

# Appendix I

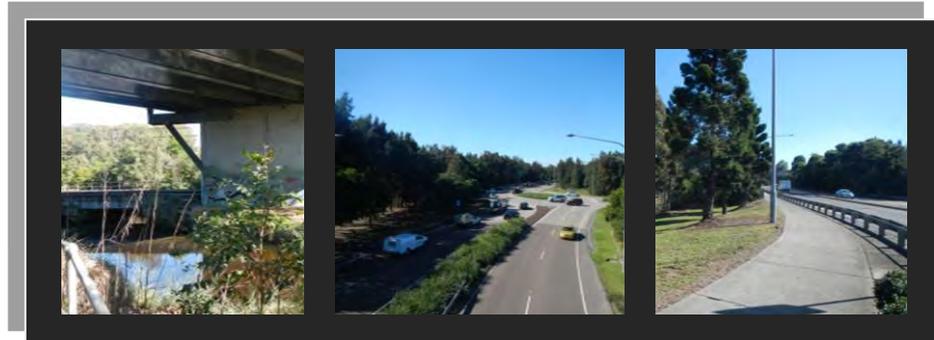
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## (Artefact Heritage 2012) *Aboriginal Cultural Heritage Assessment*

# Pacific Highway / Wyong Road intersection upgrade, Tuggerah

Aboriginal Archaeological Survey Report

Wyong LGA  
Report to SKM/RMS  
September 2012



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## Executive Summary

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Artefact Heritage was commissioned by Sinclair Knight Merz (SKM) for the NSW Roads and Maritime Services (RMS) to conduct an assessment of Aboriginal cultural heritage as part of the Review of Environmental Factors (REF) supporting a proposal for the upgrade of the intersection of Wyong Road and the Pacific Highway at Tuggerah. The proposal involves the widening of both roads and the intersection between them, and the replacement of the existing roundabout with a set of traffic signals. A new bridge over the railway line is proposed to be constructed beside the existing Wyong Road Bridge.

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

No Aboriginal sites were located during the site survey, and the study area is assessed as having low archaeological potential and low archaeological significance due to the high levels of disturbance throughout.

There are no constraints on the proposed development with regard to Aboriginal cultural heritage.



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## I.0 Introduction and Background

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### I.1 Introduction

The Roads and Maritime Services (RMS) propose to upgrade the intersection of the Pacific Highway and Wyong Road at Tuggerah on the New South Wales (NSW) Central Coast. The intersection is located in the Wyong Local Government Area (LGA) and is currently a four-leg dual-lane circulating roundabout. The RMS proposes to replace the existing round-about configuration with a modified and fully signalised intersection (the proposal), see Figure 1.

Sinclair Knight Merz (SKM) was commissioned by RMS to undertake an environmental impact assessment in the form of a Review of Environmental Factors (REF) under Part 5 of the NSW *Environmental Planning and Assessment Act 1979*. SKM commissioned Artefact Heritage to prepare an Aboriginal Archaeological Survey Report (ASR).

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

Stage 1 of the PACHCI was previously completed by RMS as part of the Preliminary Environmental Investigation (RTA 2009). As the study area was in the vicinity of a recorded Aboriginal site Stage 2 PACHCI was initiated.

### I.2 Investigator and contributions

Dr Sandra Wallace, Principal Archaeologist at Artefact Heritage, undertook this study along with Archaeologist Adele Anderson. Sharon Hodgetts (Darkinjung Local Aboriginal Land Council -DLALC) also attended the site survey. Adele Anderson wrote the report and it was reviewed by Dr Sandra Wallace.

### I.3 Description of development proposal

The intersection currently carries approximately 64,700 vehicle movements per day in total, with 34,800 vehicles on Wyong Road and 29,900 vehicles on the Pacific Highway. The intersection is currently at capacity, with significant delays during morning and afternoon peak periods affecting traffic heading to and from the Wyong Town Centre, Tuggerah and the F3 Freeway. In addition there are safety considerations including:

- The sight distance over the existing railway bridge, which limits sight lines to extensive queues, resulting in a number of rear end crashes westbound on Wyong Road.
- Crashes on the roundabout and approach roads as a result of risk taking due to congestion and small gaps.



