
Upper Slope	7714	77	1	–	–
Open Depression	7140	35.7	0.5	–	–

7.3 Previously recorded sites

The locations of six previously recorded Aboriginal sites within the study area were visited during the field survey. A summary of observations at each site location is included below.

AHIMS site 45-5-0981 / 45-5-0989 (OWR IF2)

Information included with the AHIMS site recording form for duplicate site recording 45-5-0981 / 45-5-0989 indicates the site was issued a Section 90 Consent to Destroy permit under the *NPW Act 1974* in 1995. Significant upgrade works to Old Windsor Road have occurred since that date and the site is likely to have been destroyed. The site survey visited the general location of AHIMS site 45-5-0981 / 45-5-0989 and observed the area has been impacted by widening of Old Windsor Road and associated T-Way and installation of a large car park for the T-Way. These observations support the assessment that AHIMS site 45-5-0981 / 45-5-0989 has been destroyed.

AHIMS site 45-5-2652 (PAD 33)

As outlined in Section 4.3, the southeastern and western portions of PAD 33 (AHIMS site 45-5-2652) are located within the study area. The location of PAD 33 was visited during the site survey. Observations made during the site survey indicate that the western portion of PAD 33, which is associated with a small stand of mature Eucalypts, has not been impacted since the original recording in 2002. The stand of



Eucalypts remains in an area of zero per cent surface visibility due to dense grass cover and adjacent to a channelised section of Strangers Creek.

The southeastern portion of PAD 33 appears to have been impacted by residential development and associated road infrastructure. Observations in that area during the field survey include landscaping, construction of a bitumen road, and housing. This is the portion of PAD 33 which was investigated by MDCA as part of an archaeological test excavation program, and is likely to have been impacted with an Aboriginal Heritage Impact Permit (AHIP) from OEH. This is an assumption, as the nature of the four permits listed with PAD 33 on the AHIMS site register (2002, 2013, 3636 and 3638) are not known.

Plate 53: View north towards stand of trees associated with western portion of PAD 33



Plate 54: View north across western portion of PAD 33, with Eucalypts to right of photo.



Plate 55: View west across southeastern portion of PAD 33.



Plate 56: View east across Strangers Creek to eastern portions of PAD 33.



AHIMS site 45-5-3063 (Burns Road Compound PAD)

The coordinates place the site within a recently altered landscape which includes the demolition of a tennis club house and tennis courts and the use of the area as a compound for the construction of the nearby T-Way car park. The PAD is associated with Permits 2241 and 2319 and has been previously impacted.



Plate 57: View E overlooking 45-5-3063.



Plate 58: View SE overlooking 45-5-3063.



AHIMS site 45-5-3844 (MA-1 Isolated Find)

The location of the site was revisited during the current survey. JMCD CHM described the site as being located within a gravel driveway. The coordinates place the site within a recently altered landscape which includes the demolition of an existing residential dwelling and the construction of a concrete wall, footpath with soil benching evident across the entire site location. It is understood this site has been destroyed under the Part 3A development of a Baptist Community Services retirement facility.

Plate 59: View N overlooking original recording of 45-5-3844.



Plate 60: View N overlooking original recording of 45-5-3844.



AHIMS site 45-5-3847 (MA-4)

As outlined in Section 4.6, AHIMS sites 45-5-3844 and 45-5-3847 have been impacted by construction of retirement community housing under a Part 3A approval. The recorded location of AHIMS site 45-5-3847 was visited during the current survey, and observations indicate that the site has been impacted. A bitumen road is now located where the site was recorded.



Plate 61: View west across location of AHIMS site 45-5-3847



Plate 62: View north across location of AHIMS site 45-5-3847



8.0 Discussion and Analysis of Potential

8.1 Analysis of survey results

A full survey in accordance with the OEH 2010 Code of Practice was undertaken across the entire study area. Due to the length of the study area and the fact the study area is located along an established road corridor associated with pockets of new residential development, the study area was broken down into 19 arbitrary survey units.

Overall surface visibility and exposure was low, with the average below ten per cent. Visibility and areas of exposure were generally associated with modified landform units and creek lines. All of the survey units have been subject to high levels of disturbances.

No Aboriginal sites and / or PADs were identified during the survey.

8.2 Archaeological implications

The current study area is located along the Cumberland Plain in the west of Sydney and is located within a typical Cumberland Plain undulating landscape. The study area is confined to the east to west alignment of Memorial Avenue and bordered by Old Windsor Road in the west and Windsor Road in the East. Elizabeth Macquarie Creek, Strangers Creek, a third order water course, and a tributary of Strangers Creek, bisect the study area.

Regional predictive models (White and McDonald, 2010) suggest that areas within close proximity to major freshwater resources were utilised more regularly than other areas. These areas are often identified as high resource zones. Predictive models also identified that lower slopes and terraces are more often foci for Aboriginal material culture and / or objects and as such, are more likely to be identifiable as archaeological sensitive landform units. Predictive models also stated that an increased number of sensitive land forms were identified closer to major freshwater resources / high resource zones.

The current study area is located within an area that has been subject to landform modification and ground disturbance as a result of the construction of the road, development and agriculture. The current assessment has identified that the study area is located within close proximity to resources including Strangers Creek, a third order water way.



8.2 Analysis of potential

Archaeological potential is closely related to the levels of ground disturbance within a given area. However, other factors are also taken into account when assessing archaeological potential, such as; whether artefacts were located on the surface or, whether the area is within a sensitive landform unit according to the predictive statements.

The study area has been subject generally high levels of disturbances. The study area is located along an existing road corridor that is bordered by rural allotments and market gardens and recent residential development.

A portion of one identified area of archaeological potential, PAD 33 (AHIMS site 45-5-2652) is located within the study area. The southeastern portion of PAD 33 has been impacted by residential development works. That portion of the PAD was investigated during an archaeological test excavation program. The results of that excavation indicated that there is a very low density of Aboriginal objects beneath the surface and no further archaeological investigation was recommended (see Figure 8).

The western portion of PAD 33, also within the study area, has not been impacted and appears to be in the same condition as when it was originally recorded in 2002 (see Figure 8). As the subsurface investigation in the southeastern portion of PAD 33 retrieved very few artefacts, it is likely that by association the overall archaeological potential of PAD 33 is low.

The study area has therefore been assessed as having a low archaeological potential.



Figure 8: Detail of AHIMS site 45-5-2652 (background aerial © Google 2013)



9.0 Significance Assessment

9.1 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 practiced? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

Cultural values and significance can only be addressed by Aboriginal peoples who have cultural knowledge of the area. No areas of particular cultural significance have been addressed by DLALC in their survey report (Appendix 1).

9.2 Archaeological significance assessment

The archaeological significance of the study area has been determined based on observations of each survey unit during the field survey and the results of previous archaeological investigations.

Archaeological significance values refer to the archaeological or scientific importance of a landscape or area. This is characterised using archaeological criteria such as archaeological potential, rarity of the archaeological resource, and disturbances to the landscape.

Duplicate site 45-5-0981 / 45-5-0989 has been destroyed.

A portion of site 45-5-2652 has been destroyed and the remaining portion, which consists of a PAD with no identified Aboriginal objects, has been assessed as demonstrating low archaeological potential.



Site 45-5-3063 has been subject to impacts associated with a section 87 and a section 90 permit. The current assessment has identified disturbances relating to soil movement and the demolition of buildings associated with the area surrounding the coordinate available on the extensive AHIMS search results. This PAD possesses no archaeological significance.

Sites 45-5-3844 and 45-5-3847 have been destroyed by recent development and as such, possesses no archaeological significance.

Table 18 provides a summary of the significance assessment.

Table 18: Summary of Significance Values for Previously Recorded Sites

Survey Unit	Site name	Research Potential	Scientific / Archaeological Value	Representative Value	Rarity Value	Overall Significance
17	45-5-0981 / 45-5-0989	N/A	N/A	N/A	N/A	N/A
9	45-5-2652	Low	Low	Low	Low	Low
14	45-5-3063	N/A	N/A	N/A	N/A	N/A
13	45-5-3844	N/A	N/A	N/A	N/A	N/A
13	45-5-3847	N/A	N/A	N/A	N/A	N/A

The remainder of the study area does not provide good research potential as there were no identified areas of archaeological potential. Representativeness values are low and it is not an area of rarity within the local regional context. The area does not have Aboriginal heritage and/or archaeological educational potential.

The study area is therefore assessed as having low archaeological significance.

9.3 Cultural heritage assessment

During the study area survey Mr Steve Randall of the DLALC noted a sensitive landform unit along the flat associated with a tributary of Strangers Creek but agreed that due to disturbance levels it should not be designated as a PAD.



10.0 Impact Assessment

Six Aboriginal sites listed on the AHIMS site register are located within the study area. Sites 45-5-0981 / 45-5-0989, 45-5-3063, 45-5-3844, 45-5-3847 and a portion of 45-5-2652 have been destroyed.

An intact portion of AHIMS site 45-5-2652 is located within the study area. That portion of 45-5-2652 consists of recorded Potential Archaeological Deposit (PAD), however archaeological investigation in the southeast corner of 45-5-2652 indicates that archaeological potential of the PAD is low. It is understood that the intact portion of AHIMS site 45-5-2652 is not located within the current road design and will not be impacted.

It has been identified that the proposed works will be contained within areas specified as having high levels of disturbance and low archaeological potential. The study area has been assessed as having a low archaeological potential and a low archaeological significance.

The impact assessment has therefore found that there will be no impact to known Aboriginal sites and/or places or areas of potential under the proposed works by Roads and Maritime.



11.0 Management and Mitigation Measures

11.1 Guiding principles

Conservation of Aboriginal sites is best practice cultural heritage management. Retaining Aboriginal archaeological material within a natural landscape setting enables the continuation of past cultural associations with the landscape.