The proposed design of the intersection upgrade is displayed in Figure 1. The general features of the proposal include:

- Replacement of the existing roundabout with a set of traffic signals to enable better management of the traffic volumes at this intersection.
- A new rail overbridge over the Main Northern Railway Line to accommodate eastbound movements along Wyong Road. The existing Tuggerah Rail Overbridge will accommodate all westbound movements, including turning lanes to the Pacific Highway (north).
- Widening of the intersection to accommodate extra lanes in all four directions and tie in with the recently completed Pacific Highway Upgrade, Tuggerah Straight, north of the intersection at Anzac Road:
- At-grade pedestrian crossings on all four legs of the intersection.
- Extension of the existing pedestrian underpass including improvement of the general amenity of the underpass facility.
- Extension of the pedestrian/cyclist shared path network to improve off-road pedestrian/cyclist connections to adjacent areas including: Tuggerah Railway Station, Tuggerah Supa Centa, Tuggerah Business Park and Westfield Shopping Centre.
- Upgrade of the intersection of Wyong Road and Gavenlock Road to incorporate an additional left turn slip lane into Gavenlock Road (southbound).
- Construction of retaining walls on the northern side of Wyong Road (east and west of the intersection), the southern side of Wyong Road (east of the intersection) and the western side of Pacific Highway (north of the intersection).
- Relocation of underground and overhead utilities to accommodate the proposal.
- Installation of temporary sediment control basins at four locations during the construction period, construction of onsite and offsite diversion drains and provision of sediment fences and erosion controls at the source.
- Installation of bio-retention swales to be used as operational storm water control.
- Ancillary construction facilities, including compound and stockpile sites.
- Installation of new temporary access tracks and crane pads during the construction phase.



The study area for the ASR includes the roundabout at the intersection of Wyong Road and the Pacific Highway, as well as the four approaches to the roundabout. This area encompasses a 765 m section of Wyong Road and a 430 m section of the Pacific Highway. The study area is defined as the proposed area of impact, which includes the road reserves.

#### **I.4 Aboriginal community involvement**

Aboriginal consultation has been conducted in accordance with Stage 2 of the RMS PACHCI. A Native Title search was conducted on 10 April 2012 by Artefact Heritage, which indicated that there were no Native Title claims granted or registered for consideration within the study area. No Aboriginal owners or Aboriginal land claims were listed for the study area. The study area lies within the DLALC boundaries. A representative from DLALC was contacted by the RMS Aboriginal Cultural Heritage Advisor and was invited to participate in the Stage 2 survey. Sharon Hodgetts from DLALC attended the site survey. A copy of the draft report was provided to DLALC for their comments.

An Aboriginal Cultural Heritage Assessment report was provided to RMS by DLALC. This report concluded that there was a low likelihood of Aboriginal sites occurring within the study area due to high levels of disturbance. No particular areas of cultural importance were noted, although the report states that all Aboriginal objects have cultural value (Hodgetts 2012: 22).



Figure 1: Plan of proposed development from Strategic Concept Design





## 2.0 Environmental Context

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### 2.1 Landform and geomorphology

The study area is located within the Central Coast Lowlands physiographic region. The Central Coast Lowlands occupy the coastal strip east of the Watagan Mountains between Terrigal and Munmorah State Conservation Area. This region consists of relatively low lying terrain of low rises on the Narrabeen Group. Also included within this region are alluvial plains and dune fields along the coast. A series of coastal lakes (Tuggerah, Munmorah and Macquarie) occupies a large portion of the lowlands. The topography of the study area is characterised by broad, poorly drained floodplains on Quaternary alluvium.

Murphy's soil landscape map for the Gosford-Lake Macquarie 1:100 000 map sheet indicates that the study area extends across three separate soil landscapes: Wyong, Erina and Woodburys Bridge. The majority of the study area is defined by the Wyong soil landscape, which is characterised by Quaternary sediments including sand, silt, gravel and clay. The Woodbury's Bridge and Erina soil landscapes run through the south-west portion of the study area, and include sandstone, siltstone, and claystone.

### 2.2 Hydrology

The study area is located approximately 2.5 km west of Budgewoi Lake, two kilometres south of the Wyong River and one kilometre north of Ourimbah Creek. Tuggerah Creek and Mardi Creek run to the east and north of the study area. A watercourse runs through the study area and is channelised beneath the railway overpass.

To the north-east of the study area is a permanently inundated open water body surrounded by grazed pastoral land, known as the Dairy Swamp, along with numerous ephemeral wetlands. It is not clear how the Dairy Swamp is fed water; however it appears to discharge to the Wyong River via an unnamed ephemeral drainage channel (Pittendrigh Shinkfield Bruce, 2007:6).

The proximity of permanent water, ephemeral streams, and wetland areas would have meant that the area is likely to have been suitable for Aboriginal occupation.

### 2.3 Vegetation

Prior to land clearing during the 19th and 20th centuries, the original vegetation of the study area would have been characterised by both tall open-forest and closed-forest. Common species of tall open-forest include spotted gum (*Eucalyptus maculata*), grey gum (*E. punctata*), white stringybark (*E. globoidea*) and grey ironbark (*E. paniculata*). Rough-barked apple (*Angophora floribunda*) often occurs in association with spotted gum on footslopes, while paperbarks (*Melaleuca spp.*) are common along drainage lines.



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

Plants were an important source of nutrition, common edible species being *Macrozamia*, a cycad palm with poisonous seeds that were detoxified and ground into a paste and *Xanthorrhoea*, or grass tree. The grass tree nectar was a high-energy food, the resin strong hafting glue, and the flower spikes used for spear barbs.

## 2.4 Land use history

During the first half of the 19th century, the wealth of timber resources in the Wyong region and its close proximity to Sydney attracted timber-getters, but permanent settlement was slow due to the area's rugged topography. Gradually, a commercial fishing industry developed on the Tuggerah Lakes, around which numerous small fishing villages were established (Pry and Fenton, 1998:21).

With the arrival of the Great Northern Railway in the late 1880s, the isolation of the area was eased, opening up the region to tourists who visited on day trips and for holidays, and giving local farmers quick and reliable access to markets (Pry and Fenton, 1998:21). The railway acted as a stimulus to development, and by the 1890s, citrus farming and dairying were growing industries in the region (Pittendrigh Shinkfield Bruce, 2007:13).

During the first half of the 20th century, the Central Coast became a favourite holiday destination and by 1954 the population of Wyong Shire had risen to 13,000. From the 1960s, the region's rural industries were superseded by coal mining and urban development. The population shifted from holiday-makers to more permanent residents, and rapid urban development has continued to the present.

All of the land within the study area has been subject to major ground disturbance through the construction of roads and related landscaping, the construction of the railway line, and surrounding commercial and residential development.



## 3.0 Archaeological Context

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### 3.1 Aboriginal material culture

The oldest securely dated site for Aboriginal occupation in the greater Sydney region is 14,700 years before present (yBP), which was recorded in a rock shelter at Shaw's Creek (Nanson et al, 1987). Evidence of Aboriginal occupation has been found dated to 50-60,000 yBP at Lake Mungo in NSW, so it would be likely that Aboriginal people have lived in the Sydney region for even longer than indicated by the oldest recorded dates available at present. Aboriginal occupation of the NSW Central Coast region has been dated to around 15,000 yBP in the Newcastle Bight by Baker (1994), with occupation of the hinterland ranges dated to 11,000 yBP in the Mangrove Creek Dam catchment (Attenbrow, 1981). Most sites in the Gosford-Wyong region have been dated or are assumed to date to the late Holocene (<4,000 yBP) (Kuskie, 2008:14). The archaeological material record provides evidence of this long occupation, but also provides evidence of a dynamic culture that has changed through time.