The nature of mitigation measures recommended is primarily based on an assessment of archaeological significance. The recommendations are also informed by cultural significance, which would be discussed by the DLALC.

11.2 Mitigation and management measures

This investigation has determined that there are five destroyed Aboriginal sites located within the study area:

- AHIMS site 45-5-0981 / 45-5-0989 (duplicate recording)
- AHIMS site 45-5-3063
- AHIMS site 45-5-3844
- AHIMS site 45-5-3847

These recorded sites have been impacted and no further archaeological investigation is recommended.

AHIMS site 45-5-2652 is located within the study area. One portion of the site has been impacted by residential development. Impact to that portion of the site is likely to have been subject to Aboriginal Heritage Impact Permits 2002, 2013, 3636 and 3638. Copies of these permits were not accessible during preparation of this document, and it is not clear from the AHIMS site register results whether those permits cover the impacted portion of 45-5-2652, or the entire site area.

One portion of AHIMS site 45-5-2652 located within the study area remains in the same condition as when the Potential Archaeological Deposit (PAD) was first recorded in 2002. It is understood that portion of 45-5-2652 will not be impacted by the proposed works. Where it is determined during detailed design



that there will be impact to the intact portion of 45-5-2652 further advice from an archaeologist should be sought to determined appropriate recommendations.

If unforeseen Aboriginal objects are uncovered during development, work must cease. If unexpected finds are identified, the Roads and Maritime *Standard Management Procedure: Unexpected Archaeological Finds* (July 2012) would be adhered to.

12.0 Recommendations

The following recommendations were based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended.
- The *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* DECCW (24 September 2010).
- The results of the background research, site survey and assessment.
- The interests of the DLALC.
- The likely impacts of the proposed development.

This assessment found that:

- Duplicate AHIMS site recording 45-5-0981 / 45-5-0989 is located within the study area. The site has been destroyed under Section 90 Consent to Destroy number 710.
- An intact portion of Aboriginal site 45-5-2652 is located within the study area. It is understood that intact portion of 45-5-2652 will not be impacted by the proposed works.
- One impacted portion of Aboriginal site 45-5-2652 is located within the study area. It appears that these impacts were conducted in accordance with permits 2002, 2013, 3636 and 3638, although this cannot be verified as copies of these permits were not accessible during preparation of this document.
- AHIMS site 45-5-3063, an area of Potential Archaeological Deposit (PAD), was located within the study area boundaries. This PAD has been disturbed under two Aboriginal Heritage Impact Permits (2241, 2319).
- AHIMS site 45-5-3844, an isolated find, was located within the study area boundaries. The site has been destroyed under the Part 3A development of a retirement facility.
- AHIMS site 45-5-3847 is located within the study area. The site has been destroyed under the Part 3A development of a retirement facility.
- The majority of the study area has been subject to high levels of ground disturbance.

This assessment recommends:

- There are no Aboriginal heritage constraints on the proposed upgrade works. This assessment has found that the Stage 3 PACHCI does not need to be implemented for the proposed Memorial Avenue upgrade.



- If it is determined during detailed design that there will be impacts to the intact portion of AHIMS site 45-5-2652, further advice from an archaeologist should be sought to determine appropriate recommendations.
- If Aboriginal objects or suspected human remains are located during works the Roads and Maritime Unexpected Finds Procedure would be adhered to.
- Site impact recording forms would be prepared for sites 45-5-3844 and 45-5-3063.



13.0 References

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Appendix F

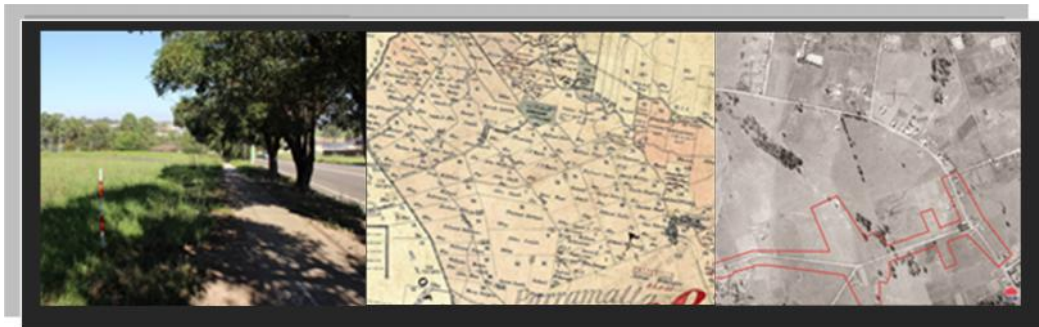
Non-Aboriginal Heritage Assessment and Statement of Heritage Impacts

Memorial Avenue Upgrade, Kellyville

Statement of Heritage Impacts and Non-Aboriginal Heritage Assessment

Report to Hyder Consulting Pty Ltd

July 2014



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Executive Summary

Artefact Heritage has been engaged by Hyder Consulting Pty Ltd on behalf of the Roads and Maritime Services to provide a non-Indigenous heritage assessment and Statement of Heritage Impact (SoHI) for proposed upgrade works at Memorial Avenue, Kellyville (the study area). The study area centres on Memorial Avenue, between Old Windsor Road and Windsor Road, and includes approximately 700 metres of Old Windsor Road and approximately 550 metres of Windsor Road.

The proposed upgrade will involve the construction of two east bound and two west bound lanes, with one future lane allowed for in both directions. The upgrade will also include a footway on either side of the avenue and a large medium strip between the east and west bound lanes, as well as improvements to existing intersections.

This report presents the results of background research, searches of relevant heritage register databases, and the results of the site inspections.

Overview of findings

On the basis of the research described in this report, it was found that:

- Approximately 700 metres of the Old Windsor Road archaeological item (The Hills LEP) is within the study area. The works will consist of widening and upgrading works, and will have a minor impact on the significance of the heritage item by altering the footprint of the road. However, this section of the Old Windsor Road has been substantially modified, and the significance of the item in this location lies largely in its alignment, rather than in fabric. In addition, the level of disturbance suggests it is unlikely that archaeological relics of local or state significance would be encountered during the works, although there is low potential that milestones identified by Godden Mackay Logan (GML) in 2012¹ remain buried within the study area.
- Approximately 550 metres of the Windsor Road heritage item (The Hills LEP) is within the study area. The works in this location will consist of widening and upgrading works, and will have a minor impact on the significance of the heritage item by altering the footprint of the road. However, this section of the Old Windsor Road has been substantially modified, and the significance of the item in this location lies largely in its alignment, rather than in fabric.

¹ Godden Mackay Logan Pty Ltd, March 2012, North West Rail Link EIS-1 Major Civil Construction Works European Heritage Report, Report prepared for NWRL Planning Approvals Team.



There is a low potential for archaeological relics or works of local or state significance to be located in the section of the Windsor Road within the study area.

- The House at 9-11 Windsor Road is listed (The Hills LEP) approximately 15 metres north-east of the study area. The proposal will not directly impact the heritage item, although there may be temporary construction impacts on the property. These may include temporary visual impacts and vibration impacts due to the movement of heavy machinery.
- Old Windsor Road and Windsor Road Heritage Precincts are on the Roads and Maritime Services Section 170 heritage register. The proposal will have minor impacts on the significance of the item, as those parts of the roads within the study area have been subject to numerous modifications and upgrading in recent decades.
- Overall, the study area has limited potential to contain archaeological remains. With the exception of milestones within the Old Windsor Road precinct, any remains found are unlikely to reach the local significance threshold. Memorial Avenue has been subject to numerous impacts occurring throughout the 20th century, including upgrades and widening of Old Windsor Road and Windsor Road, and the establishment of the westernmost part of Memorial Avenue. It is likely that the intersection of Memorial Avenue with Windsor Road, Old Windsor Road and the tollway have been subject to substantial disturbance.

The following measures are recommended to adhere to statutory obligations and minimise potential impacts of the proposed works:

- Retain the form and alignment of Memorial Avenue and limit incursion into the lots fronting the road corridor where possible.
- Old Windsor Road is listed as an archaeological heritage item on the Hills Shire Local Environmental Plan (LEP) 2012, yet does not meet the definition of 'relic' (i.e. below-ground) so approval is not required for impacts to the actual road fabric under Section 139 of the Heritage Act. This document has identified that there is low potential that buried milestones identified by Godden Mackay Logan (GML) in 2012² remain buried in the study area. It is, therefore, recommended that subsurface impacts to the fabric of the road be avoided where possible. It is recommended that a Section 139(4) exception endorsement be obtained, prior to works commencing, for any sub-surface impacts within the curtilage of the listed heritage item. It is recommended that a condition of this endorsement be a program of intermittent archaeological monitoring of excavation works within the Old Windsor Road curtilage. This would confirm our predictions about the level of disturbance

² Godden Mackay Logan Pty Ltd, March 2012, North West Rail Link EIS-1 Major Civil Construction Works European Heritage Report, Report prepared for NWRL Planning Approvals Team.



that already exists within the road corridor, yet allow for the recording of unexpected milestones, which would be considered significant if found.

- If any unanticipated archaeological deposits, such as structural remains, culverts, historic cuttings, retaining walls, or evidence of historic road surfaces, are identified within the study area during construction, the (NSW) Roads and Maritime Unexpected Archaeological Finds Procedure 2012 should be followed.³ These procedures are as follows:
 1. Contact and engage an archaeologist, and Aboriginal site officer where required.
 2. Contact and engage an archaeologist, and Aboriginal site officer where required.
 3. Formulate an archaeological management plan.
 4. Formally notify the regulator by letter, if required.
 5. Implement archaeological management plan.
 6. Review CEMPs and approval conditions.
- It is recommended that the curtilage of the House at 9-11 Windsor Road be avoided and any vibration impacts mitigated through the implementation of a vibration management.