The existing archaeological record is limited to certain materials and objects that were able to withstand degradation and decay. As a result the most common type of Aboriginal objects remaining in the archaeological record are stone artefacts. Archaeological analyses of these artefacts in their contexts have provided the basis for the interpretation of change in material culture over time. Technologies used for making tools changed, along with preference of raw material. Different types of tools appeared at certain times, for example ground stone hatchets are first observed in the archaeological record around 4,000 yBP in the Sydney region (Attenbrow, 2010:102). It 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 to explain the typological differences he was seeing in stone tool technology in different stratigraphic levels during excavations such as Lapstone Creek near the foot of the Blue Mountains (McCarthy, 1948). The sequence had three phases that corresponded to different technologies and tool types (the Capertian, Bondaian and Eloueran). The categories have been refined through the interpretation of further excavation data and radiocarbon dates (Hiscock & Attenbrow, 2005; JMcD CHM, 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 4,000 yBP to 1,000 yBP backed artefacts appear more frequently. Tool manufacture techniques become more complex and bipolar flaking increases (JMcD CHM, 2006). It has been argued that from 1,400 to 1,000 years before contact there is evidence of a decline in tool manufacture. This reduction may be the result of decreased tool making, an increase in the use of organic materials, changes in the way tools were made, or changes in what types of tools were preferred (Attenbrow, 2010:102). The reduction in evidence coincides with the reduction in frequency of backed blades as a percentage of the assemblage.



### 3.2 Aboriginal histories of the locality

Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The language group spoken in the Tuggerah area is thought to have been Darkinjang, though the Awabakal language group was also located along the coast close by. The Darkinjang lands roughly extend from the Hawkesbury River northwards to Wollombi and the southern drainage of the Hunter River (Tindale, 1974).

British colonisation had a profound and devastating effect on the Aboriginal population of the Sydney region. In the early days of the colony Aboriginal people were disenfranchised from their land as the British claimed areas for settlement and agriculture. The colonists, often at the expense of the local Aboriginal groups, also claimed resources such as pasture, timber, fishing grounds and water sources. In 1828, conflict between European settlers and Aboriginal people in the Gosford region led to investigation by the local magistrate. It was found that a local landowner, William Cape, regularly threatened local Aboriginal people with his musket and provoked them to acts of violence (Kuskie, 2008:15)

Overall the devastation of Aboriginal culture did not come about through war with the British, but instead through disease and forced removal from traditional lands. It is thought that during the 1789 smallpox epidemic over half of the Aboriginal people of the greater Sydney region died.

Descendants of Darkinjang (or Darkinjung) language speakers have continued to live in the region until the present-day, and the study area falls within the area of the Darkinjung Local Aboriginal Land Council.

### 3.3 Registered Aboriginal sites in the local area – AHIMS search

A search of the Aboriginal Heritage Information System (AHIMS) database was undertaken on the 29 February 2012 for sites within a five kilometre radius of the study area. The search area fulfils the OEH Due Diligence guidelines. A total of 14 Aboriginal sites were identified by the search with 13 sites described as open artefact scatters, and one area of potential archaeological deposit (PAD).

Of the 14 AHIMS registered sites, only one (AHIMS #45-3-3384) is located in the immediate vicinity of the study area. This site was identified as a PAD in 2008, but subsequent test excavations did not uncover any artefacts and in 2009, Kayandel Archaeological Services recommended that the AHIMS record for the site should be amended to “Not a site” (KAS, 2009).