³ RMS, July 2012. RMS Unexpected Archaeological Finds Procedure. Site accessed on 17/07/2014 at: http://www.rms.nsw.gov.au/environment/downloads/unexpected_archaeological_finds_procedure.pdf



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1.0 Introduction and Background

1.1 Background

Artefact Heritage has been engaged by Hyder Consulting Pty Ltd on behalf of the Roads and Maritime Services to provide a non-Indigenous heritage assessment and Statement of Heritage Impacts (SoHI) for proposed works at Memorial Avenue, Kellyville (the study area). This document provides an assessment of potential impacts to non-Indigenous heritage and provides advice regarding possible measures to mitigate impacts and fulfil the requirements of relevant legislation. This assessment has been undertaken within the context of the *NSW Heritage Act 1977* (as amended 1999) and the NSW Heritage Council Guidelines (1996).

Memorial Avenue is a state arterial road, which runs in an east-west direction connecting Old Windsor Road in the west to Windsor Road in the east. It links the Blacktown local government area (LGA) and some of its suburbs such as Glenwood, Stanhope Gardens and Parklea with the Hills Shire Council LGA and some of its suburbs such as Castle Hill and Kellyville.

Memorial Avenue is currently a two-lane two-way road and carries about 25,000 vehicles per day. The road currently operates at a poor level of service and has a volume over-capacity ratio exceeding 0.9 during peak periods. Traffic on Memorial Avenue is forecasted to increase by 40 per cent in the next 23 years.

Memorial Avenue forms part of the east-west route connecting Blacktown and Castle Hill and currently remains one of the last two-lane sections in the link; the other being Showground Road, which is in the process of being upgraded. Memorial Avenue is included in the NSW Transport Master Plan as one of the road upgrade projects to be undertaken in the short-term.

The overall objectives of the upgrade project are as follows:

- Improve road safety in line with the NSW Road Safety Strategy 2012-2021 Safe System Directions and Safer Road Key Focus.
- Improve liveability and sustainability and support economic growth and productivity by providing road capacity for projected traffic volumes on Memorial Avenue between Old Windsor Road and Windsor Road.
- Improve travel times.
- Improve quality of service, sustainability and liveability by providing facilities for walking and cycling and future public transport needs.
- Improve urban design and visual aspect.



- Improve drainage systems in the area.

1.2 The study area

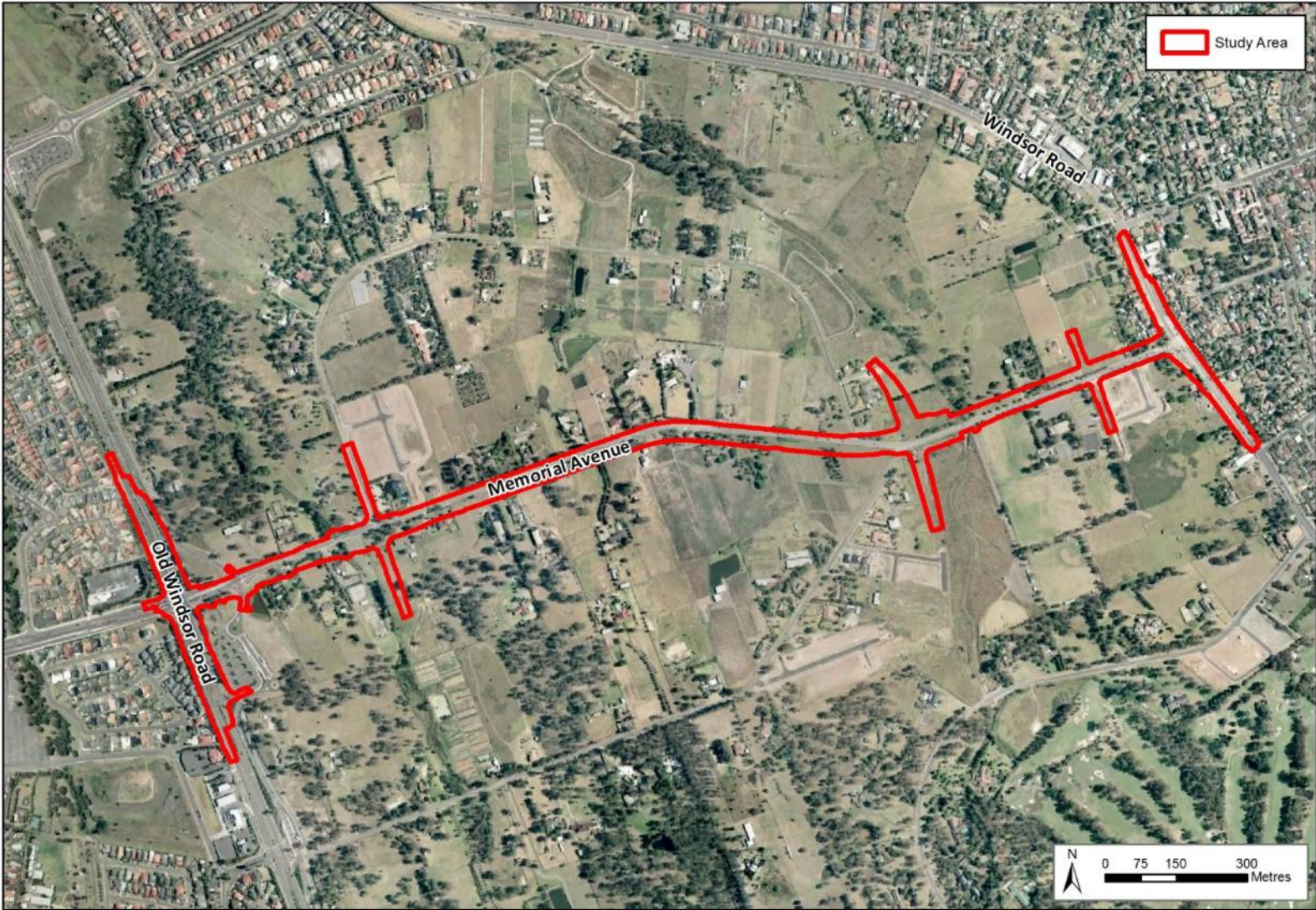
The study area centres on Memorial Avenue, between Old Windsor Road and Windsor Road (Figure 1). It is approximately two kilometres in length. The study area also includes approximately 700 metres of Old Windsor Road (on the western end of Memorial Avenue) and approximately 550 metres of Windsor Road (on the eastern end of Memorial Avenue (Figure 1).

The study area is defined by the a red line in Figure 1, which is based on the footprint of the concept design as provided by Hyder Consulting on 28 July 2014 (Figure 25). The proposed design involves the widening of the entire length of Memorial Avenue and the establishment of three new junctions along Memorial Avenue and upgrades of the T-intersections at Windsor Road and Old Windsor Road (Figure 25).

The study area is situated within the suburb of Kellyville and is within The Hills Shire Council LGA and the Blacktown LGA.



Figure 1: Location of the study area (in red). (Base map © SIX Maps)





1.3 Statutory context

There are several items of state legislation that form the basis for managing non-Indigenous heritage in NSW. This section provides a summary of these items of legislation and associated statutory registers.

1.3.1 The NSW Heritage Act 1977

The *NSW Heritage Act 1977* (the Heritage Act) is the primary piece of state legislation affording protection to items of environmental heritage (natural and cultural) in New South Wales. Under the Heritage Act, 'items of environmental heritage' include places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. State significant items are listed on the NSW State Heritage Register (SHR) and are given protection under the Heritage Act against any activities that may damage an item or affect its heritage significance.

The Heritage Act also protects 'relics', which can include archaeological material, features and deposits. Section 4(1) of the Heritage Act (as amended 2009) defines 'relic' as follows:

"relic means any deposit, artefact, object or material evidence that:

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
- (b) is of State or local heritage significance."

Section 139[1] of the Heritage Act states that:

"A person must not disturb or excavate any land knowingly or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit."

Permits to disturb or excavate 'relics' are issued by the NSW Heritage Council or a Delegate of the NSW Heritage Council under Section 140 (for relics not protected by an SHR listing) or Section 60 (for relics protected by an SHR listing) of the Heritage Act. Exemptions to these permits may be applicable under certain conditions.

The Heritage Act also requires all government agencies to identify and manage heritage assets in their ownership and control. Under Section 170 of the Heritage Act, government agencies must establish and keep a register which includes all items of environmental heritage listed on the SHR, an environmental planning instrument, or which may be subject to an interim heritage order that are owned, occupied or managed by that government body. Under Section 170A of the Heritage Act all government agencies



must also ensure that all items entered on its register are maintained with due diligence in accordance with State Owned Heritage Management Principles approved by the NSW Minister for Infrastructure & Planning on advice of the NSW Heritage Council.

The State Heritage Register (SHR)

The SHR was established under Section 22 of the Heritage Act and is a list of places and objects of particular importance to the people of NSW, including archaeological sites. The SHR is administered by the Heritage Division of the Office of Environment and Heritage (OEH) and includes a diverse range of over 1500 items, in both private and public ownership. To be listed, an item must be deemed to be of heritage significance for the whole of NSW.

No items within the vicinity of the study area are listed on the SHR.

Section 170 Registers

The Heritage Act requires all government agencies to identify and manage heritage assets in their ownership and control. Under Section 170 of the Heritage Act, government agencies must establish and keep a register which includes all items of environmental heritage listed on the SHR, an environmental planning instrument or which may be subject to an interim heritage order that are owned, occupied or managed by that government body.

A single item listed on the Roads and Maritime Services Section 170 Register is within the study area:

- **Item Number 4301011 - Old Windsor Road and Windsor Road Heritage Precinct.**

1.3.2 [The Environmental Planning and Assessment Act 1979](#)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes a framework for cultural heritage values to be formally assessed in the land use planning and development consent process. The EP&A Act requires that environmental impacts are considered prior to land development; this includes impacts on cultural heritage items and places as well as archaeological sites and deposits. The EP&A Act also requires that Local Governments prepare planning instruments (such as Local Environmental Plans [LEPs] and Development Control Plans [DCPs]) in accordance with the Act to provide guidance on the level of environmental assessment required. The current study area falls within the boundaries of the Blacktown LEP 2013 and Hills Shire Council LEP 2012.

As the proposed works would be undertaken by a state agency, Roads and Maritime Services, these LEPs are overridden by the State Environmental Planning Policy (Infrastructure) (ISEPP) 2007.



The Blacktown Local Environmental Plan (LEP) 2013

The westernmost portion of the study area falls within the Blacktown LGA.

There are no items listed on the Blacktown LEP 2013 within the study area.

The Hills Shire Council Local Environmental Plan (LEP) 2012

There are two items within the study area listed on The Hills LEP 2012 (Figure 2).

- **Archaeological heritage item A2 – Old Windsor Road**
- **Heritage Item I28 – Windsor Road**

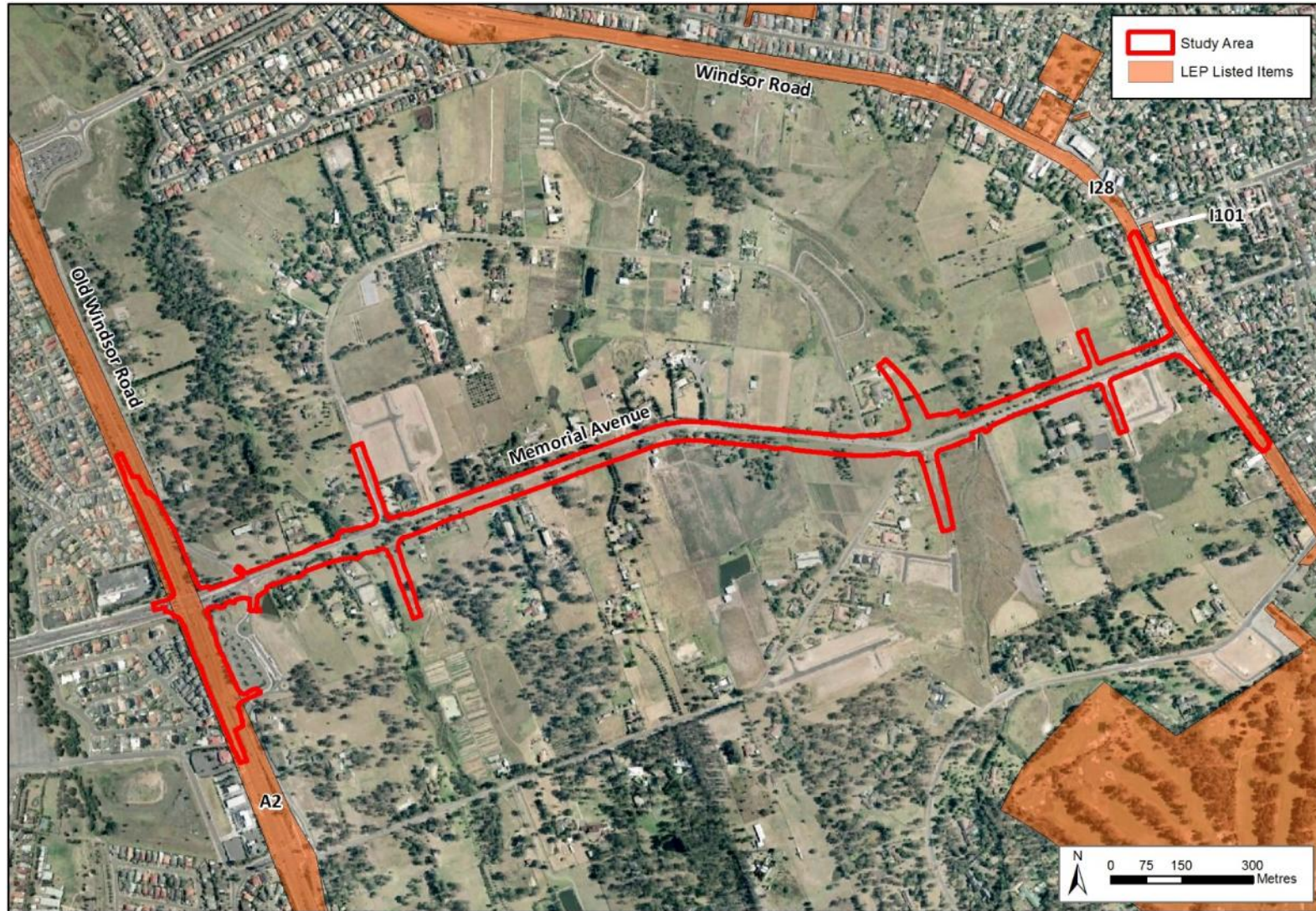
A single item is listed in close proximity to the study area:

- **Heritage item I101 – House at 9-11 Windsor Road**

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Figure 2: LEP Heritage Listing map, with the study area outlined in red.





State Environmental Planning Policy (Infrastructure) (ISEPP) 2007

In 2007, the ISEPP was introduced in order to streamline the development of infrastructure projects undertaken by state agencies, including Roads and Maritime Services. Generally, where there is conflict between the provisions of the ISEPP and other environmental planning instruments, the ISEPP prevails. Under the ISEPP, development for the purpose of road infrastructure may be carried out by a public authority without consent on any land. The ISEPP overrides the controls included in The Hills LEP 2012 and the Blacktown LEP 2013, and Roads and Maritime Services is only required to consult with Council when development “is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area”.

1.3.3 *The Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are defined in the EPBC Act 1999 as matters of national environmental significance. Under the EPBC Act 1999, nationally significant heritage items are protected through listing on the Commonwealth Heritage List or the National Heritage List.

1.4 Non-statutory context

Australian Heritage Database (Formerly the Register of the National Estate)

The Australian Heritage Database holds listings of The National Heritage Register and the National Heritage List.

The Register of the National Estate is a list of natural, Indigenous and historic heritage places throughout Australia. It was originally established under the *Australian Heritage Commission Act 1975*. Under that Act, the Australian Heritage Commission entered more than 13,000 places onto the register. Following amendments to the *Australian Heritage Council Act 2003*, the Register of the National Estate was frozen on 19 February 2007, which means that no new places can be added, or removed. It was a statutory register until February 2012.

On 1 January 2004, a new national heritage system was established under the EPBC Act. This led to the introduction of the National Heritage List, which was designed to recognise and protect places of outstanding heritage value to the nation.

There is one item that passes through the study area listed on the Register of the National Estate.

- **Listing ID 2963: Old Windsor Road (from Seven Hills Road to Windsor Road)**



The National Trust of Australia

The National Trust of Australia is a community-based, non-government organisation committed to promoting and conserving Australia's Indigenous, natural and historic heritage. The Trust acts as custodian and manages over 300 heritage places.

There are no items within the study area on The National Trust of Australia.

1.5 Previous reports

The results of a previous investigation of the study area are contained within the following report:

- Godden Mackay Logan Pty Ltd, March 2012, *North West Rail Link EIS-1 Major Civil Construction Works European Heritage Report*, Report prepared for NWRL Planning Approvals Team.

Memorial Avenue, or Construction Site 10, was assessed as having the following archaeological potential:

A number of boundary stones along Old Windsor Road were identified in the Windsor Road and Old Windsor Road CMP (Clive Lucas, Stapleton & Partners, 2005) to the north of Memorial Avenue. These boundary stones were most likely buried during construction of the Northwest Transitway during the past decade.⁴

1.6 Report authorship

This report was written by Joshua Madden and Jenny Winnett (Heritage Consultants, Artefact Heritage) with management input by Dr Sandra Wallace, (Director, Artefact Heritage).

⁴ GML, March 2012, 34.



2.0 Historical Context

2.1 European settlement and the Cumberland Plain

The Cumberland Plain was home to the Darug language group which is thought to have extended from Appin in the south to the Hawkesbury River, west of the Georges River, Parramatta, the Lane Cove River and to Berowra Creek (Attenbrow 2010: 34). The Cumberland Plain was home to many Aboriginal tribal groups, with the current study area located within the *Bediagal* tribal boundaries.⁵

The development of European settlement within the local area was characterised by both government run properties and large privately run farms. Settlement within the region was primarily shaped by the construction of Old Windsor Road, Windsor Road, the Castle Hill Government Farm and the Field of Mars Common. Both Windsor and Old Windsor Roads enabled relatively reliable access between the newly developed agricultural areas and Parramatta and Sydney. Throughout the 19th century, the Castle Hill Government Farm and Field of Mars Common (located to the south-east of the current study area) inhibited residential and farming expansion in the area with The Field of Mars Common 'operational' until the early 1880s.

On arrival in Australia, Governor Phillip was instructed to immediately begin the cultivation of the land. He established a government farm at Rose Hill (later Parramatta) in November 1788 in an attempt to establish an agricultural convict community that would make the colony as self-sufficient as possible. As early as 1789, explorations west of Parramatta, which included the area around the current study area, were being undertaken. Settlement began to spread from Parramatta by the early 1790s with Governor Phillip establishing a government farm at Toongabbie in 1791, which was followed soon after by land grants in areas further west, including Kellyville in 1793. By 1794, 22 settlers were established in the Hawkesbury region. In 1794 Governor Hunter granted the first land parcel along the Hawkesbury Road (now Old Windsor Road) at Baulkham Hills to William Joyce, an emancipated convict. This began the settlement within the local area and the broader Baulkham Hills Shire Council area. The largest grant in the area, of approximately 980 hectares, was made jointly to Joseph Foveaux and Charles Grimes and fronted Old Windsor Road. Foveaux ran more than 1200 merino sheep on the farm which was later sold to the Macarthurs in 1815.