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



**Figure 2: AHIMS sites within a five kilometre radius of the study area (outlined in red) Background GoogleEarth.**

Map removed for public version

### 3.4 Site types

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

- Stone Artefacts – Flaked and ground stone artefacts are the most common trace of Aboriginal occupation in the Sydney region. Aboriginal people used particular techniques to flake stone and these changed over time. The approximate age of a tool can often be diagnosed by the way that it was made. Stone artefacts are most often found in scatters that may indicate an Aboriginal campsite was once present. Stone artefacts may also be found as isolated finds. Stone tools in the Sydney region are most often made from raw materials known as silcrete, tuff and quartz. These are all easily flaked and form sharp edges, which



can be used for cutting or barbing spears. It is possible that stone artefacts, either on the surface, or buried, exist within the study area.

- Rock shelters with deposit – Rock shelters were used by Aboriginal people for habitation, rest places and as art or ceremonial sites. Deposits can build up on the floor of these shelters over time and bury traces of Aboriginal occupation. If these deposits are not disturbed, rock shelters can provide an intact stratigraphy that can tell us about the way Aboriginal occupation changed through time. There are no rock outcrops surrounding the intersection, therefore rock shelters are unlikely to occur within the study area.
- Shell middens – Shell middens are remains of campsites in which the primary traces are shell and/or bones of fish. Shell middens are often found close to rivers or streams and are either along banks or within enclosed shelters. The majority of shell middens in the Central Coast region were destroyed when they were mined for lime in the early days of the colony and are found close to permanent water therefore it is unlikely that they would occur within the study area.
- Rock engravings/Rock art – Rock engravings are often found in Hawkesbury geologies on flat sandstone platforms. Shapes of animals, ancestor figures or other symbols were carved into the sandstone. Weathering has affected the visibility of many rock engravings. Other rock art of various forms has also been recorded in the Sydney basin. Stencils, charcoal drawings and paintings are examples of the techniques used by Aboriginal people. Rock art is relatively rare, but is more common on sandstone geologies so is unlikely to occur in the study area.
- Axe grinding grooves – Axe grinding grooves are created when axe blanks (often basalt cobbles) are shaped by rubbing the stone across an abrasive rock such as sandstone, often using water. Sharpening axes and other tools also forms them. Axe grinding grooves are often found on the banks of streams or rock pools if they were to occur near the study area it would be around the banks of Tuggerah Creek.
- Scarred trees – Aboriginal people practiced tree marking or scarring for a variety of reasons. Large scars are often the result of a tree being debarked for a canoe blank and smaller scars may have been the result of making shields or coolamons (storage vessels). Tree marking may have been the result of ritual practices, or associated with burial. Scarred trees that remain today would be over 150 years old and the scar would retain certain characteristics that enable its identification as cultural. It is highly unlikely that scarred trees remain in the study area, as intensive clearing would have removed any trees old enough to bear cultural scars.
- Post-contact sites – Sites where evidence of early interaction between Aboriginal people and Europeans are known as contact sites. Artefacts found at contact sites may include flaked glass or ceramic. It is unlikely that post-contact sites would occur within the study area.
- PAD– Areas are classified as PADs if there is a likelihood of archaeological material existing below the ground surface or on the ground surface but obscured from view. An Aboriginal object does not need to be recorded for an area of PAD to be specified. It is possible that areas of PAD would be found within the study area.



### 3.5 Previous archaeological work in the local area

While numerous archaeological studies have been conducted in the Wyong region, relatively few of these have located Aboriginal archaeological sites. Dallas (1984) has suggested that this low level of site location probably results from local terrain conditions and high levels of disturbance since European settlement. The following section summarises the findings of previous studies in the general vicinity of the current study area.

**Ross (1980)** surveyed the route of a proposed 330 kV transmission line from the Tuggerah sub-station (located around one kilometre east of the current study area) to Sterland in the north-east. The survey was restricted to the sites of proposed towers and no Aboriginal sites were located.