2.2 Windsor Road and Old Windsor Road

Old Windsor Road and Windsor Road were, and continue to be, major arterial roads between the western suburbs of Sydney and Parramatta. With the discovery of arable land in the west and north-

⁵ Attenbrow, 2010; 23



west of the Cumberland Plain, settlement was established in the vicinity of Windsor and Richmond on the Hawkesbury River. A track developed as an extension of the Sydney Road from Parramatta to Windsor to serve the agricultural community in the Hawkesbury area. The first improvements were ordered by Governor Hunter in 1797, and landholders undertook the widening of the road to 20 feet (6 metres). This is regarded as the date for the creation of the original Windsor Road as a carriageway. In 1805 Surveyor James Meehan surveyed an alignment between Parramatta and Kellyville, which became the basis for the new Windsor Road established in 1812-1813.

It has been over 200 years since the first Hawkesbury Road was constructed, and the routes of both the Windsor and Old Windsor Roads remain basically the same. Parts of the Old Hawkesbury Road survive in use partly as a sealed minor suburban road and partly as an unsealed rural lane giving access to adjacent properties.

Both Windsor Road and Old Windsor Road have been substantially modified to cater for modern traffic. Significant elements of the old road still remain as bypassed sections which retain original surfaces, boundary stones and alignment markers.⁶ These sections retain characteristics evocative of the historic, rural character of the Cumberland Plain, both within the current road reserve and in redundant sections outside the reserve. Together they are vital in understanding the cultural landscapes of the region. The remaining historic road fabric demonstrates the methods of road construction and maintenance over two centuries.⁷ The longest stretch of original road is the Old Hawkesbury Road, which runs parallel to the Windsor Road at Vineyard but diverges to the north-east as it approaches the south.⁸

A section of Windsor Road between Meurants Lane and the proposed Castlereagh Freeway (300 metres southward from Caddies Creek) is listed on the Roads and Maritime Services Section 170 heritage register. A significant length of road north and south of the intersection with Sunnyholt Road is listed in the Draft Blacktown LEP 2013. The road closely follows the original horizontal and vertical alignment and retains substantial original vegetation on both verges.

2.3 Kellyville

European settlement was attracted to the area around Kellyville as early as the 1790s due to its arable soil and trees suitable for logging.⁹ Baulkham Hills, Castle Hill and West Pennant Hills are founded on a geological base of Wianamatta Shale, which gives rise to soils suitable for intensive agricultural development.¹⁰

⁶ Roads and Maritime Services Section 170: Old Windsor Road and Windsor Road Heritage Precincts.

⁷ Roads and Maritime Services Section 170: Old Windsor Road and Windsor Road Heritage Precincts.

⁸ Roads and Maritime Services Section 170: Old Windsor Road and Windsor Road Heritage Precincts.

⁹ Thorp 2004: 1

¹⁰ Thorp 2004: 8

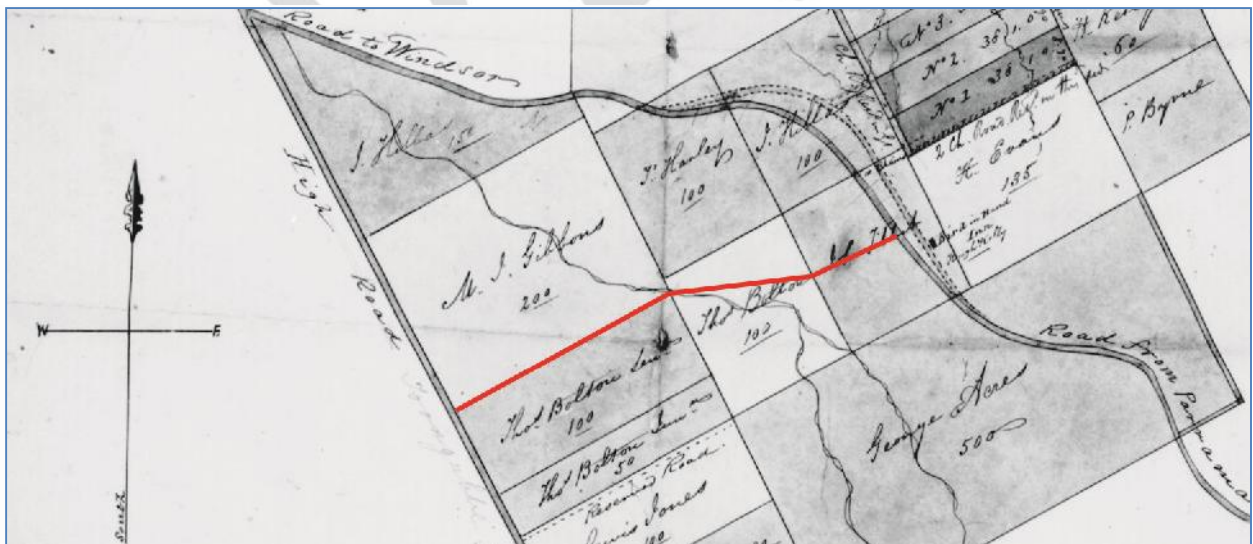


One of the early settlers in the region, Humphrey Evans, was granted 135 acres to the east of the study area in 1803. It was a condition of the grant that Evans cleared and improved the land within five years. By March 1804, when the Irish convicts at Castle Hill rebelled and broke free from Government Farm, Evans had constructed a house and was making a living off his land.¹¹ Evans died unexpectedly in 1805 and his wife, Mary, inherited the property. Mary married a former convict, Hugh Kelly, and the property was used to run 200 head of cattle. In 1821 he acquired a licence to run the Half Way House, an inn located on the corner of Windsor Road and Wrights Road (immediately east of the study area). By 1829 the inn became known as the Bird in Hand. Kelly died in 1835. In 1836 the inn reverted to Kelly's third wife, Mary Ann, who had since remarried.¹² The property was then let out and was used at different times as a blacksmithing business and a general store.

In 1884 several former grants and properties were amalgamated to form the Kellyville estate.

During the 19th and the early part of the 20th century, the region was primarily rural and was dominated by farms. The region was dominated by sheep and cattle farms and crops such as wheat and maize during the early part of the 19th century. In the late 1800s crop farming diminished and a rise of orchard farms and vineyards began to establish a foothold in the area, which saw the area primarily used for farming citrus and rearing sheep for wool.

Figure 3: The location of Memorial Avenue as it currently exists (marked in red), running between the properties of Mr. J. Gibbon, and Thomas Bolton Senior, through the property of Thomas Boulton, and through the property of John Tibbet. Plan of 23 portions, 1860.

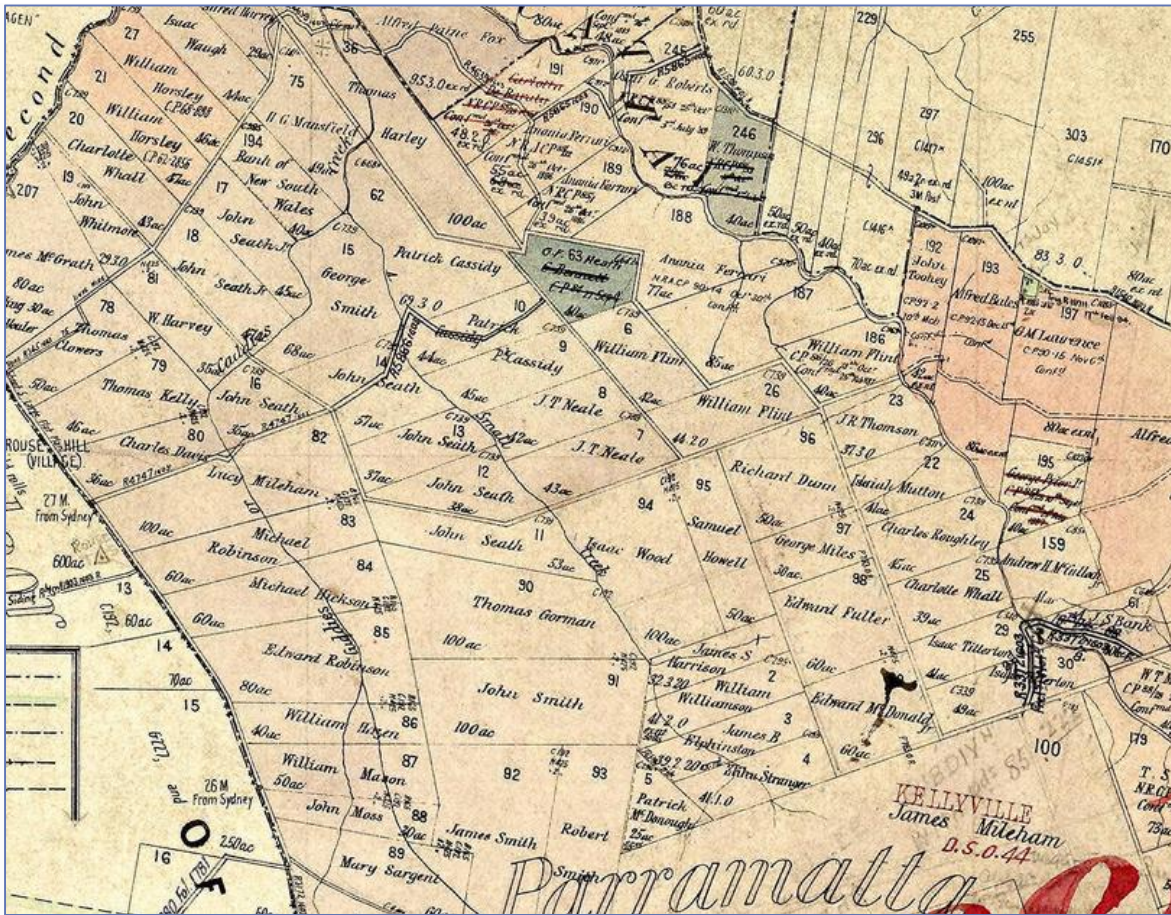


¹¹ Thorp 2004: 9.

¹² Thorp 2004: 12



Figure 4: Plan of the Parish of Castle Hill 1897.



By the 20th century, however, citrus farms and vineyards began to be replaced by stone fruit farming as well as poultry and dairy farms. The region saw a flourishing of market gardens after the Second World War due to the influx of European immigrants. This resulted in the sub-division of the larger farming properties into smaller farming lots. More recent developments within the region have resulted in a decline of agricultural activities, which are primarily reduced to occasional small market gardens and hobby farms.





Figure 5: Subdivision plan of 1932 showing Memorial Avenue (previously Balmoral Road).



2.4 The study area

By 1860, the bushland around the current study area was a series of five rural allotments located between Old Windsor Road and Windsor Road (Figure 3). Thomas Boulton Senior owned 100 acres bordering Old Windsor Road while M.J Gibbon owned 200 acres fronting Old Windsor Road. The boundary between the two properties is now the western alignment of Memorial Avenue. John Tibbett was granted 100 acres fronting Windsor Road while Thomas Boulton owned 100 acres, located between Thomas Boulton Senior and John Tibbett's properties. The eastern alignment of Memorial Avenue now traverses through the centre of these two properties (Figure 4).



It is likely that the land around Memorial Avenue followed patterns of development similar to that of the rest of Kellyville. Oral history described the use of the area as dairy farms and orchards.¹³ Analysis of the council rate books from the year 1907 reveals that the vast majority of occupants in the Kellyville district were fruit growers and orchardists. The remainder were commonly engaged in domestic employment and labour.

By the early 1930s, the area between Windsor Road and Old Windsor Road was steadily being sold off as smaller allotments. By this stage Balmoral Road, which would later be known as Memorial Avenue, had been constructed, which allowed for the sub-division of the larger farm allotments. In 1924, Kellyville Memorial Hall was opened on the corner of Windsor Road and Memorial Avenue to honour those who served in World War I.

Figure 6: The 1943 aerial of Sydney did not capture the complete study area, but the portion that was shows us that the area was largely rural at this time. Memorial Avenue is shaded in red



The study area has retained some of the small lot semi-rural character to the present day. The rural nature of the study area is still evident with numerous market garden plots. The Kellyville/Rouse Hill area has undergone major residential redevelopment over the last 20 years with the location of the current study area, although still semi-rural, becoming increasingly inundated by infrastructure to support the increasing residential development.

¹³ The Hills Voices Online Project.

3.0 Site Inspection

3.1 Background

An inspection of the study area was undertaken by Josh Madden and Lyndon Patterson (Heritage Consultants, Artefact Heritage) on 20 and 21 March 2014. An additional site visit was conducted on 17 July 2014 by Alyce Howard (Heritage Consultant, Artefact Heritage) to investigate the amended design.

3.2 Site Inspection

The inspections covered the entirety of the study area. The study area was found to be highly disturbed throughout. Severe disturbances included landscape modifications in the form of cuttings and redistribution of soils, the construction of houses, roads, footpaths and above ground and sub-surface services. The study area also contained the remains of previously demolished residences. Evidence of soil redistribution was noted and large amounts of bluestone metals were evident throughout the study area. The northern side of Memorial Avenue had evidence of cutting and benching.

Two creeks pass through the study area; Elizabeth Macarthur and Strangers Creeks. Memorial Avenue spans these watercourses via large concrete culverts.

The study area centres upon the road alignments of Memorial Avenue, Old Windsor Road and Windsor Road. As such, the study area is subject to major disturbances and modifications associated with the numerous phases of construction and maintenance to the roads. Intersections where Memorial Avenue meets Old Windsor Road and Windsor Road feature traffic lights. Extensive subsurface disturbances are likely to be associated with the installation of this infrastructure.

Figure 7: View east showing an undulating landform with zero visibility.



Figure 8: View east showing typical house frontage.





Figure 9: View west, southern side of Western Avenue.



Figure 10: View east of cut, road and service infrastructure.



3.3 Description of heritage items

3.3.1 Old Windsor Road

The westernmost section of the study area includes approximately 700 metres of Old Windsor Road, extending north and south of the intersection with Memorial Avenue. This section of the study area had been subject to severe disturbances including landscape modification in the form of cutting and benching, the construction of roads, footpaths above ground and underground services.

Figure 11: View north overlooking Northern T-Way.



Figure 12: View south overlooking Northern T-Way.



Memorial Avenue Upgrade, Kellyville



Figure 13: View south overlooking the southern T-Way.



Figure 14: View east overlooking southern T-Way entrance.



Figure 15: View south overlooking at the T-Intersection between Memorial Avenue and Old Windsor Road.



Figure 16: View west overlooking T-intersection showing soil benching and cutting.



Figure 17: View north, Intersection of Old Windsor Road and Memorial Avenue showing disturbance.



Figure 18: View south, Intersection of Old Windsor Road and Memorial Avenue showing disturbance.





3.3.2 Windsor Road

The easternmost section of the study area incorporates approximately 550 metres of Windsor Road, extending north and south from the intersection with Memorial Avenue. This area has been subject to severe disturbances which include landform alteration in the form of cutting and re-deposition of soils for a public park, a concrete slab (and a now demolished building) and above ground and sub-surface services.

Figure 19: View west overlooking Memorial Avenue.



Figure 20: View south toward T-Intersection of Memorial Avenue and Windsor Road.



Figure 21: View west overlooking Memorial Avenue at the T-intersection SU2.



Figure 22: View south overlooking SU2.



3.3.3 House at 9-11 Windsor Road

The House at 9-11 Windsor Road is immediately adjacent the north-eastern corner of the study area. The frontage of the property is largely shielded by a wooden paling fence and mature trees (Figure 23). The house appears to be constructed of brick foundations with more recent CFC sheeting (Figure 24). It is likely the house dates from the early to mid-20th century.



Figure 23: View east towards the heritage listed property from Windsor Road. Artefact Heritage 2014.



Figure 24: View south of the heritage listed property from President Avenue. Artefact Heritage 2014.





4.0 Archaeological Potential

4.1 Discussion of archaeological potential

Archaeological potential is defined as the potential of a site to contain archaeological relics, as classified under the *NSW Heritage Act 1977*. Archaeological potential is assessed by identifying former land uses and associated features through historical research, and evaluating whether subsequent actions (either natural or human) may have impacted on evidence for these former land uses.

The study area has associations with early European settlement of the Kellyville area. It has been continuously owned and used for pastoral and agricultural activities from the mid-19th century. The settlement of the area, however, is poorly documented. It is likely that the lots associated with the study area were used as market gardens or dairies throughout the late 19th century and into the early 20th century.

There is very limited potential for archaeological remains of structures associated with early 20th century occupation of the area to exist in the study area. Analysis of plans from the 19th century indicates that the study area was unlikely to have contained substantial structures prior to the early 1900s. Examination of the 1943 aerial photograph of Sydney also suggests that any structures that were located in the study area are further north and south, and therefore outside the study area. The study area has also been subject to numerous impacts, which are likely to have damaged or removed any archaeological remains. These impacts include upgrades to the Memorial Avenue road corridor and the establishment of footpaths and culverts, the installation of subsurface services, subdivision, the construction of residences and landscaping associated with these residences, and the demolition of early structures.

The westernmost extent of the study area includes approximately 700 metres of Old Windsor Road, which is listed on The Hills LEP as an archaeological item. The western extent of Memorial Avenue was not constructed until the 20th century and its construction would have impacted on any original fabric of Old Windsor Road in this location. Furthermore, this intersection would have been subject to extensive subsurface impacts associated with the installation of traffic light systems. As such, it is highly unlikely that intact archaeological remains associated with the earlier phases of Old Windsor Road would be retained within the study area.

A number of boundary stones along Old Windsor Road were identified to the north of Memorial Avenue in the Windsor Road and Old Windsor Road CMP.¹⁴ These boundary stones are located outside the study area and were most likely buried during construction of the Northwest Transitway during the past decade.

¹⁴ Clive Lucas, Stapleton & Partners, 2005



There is, therefore, limited potential to encounter archaeological remains associated with the early construction or use of Old Windsor Road within the study area.

Similarly, the approximately 550 metres of Windsor Road that is included in the study area is unlikely to retain any intact archaeological remains associated with the original road. Successive phases of construction and maintenance of Windsor Road have disturbed the eastern portion of the study area, particularly at the intersection of Windsor Road and Memorial Avenue where the installation of traffic light systems would have had extensive subsurface impacts. The 20th century house listed as heritage item I101 on the Hills LEP is located immediately adjacent the north-east corner of the study area. It is unlikely that the proposed development will impact upon heritage item I101.

Overall, the study area has limited to no potential to contain archaeological remains associated with occupation of the study area, or with the undisturbed remains of either Old Windsor Road or Windsor Road.

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5.0 Assessment of Significance

5.1 NSW heritage assessment guidelines

Determining the significance of heritage items is undertaken by utilising a system of assessment centred on the *Burra Charter* of Australia ICOMOS. The principles of the charter are relevant to the assessment, conservation and management of sites and relics. The assessment of heritage significance is outlined through legislation in the NSW *Heritage Act 1977* and implemented through the NSW Heritage Manual and the Archaeological Assessment Guidelines (NSW Heritage Office 1996: 25-27). If an item meets one of the seven heritage criteria, and retains the integrity of its key attributes, it can be considered to have heritage significance. The significance of an item or potential archaeological site can then be assessed as being of local or state significance, based on a series of criteria that have been developed for assessing significance relating to archaeological sites and their associated 'relics'. The criteria identify a series of questions that could be asked in relation to the item to assist in the identification of the appropriate level of significance to be applied. The criteria relevant to the assessment of the potential archaeological resource in the Memorial Avenue study area have been outlined in Section 5.2.