**Dyall (1981)** surveyed the proposed site of a power station at Chittaway Point, south-east of the current study area. The survey covered a 12 km<sup>2</sup> area which included the floodplain behind Lake Tuggerah and the higher sandstone terrain situated further to the west. Sparse artefact scatters were identified at twelve locations on elevated ground within the floodplain.

**Dallas (1984)** surveyed a number of locations in relation to the proposed Wyong Shire sewerage treatment plant and pipeline route. This survey located one artefact scatter at Tuggerah, immediately to the north of Ourimbah Creek. This artefact scatter consisted of two stone artefacts and was located on imported landfill.

**Dean-Jones (1986)** surveyed land at Tuggerah, including both sandstone country to the west and lower drainage lines and floodplain. One stone quarry site and three isolated stone artefacts were identified on the northern side of Mount Tangy Dangy, near Kangy Angy, approximately two kilometres south-west of the current study area. The quarry comprised numerous blocks of metamorphosed fine-grained quartz sandstone distributed over a 50 m x 15 m area. It was concluded that the quarry site was of high significance.

**Barber (1992)** surveyed an area around 700 m south-east of the current study area, which included swamps, elevated flats, hill slopes and crests. Only one small, sparse artefact scatter was recorded, on elevated ground above wetland.

**Kayandel Archaeological Services [KAS] (2008 and 2009)** conducted an Aboriginal Heritage Impact Assessment of the Tuggerah Bus Interchange at Tuggerah Railway Station, and identified an area of PAD immediately to the north-east of Tuggerah Station. Test excavations were conducted across the area in 2009, but no evidence for Aboriginal occupation was recorded.

## 4.0 Predictions

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### 4.1 Predictive models

A number of predictive models regarding site type locations and frequencies have been formulated for the NSW Central Coast region.

**Vinnicombe (1980)** surveyed a selection of water catchment areas in the Gosford –Wyong region in order to discern patterns in the locations of different site types. This survey included the Lake Tuggerah catchment area, near the current study area. Vinnicombe found that:

- Open middens occur on sand, alluvium, and sandstone; often in protected locations near water.
- Artefact scatters and open camp sites are relatively rare within the region, but may occur on any flat terrain near water.
- Rock shelter sites are found in exposed Hawkesbury sandstone terrain above valley floors or below ridge tops.
- Axe grinding grooves occur within exposures of Hawkesbury sandstone near water.

At the time of Vinnicombe's study, relatively few archaeological surveys had been conducted in the region, and therefore these findings were not conclusive.

**Dallas et al (1987)** undertook a study of Aboriginal cultural resources throughout Wyong Shire, including a review of ethnographic data, archaeological investigations, and environmental studies. It was observed that the low number of existing archaeological surveys at the time made it difficult to formulate adequate conclusions about the range of cultural resources that could potentially exist in the region.

It was found that the most common site types in the coastal and lake areas were middens, artefact scatters, and scarred trees, while artefact scatters and grinding grooves were most common along creeks. Rock shelters with art and/or deposit were generally located in the foothills and plateaux.

Dallas et al point out that the majority of recorded sites in Wyong Shire are sheltered sites in sandstone areas of the coast and riverine zones, but argue that this concentration of sites may be due to the absence of high impact development and favourable preservation conditions, rather than reflecting true patterns of occupation in the region.

**Bonhomme and Buzer (1994)** tested four alternative models for subsistence strategy on the NSW Central Coast. These models were:

1. High residential mobility.
2. Seasonally scheduled mobility based within the Central Coast.



3. Seasonally scheduled mobility based outside the Central Coast.
4. Minimal residential mobility based within the Central Coast.

It was concluded that, based on the seasonality, reliability, and distribution of resources in the region, models 2 and 3 were the most applicable models for subsistence strategy, with model 2 providing the most consistent interpretation for the available data.

## **4.2 Material traces of occupation**

The most likely sites to occur within the study area are artefact scatters or isolated finds. Axe grinding grooves may occur close to Tuggerah Creek. It is unlikely that scarred or marked trees will be located, as all old growth trees appear to have been removed. It is possible that areas of PAD will be located within the study area, depending on the levels of ground disturbance.

## **4.3 Archaeological potential**

Considerable disturbance has occurred within the study area since colonisation. Initially this disturbance took the form of clearing, grazing and ploughing which disturbed the soil surface and encouraged erosion. More recently, major impacts have occurred through the construction of the roads and railway line, resulting in significant disturbance in all areas of the study area. It is therefore unlikely that intact subsurface deposits remain within the study area. The study area is assessed as having a low archaeological potential.



## 5.0 Field Methods

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### 5.1 Survey coverage

The aim of the field survey was to identify any traces of Aboriginal land use, or archaeological sites within the study area. The study area was therefore examined in closely walked transects (five metres apart) in order to cover the highest possible amount of ground surface. The archaeologists and Aboriginal representative walked along the road reserves, stopping at areas of ground exposure to examine the area in detail for stone tools or other evidence of Aboriginal occupation.

**Table 1: Survey coverage.**

Survey area (estimate)	Landform	Visibility (%)	Exposure (%)	Effective coverage area	Effective coverage (%)
66,000 m <sup>2</sup>	Elevated land above floodplain	20	30	6,600 m <sup>2</sup>	10

### 5.2 Survey methodology

The site survey was conducted on 2 May 2012 and was undertaken in accordance with best practice standards. The survey area was covered on foot and ground exposures were examined for stone artefacts, shell, or other traces of Aboriginal occupation. No mature trees remain in the study area and therefore cultural scarring or marking that may have been the work of Aboriginal people was not expected.

A photographic record was kept, with photos taken to represent the landform unit and levels of disturbance.

### 5.3 Site recording

No Aboriginal sites were located during the survey.

## 6.0 Results

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### 6.1 Survey observations

All parts of the study area have been subject to disturbance through the construction of the roads and associated landscaping, the construction of the railway line, and modifications to Tuggerah Creek.

Along the roadsides throughout the study area, major landscape modification has occurred through the creation of drainage lines, concrete footpaths, garden beds, and levelled areas of grass. Few areas of exposure were present, and all were in disturbed contexts.

Tuggerah Creek, where it passes beneath the Wyong Road Bridge, has been heavily modified through the construction of the bridge, the creation of a concrete footpath on the creek bank, and the construction of the railway line on a low bridge over the water.

**Plate 1: Looking south-west across study area from pedestrian overpass at Tuggerah Railway Station.**



At the northern end of the study area, between Wyong Road and the fast food complex, is a marshy depression. The vegetation in this marsh is recognized as two separate Threatened Ecological Communities which include: Freshwater Wetlands on Coastal Floodplains and Swamp Oak Floodplain Forest on Coastal Floodplains. This marshy area is also vegetated with introduced weeds, surrounded by immature acacia trees. Although some natural vegetation may remain the area appears to have been disturbed by the construction of the road embankment and drainage culverts.



**Plate 2: Road embankment and pedestrian underpass beneath Wyong Road, south of central roundabout.**



**Plate 3: Concrete footpath and gutter south of Pacific Highway, west of central roundabout.**



**Plate 4: Tuggerah Creek beneath Wyong Road bridge, facing north.**





**Plate 5: Marshy depression between Wyong Road and Hungry Jacks.**



## **6.2 Summary of findings**

No Aboriginal sites or areas of archaeological potential were located during the site survey.



## 7.0 Statutory Requirements

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

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

The *National Parks & Wildlife Act 1974* (NP&W Act), administered by the OEH provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

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

The NP&W Act was recently amended (2010) and as a result the legislative structure for seeking permission to impact on heritage items has changed. An s90 permit is now the only Aboriginal Heritage Impact Permit (AHIP) available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

As part of the administration of Part 6 of the Act, OEH has developed regulatory guidelines on Aboriginal consultation, which are outlined in *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (2010). Guidelines have also been developed for the processes of due diligence - *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (2010), and for investigation of Aboriginal objects - *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (2010) in accordance with the 2010 amendment to the NP&W Act.