'State heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to the state in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

'Local heritage significance', in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.¹⁵

The overall aim of assessing archaeological significance is to identify whether an archaeological resource, deposit, site or feature is of cultural value. The assessment will result in a succinct statement of heritage significance that summarises the values of the place, site, resource, deposit or feature.

The heritage significance assessment criteria are as follows:

Table 1: NSW heritage assessment criteria

Criteria	Description
A – Historical Significance	An item is important in the course or pattern of the local area's cultural or natural history.
B – Associative	An item has strong or special associations with the life or works of a person, or

¹⁵ This section is an extract based on the Heritage Office Assessing Significance for Historical Archaeological Sites and Relics 2009:6.



Criteria	Description
Significance	group of persons, of importance in the local area's cultural or natural history.
C – Aesthetic Significance	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in the local area.
D – Social Significance	An item has strong or special association with a particular community or cultural group in the local area for social, cultural or spiritual reasons.
E – Research Potential	An item has potential to yield information that will contribute to an understanding of the local area's cultural or natural history.
F – Rarity	An item possesses uncommon, rare or endangered aspects of the local area's cultural or natural history.
G – Representative	An item is important in demonstrating the principal characteristics of a class of NSWs (or the local area's): <ul style="list-style-type: none"> - cultural or natural places; or - cultural or natural environments.

5.2 Fulfilment of the NSW heritage assessment criteria

The assessment of the significance of the potential archaeological resource contained within the study area against the NSW heritage assessment criteria is outlined in Table 2.

Table 2: Consideration against NSW heritage assessment criteria

Criteria	Description									
A – Historical Significance	<p>Identified NSW Historical Themes relevant to the study area include:</p> <table border="1"> <thead> <tr> <th>National theme</th> <th>State theme</th> <th>Demonstrated by:</th> </tr> </thead> <tbody> <tr> <td>Developing local, regional and national economies</td> <td>Agriculture</td> <td>Market gardens, orchards, dairies and plantations</td> </tr> <tr> <td>Building settlements, towns and cities</td> <td>Land tenure</td> <td>Subdivision pattern</td> </tr> </tbody> </table> <p>The pattern of subdivision along the alignment of Memorial Avenue demonstrates the pattern of development of the area from the mid-19th century. However, this pattern has been largely removed by modern subdivision and intensive residential occupation of areas surrounding and within the study area.</p> <p>Therefore, although the study area has some limited significance under this criterion, the study area does not meet the local significance threshold.</p>	National theme	State theme	Demonstrated by:	Developing local, regional and national economies	Agriculture	Market gardens, orchards, dairies and plantations	Building settlements, towns and cities	Land tenure	Subdivision pattern
National theme	State theme	Demonstrated by:								
Developing local, regional and national economies	Agriculture	Market gardens, orchards, dairies and plantations								
Building settlements, towns and cities	Land tenure	Subdivision pattern								



Criteria	Description
B – Associative Significance	<p>The study area does not have strong or special associations with the life or works of a person, or group of persons, of importance in the local area's cultural or natural history. Historical owners of properties along Memorial Avenue do not appear to have been notable local personalities.</p> <p>The study area does not meet the local significance threshold under this criterion.</p>
C – Aesthetic Significance	<p>The study area retains some of the rural aesthetic that was once dominant in Kellyville, although this has also been retained in the large sub-division to the north and south of Memorial Avenue.</p> <p>The study area does not meet the local significance threshold under this criterion.</p>
D – Social Significance	<p>The study area is unlikely to have strong or special associations with a particular community or cultural group in the local area for social, cultural or spiritual reasons. The Hills Council has compiled an oral history record¹⁶, and an interview with a previous occupant of a dairy of Memorial Avenue indicates that the majority of landowners in the area throughout the early 20th century moved into the area from elsewhere. It is unlikely that members of the current community have a strong association with the study area.</p> <p>The study area does not meet the local significance threshold under this criterion.</p>
E – Research significance	<p>The study area is unlikely to meet this criterion as it holds limited potential to provide substantial archaeological or scientific information that cannot be gained from other sources. Whilst it is likely that some portions of the study area were used as market gardens or dairies throughout the late 19th and early 20th century, subsequent use and subdivision of the area, the widening of Memorial Avenue, and the creation of new roads indicates that there is limited potential for evidence of these activities to remain intact.</p> <p>The eastern and western extents of the study area are within the curtilages of Windsor Road and Old Windsor Road, both of which are heritage listed items. Old Windsor Road is listed as an archaeological item on The Hills LEP. The western extent of Memorial Avenue was not constructed until the 20th century and its construction would have impacted on any original fabric of Old Windsor Road in this location. Successive phases of construction and maintenance of both Old Windsor Road and Windsor Road would have extensively modified the original road features. Therefore, it is highly unlikely that archaeological remains associated with the earlier phases of Old Windsor Road would be retained within the study area.</p> <p>There is limited potential that the study area may contain archaeological remains that may reflect earlier land-use of the study area (structural remains associated with dairying, market gardening or 20th century residential occupation), although the majority of these types of structures would historically have been set back further from Memorial Avenue than the current study area. Overall, any archaeological remains within the study area are unlikely to meet the local significance threshold under this criterion, as they would not have the ability to add substantially to our understanding of the history of the study area, or of the wider area of Memorial Avenue.</p> <p>The study area does not meet the local significance threshold under this criterion.</p>

¹⁶ The Hills Voices Online Project



Criteria	Description
F – Rarity	The study area does not possess uncommon, rare or endangered aspects of the local area's cultural or natural history. The study area does not meet the local significance threshold under this criterion.
G – Representativeness	The study area is not important in demonstrating the principal characteristics of a class of NSWs cultural or natural places or environments. The study area does not meet the local significance threshold under this criterion.

5.3 Statement of heritage significance of the study area

The study area does not meet the threshold for local significance under the NSW Heritage assessment criteria. Although the study area does have some historical value and partially retains an indication of earlier subdivision patterns, this has been largely removed by modern intensive residential occupation. The study area represents the historical relationship between three early road alignments; Old Windsor Road, Windsor Road and Memorial Avenue, although the westernmost intersection of Memorial Avenue and Old Windsor Road is a 20th century addition. Any archaeological remains found within the study area are unlikely to reach the local significance threshold.

The following section summarises the significance of heritage listed items within the study area.

5.3.1 Windsor Road and Old Windsor Road precincts¹⁷

Windsor Road and Old Windsor Road, as first laid out in 1794 and re-aligned in 1812-1813, are of state and national significance. They incorporate the second road to be laid out in the colony and played an important role in the settlement of the Hawkesbury region and the development of the colony of NSW.

Windsor Road and Old Windsor Road retain characteristics evocative of the historic, rural character of the Cumberland Plain, both within the current road reserve and in redundant sections outside the reserve. Together they are vital in understanding the cultural landscapes of the region. Remaining historic road fabric, both inside and outside the current road reserve, demonstrates the methods of road construction and maintenance over two centuries. However, successive phases of construction and maintenance of both roads have impacted upon the likelihood of intact archaeological evidence remaining.

Those sections of Old Windsor Road and Windsor Road, located within the study area, have been severely impacted by modern upgrading and maintenance. They do, however, have heritage significance on a local level, as they represent an original road alignment and are demonstrative of the evolution of an historic road corridor.

¹⁷ Statement taken from the Roads and Maritime Services Section 170 Register: Old Windsor Road and Windsor Road precincts.



6.0 Heritage Impact Assessment

6.1 The Proposal

The study area encompasses the entire length of Memorial Avenue, Kellyville, and includes the portions of Old Windsor Road (approximately 700 metres) and Windsor Road (approximately 550 metres) that extend from their respective intersections with Memorial Avenue. Roads and Maritime Services propose to upgrade and widen Memorial Avenue. The proposed designs include the establishment of three new junctions along Memorial Avenue as well as upgrades of the T-intersection of Memorial Avenue and Windsor Road and the T-intersection of Memorial Avenue and Old Windsor Road (Figure 25).

The proposed upgrade will involve the construction of two east bound and two west bound lanes, with one future lane allowed for in both directions. The upgrade will also include a footway on either side of the avenue and a large median strip between the east and west bound lanes. The proposed works will also include the creation and widening of a four way crossroad at the existing western T-intersection of Arnold Avenue and Memorial Avenue. A four way crossroad will be constructed between Burns Road and Memorial Avenue, approximately 250 metres west of the T-intersection of Memorial Road and Windsor Road. A new four way crossroad will also be constructed between an as yet un-named road and Memorial Avenue directly east of the current intersection between Memorial Avenue and Hector Court (Figure 25).

An overview of the scope of the project is as follows:

- Four lane dual carriageway with provision for upgrading to six lanes.
- Shared paths on both sides of the road.
- New signalised intersections – at Arnold Avenue and Severn Vale Drive.
- Upgrading of intersections at Old Windsor Road and Windsor Road.
- Arnold Avenue East (on the northern side) and Hector Court (on the southern side) to be made cul-de-sacs at Memorial Avenue.
- A new signalised intersection to be installed at Severn Vale Drive.
- Left in and left out access for Burns Road and Stone Mason Drive.



Figure 25: Plan showing the proposal impact area.





6.2 Potential impact of proposal on listed items

6.3.1 A2 – Old Windsor Road (The Hills LEP 2012)

The proposal will impact approximately 700 metres of Old Windsor Road, extending north and south of the intersection with Memorial Avenue. This work will involve widening to the east by approximately 15 metres, with substantial in-cutting and levelling expected. The road will also be widened to the west by approximately five metres. The majority of this work will be in areas of pre-existing impact, including the tollway and large parking areas to the east. The proposed works will also involve the upgrading of the existing intersection.