### **Heritage Act (1977)**

The *Heritage Act 1977* (Heritage Act) is administered by the Department of Premier and Cabinet and protects the natural and cultural heritage of NSW. Generally the Heritage Act only pertains to Aboriginal Heritage if it is listed on the State Heritage Register, or subject to an interim heritage order.

### **Aboriginal Land Rights Act (1983)**

The *Aboriginal Land Rights Act 1983* (ALRA Act) is administered by the NSW Department of Human Services - Aboriginal Affairs. The ARLA Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the ARLA 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* (Native Title Act) was introduced to work in conjunction with the Commonwealth *Native Title Act 1993*. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Native Title Act.



## 8.0 Significance Assessment

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

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

The archaeological significance of the study area is assessed as being low due to the high levels of disturbance throughout. No Aboriginal sites have been located within the study area, and the study area has no research or education potential. No particular areas of cultural significance were noted by DLALC during the site survey. No further submissions on cultural significance have since been received.



## 9.0 Impact Assessment

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### 9.1 Potential impacts

Any items of Aboriginal cultural heritage remaining within the study area would have a high potential of being impacted by the proposal.

The proposed development would have major impacts on land along the north-east side of Wyong Road, with the addition of new lanes on this side of the road and the construction of a second bridge over Tuggerah Creek. More limited widening would also occur on either side of the Pacific Highway, while land to the south-west of Wyong Road would be largely unaffected.

Likely impacts to the study area would result from earthworks and widening works on the roads, stormwater drainage modification works, kerb and guttering installation, the construction of new road pavement, the installation of traffic lights and street lights, and landscaping.

### 9.2 Archaeological impact assessment

No Aboriginal sites were recorded within the study area, which was assessed as having low archaeological potential. It is unlikely that the proposal would impact on any intact archaeological sites.

### 9.3 Cultural heritage impact assessment

The DLALC cultural heritage assessment report discusses a number of management measures regarding potential impacts to Aboriginal heritage. These recommendations should be considered in the context of the provisions of the PACHCI, OEH guidelines and requirements, and the RMS *Unexpected Archaeological Finds Procedure* (2011). The recommendations of the DLALC report are as follows (Hodgetts 2012: 34):

1. Development employees, contractors and personnel should receive basic training in the recognition of Aboriginal cultural heritage material and sites.
2. When any soil, vegetation clearing or leaf litter removal activities are conducted workers should be observant and keep a look out for rock engravings, surface shell, bone, rocks or any other Aboriginal cultural heritage material.
3. If Aboriginal cultural heritage sites or material is discovered, work should cease, the area should then be avoided and the Office of Environment and Heritage (OEH) and Darkinjung Local Aboriginal Land Council be immediately notified.



4. RMS or Contractor must give notice to Darkinjung LALC 30 days prior to any commencement of construction work and to engage a Darkinjung LALC Sites Officer to monitor any earthworks or excavations. This is due to the possibility of uncovering Aboriginal objects/items of significance whilst earthmoving/excavation takes place.



## 10.0 Recommendations

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The following recommendations are based on consideration of:

- Statutory requirements under the NP&W Act as amended.
- The results of the background research, site survey and assessment.
- The interests of the Aboriginal stakeholder groups.
- The likely impacts of the proposed development.

It was found that:

- No Aboriginal sites were located within the study area.
- The entire study area was highly disturbed and has low archaeological significance.

It is therefore recommended that:

- There are no constraints on the proposed development with regard to Aboriginal heritage.
- If unexpected Aboriginal sites are located during construction of the road upgrade the RMS *Unexpected Archaeological Finds Procedure* (2011) would be implemented.
- DLALC have requested that their office is advised 30 days prior to works commencing.



## 11.0 References

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