This section of Old Windsor Road has been subject to severe disturbances including landscape modification in the form of cutting and benching, the construction of roads and footpaths, and the installation of above ground and underground services. As discussed in the assessment of significance (Table 2) the fabric has been altered numerous times and is no longer classed as significant. The road alignment itself, however, continues to demonstrate the evolution of an historic road corridor, and represents an early and significant road alignment. It is expected that the proposal will impact on the modern fabric of the road, and will not alter its alignment. The proposal will therefore have a minor impact on the heritage significance of the road precinct.

There is low archaeological potential that buried milestones may be encountered during subsurface works within the road corridor.

6.3.2 I28 - Windsor Road (The Hills LEP 2012)

The proposal will impact approximately 550 metres of Windsor Road, extending north and south from the intersection with Memorial Avenue. This work will include the widening of Windsor Road by 15 metres to the west, and approximately five metres to the east. It is not expected that this work will require significant areas of in-cutting or in-filling, and the proposed road will be largely on the level of the existing. This work will include upgrading of the intersection with Memorial Avenue.

This section of Windsor Road has been subject to severe disturbances which include landform alteration in the form of cutting and re-deposition of soils for a public park, a concrete slab (and a now demolished building) and above ground and sub-surface services. As the fabric has been altered numerous times it is no longer classed as significant. As with Old Windsor Road, Windsor Road continues to demonstrate the evolution of an historic road corridor, and is representative of an early and significant road alignment. It is expected that the proposal will impact on the modern fabric of the road, and will not alter its alignment. The proposal will therefore have a minor impact on the heritage significance of the road precinct.



6.3.3 1101 - House at 9-11 Windsor Road (The Hills LEP 2012)

The House at 9-11 Windsor Road is approximately 15 metres to the north-east of the study area (Figure 26). The proposal will not directly impact the heritage listing. However, works associated with the proposal may involve temporary aesthetic impacts due to road works and the presence of machinery. This impact is mitigated as the property is largely shielded by a wooden paling fence and mature trees. There is also a potential for vibration from works to affect the property.

6.3.4 4301011 - Old Windsor Road and Windsor Road Heritage Precincts (Roads and Maritime Services Section 170 Register)

See sections 6.3.1 and 6.3.2 for the impacts within this heritage item. The proposal will impact approximately 550 metres of Windsor Road and 700 metres of Old Windsor Road, where the respective roads intersect Memorial Avenue. Road widening is proposed at both intersections to be in the region of five to 15 metres, and more intrusive impacts (excavation) will occur on the intersections themselves. As the fabric of these roads in these particular locations has been altered previously on numerous occasions, they are no longer of significance. However the alignment of the road is considered significant as it represents the original alignment of the road. It is expected that the proposal will impact the modern fabric of the road but will not alter its alignment.



Figure 26: Detail of House at 9-11 Windsor Road (I101).





6.3 Statement of heritage impact

Overall, the proposed works would not negatively impact on the limited heritage significance of the study area or on the heritage listed Old Windsor Road, Windsor Road or House at 9-11 Windsor Road. A statement of heritage impact is summarised in Table 3.

Table 3: SoHI

Development	Discussion
<p>What aspects of the proposal respect or enhance the heritage significance of the study area?</p>	<p>The limited heritage significance of the study area lies in its maintenance of the historic relationship between three road alignments: Old Windsor Road, Windsor Road and Memorial Avenue, and in its ability to partially represent the earlier pattern of large-lot rural subdivision in the Kellyville area. As the proposal will follow the alignment of Memorial Avenue, which has existed (with the exception of the intersection with Old Windsor Road) in this location since the mid-19th century, it will not significantly impact on lots aligned to the road, the proposal will not negatively impact on the limited historic significance of the study area.</p> <p>Overall the study area is unlikely to contain archaeological remains (due to 20th century disturbance in Old Windsor Road, Windsor Road and the existing level of disturbance throughout the Memorial Avenue road corridor), There is low potential that buried milestones may be located within the Old Windsor Road curtilage.</p> <p>As the area is currently dominated by substantial road corridors, the widening of Memorial Avenue would not have a negative visual impact on those heritage items within the study area (which are themselves road corridors). The nearest built heritage item, the House at 9-11 Windsor Road, is located outside the study area. There is a minor visual impact of the proposal, which is largely mitigated by the existing paling fence and large trees that screen the house from Windsor Road.</p> <p>Overall, the proposal respects the heritage significance of the study area.</p>
<p>What aspects of the proposal could have a detrimental impact on the heritage significance of the study area?</p>	<p>The study area has been assessed as having limited heritage significance. Furthermore, the proposal is confined to the extant Old Windsor Road, Windsor Road and Memorial Avenue road corridors, where the chance of encountering archaeological remains is highly unlikely. The proposal will not have a detrimental impact on the heritage significance of the study area.</p> <p>However, there is a potential for temporary visual and vibration impacts to the House at 9-11 Windsor Road (I101), during the construction phase of the proposal.</p> <p>There may be some temporary visual and vibration impacts that arise during the construction phase of the works.</p>
<p>Have more sympathetic options been considered and discounted?</p>	<p>n/a</p>



7.0 Conclusions and recommendations

On the basis of the research described in this report, it was found that:

- Approximately 700 metres of the Old Windsor Road archaeological item (The Hills LEP) is within the study area. The works will consist of widening and upgrading works, and will have a minor impact on the significance of the heritage item by altering the footprint of the road. However, this section of the Old Windsor Road has been substantially modified, and the significance of the item in this location lies largely in its alignment, rather than in fabric. In addition, the level of disturbance suggests it is unlikely that archaeological relics of local or state significance would be encountered during the works, although there is low potential that milestones identified by Godden Mackay Logan (GML) in 2012¹⁸ remain buried within the study area.
- Approximately 550 metres of the Windsor Road heritage item (The Hills LEP) is within the study area. The works in this location will consist of widening and upgrading works, and will have a minor impact on the significance of the heritage item by altering the footprint of the road. However, this section of the Old Windsor Road has been substantially modified, and the significance of the item in this location lies largely in its alignment, rather than in fabric. There is a low potential for archaeological relics or works of local or state significance to be located in the section of the Windsor Road within the study area.
- The House at 9-11 Windsor Road is listed (The Hills LEP) approximately 15 metres north-east of the study area. The proposal will not directly impact the heritage item, although there may be temporary construction impacts on the property. These may include temporary visual impacts and vibration impacts due of the movement of heavy machinery.
- Old Windsor Road and Windsor Road Heritage Precincts are on the Roads and Maritime Services Section 170 heritage register. The proposal will have minor impacts on the significance of the item, as those parts of the roads within the study area have been subject to numerous modifications and upgrading in recent decades.
- Overall, the study area has limited potential to contain archaeological remains. With the exception of milestones within the Old Windsor Road precinct, any remains found are unlikely to reach the local significance threshold. Memorial Avenue has been subject to numerous impacts occurring throughout the 20th century, including upgrades and widening of Old Windsor Road and Windsor Road, and the establishment of the westernmost part of Memorial Avenue. It is likely that the

¹⁸ Godden Mackay Logan Pty Ltd, March 2012, North West Rail Link EIS-1 Major Civil Construction Works European Heritage Report, Report prepared for NWRL Planning Approvals Team.



intersection of Memorial Avenue with Windsor Road, Old Windsor Road and the tollway have been subject to substantial disturbance.

The following measures are recommended to adhere to statutory obligations and minimise potential impacts of the proposed works:

- Retain the form and alignment of Memorial Avenue and limit incursion into the lots fronting the road corridor where possible.
- Old Windsor Road is listed as an archaeological heritage item on the Hills Shire Local Environmental Plan (LEP) 2012, yet does not meet the definition of 'relic' (i.e. below-ground) so approval is not required for impacts to the actual road fabric under Section 139 of the Heritage Act. This document has identified that there is low potential that buried milestones identified by Godden Mackay Logan (GML) in 2012¹⁹ remain buried in the study area. It is, therefore, recommended that subsurface impacts to the fabric of the road be avoided where possible. It is recommended that a Section 139(4) exception endorsement be obtained, prior to works commencing, for any sub-surface impacts within the curtilage of the listed heritage item. It is recommended that a condition of this endorsement be a program of intermittent archaeological monitoring of excavation works within the Old Windsor Road curtilage. This would confirm our predictions about the level of disturbance that already exists within the road corridor, yet allow for the recording of unexpected milestones, which would be considered significant if found.
- If any unanticipated archaeological deposits, such as structural remains, culverts, historic cuttings, retaining walls, or evidence of historic road surfaces, are identified within the study area during construction, the (NSW) Roads and Maritime Unexpected Archaeological Finds Procedure 2012 should be followed.²⁰ These procedures are as follows:
 7. Contact and engage an archaeologist, and Aboriginal site officer where required.
 8. Contact and engage an archaeologist, and Aboriginal site officer where required.
 9. Formulate an archaeological management plan.
 10. Formally notify the regulator by letter, if required.
 11. Implement archaeological management plan.
 12. Review CEMPs and approval conditions.
- It is recommended that the curtilage of the House at 9-11 Windsor Road be avoided and any vibration impacts mitigated through the implementation of a vibration management.

¹⁹ Godden Mackay Logan Pty Ltd, March 2012, North West Rail Link EIS-1 Major Civil Construction Works European Heritage Report, Report prepared for NWRL Planning Approvals Team.

²⁰ RMS, July 2012. RMS Unexpected Archaeological Finds Procedure. Site accessed on 17/07/2014 at: http://www.rms.nsw.gov.au/environment/downloads/unexpected_archaeological_finds_procedure.pdf



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