# Roads and Traffic Authority

## Pacific Highway Upgrade - Oxley Highway to Kempsey

### Aboriginal Heritage Working Paper

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# 6. Assessment methodology

## 6.1 Background

The Aboriginal heritage impact assessment was conducted in two phases:

- An initial predictive desktop study to assist with the selection of feasible route options, in consultation with the Aboriginal community (Kuskie 2005a, 2005b).
- Detailed investigations of the Proposal, including a comprehensive field survey undertaken with the registered Aboriginal stakeholders and sub-surface investigations.

For both phases the assessment included a review of relevant heritage registers (**Section 5.1**) and consultation with the local Aboriginal community (**Section 3**). Additional research was also conducted, including at the:

- National Library of Australia.
- DECCW catalogue of Aboriginal site records and archaeological reports.

The initial predictive model of site location developed during the initial predictive desktop study, along with consultation with the local Aboriginal community, informed the detailed assessment of the Proposal.

Following the completion of the initial predictive desktop study Kuskie (2005a) concluded that in order to identify the nature and extent of any Aboriginal heritage evidence within the study area, its significance, the potential impacts of the Proposal on this evidence and to recommend appropriate management strategies, further investigation was required of the Proposal.

## 6.2 Detailed field survey

A detailed field survey methodology dated September 2006 was prepared by South East Archaeology (*Pacific Highway Upgrade – Oxley Highway to Kempsey: Aboriginal Heritage Impact Assessment – Proposed Investigation Methodology*) that outlined the process for the overall heritage investigation as per the DECCW consultation guidelines. After the agreement of the stakeholders was received, the detailed field survey was undertaken.

A comprehensive field survey of the study area was undertaken by South East Archaeology over nine days between 5 and 14 March 2007. South East Archaeology was assisted by representatives of Dunghutti Elders Aboriginal Corporation, Kempsey Local Aboriginal Land Council and Birpai Local Aboriginal Land Council.

### 6.2.1 Survey areas

The undisturbed study area was divided into environmental contexts (**Section 4.7**) based on particular combinations of environmental variables that are assumed to relate to Aboriginal usage of the area. The survey areas for the detailed field survey were defined as the individual archaeological terrain unit that is bounded on all sides by different archaeological terrain units (cf. Kuskie 2000).

The total area subject to field survey was approximately 560 hectares. Approximately 103 hectares (approximately 18.3 per cent) is highly disturbed by previous development including the existing Pacific Highway and was subject to a brief visual inspection. This confirmed that these areas had negligible potential for any Aboriginal heritage evidence to survive. Virtually the entire length of the Proposal was inspected on foot during the field survey, representing an area of approximately 413 hectares (approximately 74 per cent).

Further discussion on the surface survey coverage is provided in **Section 7.1.1**.

### 6.2.2 Recording

Detailed recording of the survey areas was made on survey recording forms, including environmental variables and heritage resources identified or potentially present. Each survey area was assigned a unique reference code (OHK1, OHK2, etc). Surveying was generally completed within a single survey area prior to commencing inspection of another area.

Aboriginal heritage site recording forms for each identified site were also completed. Spatially separate locations of heritage evidence were recorded as separate sites named after the survey area number followed by a sequential letter. For example, the sites identified within survey area OHK91 were named OHK91/A and OHK91/B (**Appendix D**).

Stone artefacts were recorded on a lithic item recording form, including details about provenance, stone material type, artefact type, size class, cortex and other relevant attributes.

Each survey area was inspected on foot by South East Archaeology and the Aboriginal community representatives. Within each survey area:

- Inspection was made for stone artefacts, focusing on areas with ground surface visibility.
- Inspection was made for obtrusive site types such as scarred trees and grinding grooves.

During the survey Aboriginal community representatives were also asked of their knowledge of any areas of cultural significance within the study area, for example:

- Sites or places associated with ceremonies, spiritual / mythological beliefs and traditional knowledge, which date from the pre-contact period and have persisted until the present time.
- Sites or places associated with historical associations, which date from the post-contact period and are remembered by people today (for example, plant and animal resource use areas and known camp sites).
- Sites or places of contemporary significance (apart from those areas for which Aboriginal objects remain), for which the significance has been acquired in recent times.

The results of the detailed field survey are presented in **Section 7.1**.

## 6.3 Sub-surface investigations

During the detailed field survey, three areas along the Proposal were identified as having a high potential for deposits of stone artefacts, particularly deposits that may be of significance. These potential deposits occur on a crest north of the Hastings River and two crests north of the Wilson River.

The initial surface survey was limited by low conditions of visibility at the location north of the Hastings River. At one of the two locations north of the Wilson River, several small stone artefact scatter sites were visible on the surface. These locations were likely to have been used by Aboriginal people over many thousands of years as corridors for movement and possibly for camping close to the resource rich rivers.

In order to obtain more information about the nature and extent of the heritage evidence in these locations, to enable an assessment to be made of the potential impacts of the Proposal and to allow management options to be formulated, further investigation in the form of sub-surface investigations was required. Further investigation was not undertaken on a second crest north of the Wilson River, due to its small spatial extent, existing high levels of impact and similarity to the other crest north of the Wilson River that was being sampled.

A detailed research design for the program of sub-surface investigations, to supplement the detailed field survey methodology (**Section 6.2**) was prepared by South East Archaeology in September 2007 (*Pacific Highway Upgrade – Oxley Highway to Kempsey: Aboriginal Heritage Impact Assessment – Test Excavation of Locations Adjacent to the Hastings River and Wilson River – Research Design*) and distributed to the Aboriginal stakeholders for review. After the agreement of the stakeholders was received, the program of sub-surface investigations was undertaken.

The proposed testing occurred in accordance with relevant DECCW policies and guidelines, including the draft *Part 3A Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DECC 2005), *Interim Community Consultation Requirements for Applicants* (DECC 2004) and *Aboriginal Heritage Standards and Guidelines Kit* (DECC 1997). As a matter of courtesy, the draft research design was forwarded to DECCW for review prior to its finalisation.

The detailed research design involved:

- Review of the studies undertaken to date.
- Identification of the environmental context of the investigation area.
- Identification of the cultural context of the investigation area.
- Identification of the expected nature and distribution of evidence.
- Aims.
- Methodology.

The cultural context and expected nature and distribution of evidence are detailed in **Appendix E**. The aims and methodology are discussed below and supplement the information provided in **Section 5.4** on the predictive model.

### 6.3.1 Sub-surface investigation aims

Prior to the conduct of the present assessment, there was a virtual absence of excavation data in the region relating to the types of contexts proposed for sub-surface testing, which constrains the ability to adequately assess these areas and the potential impacts of the Proposal, on the basis of the currently available information. The potential nature, extent and integrity of evidence in these contexts, along with its significance, are uncertain.

Sub-surface testing was therefore essential to retrieve a suitable sample of evidence to:

- Permit identification of the nature, distribution and integrity of heritage evidence within the crest contexts north of the Hastings and Wilson rivers, including the activities represented and the potential for this evidence to address locally and regionally relevant research questions.
- Permit a more robust assessment of the scientific significance of the identified and potential Aboriginal heritage resources of the study area and assessment of the potential impacts of the Proposal.
- Provide a satisfactory basis from which to formulate strategies for the management of the Aboriginal heritage resource in these locations.

Through the excavation and subsequent analysis of the evidence retrieved, a series of research hypotheses (**Appendix F**) were proposed to be addressed to the extent that is possible given the nature of the evidence and present limitations of methodological and theoretical knowledge.

### 6.3.2 Sub-surface investigation methodology

Sub-surface investigations were undertaken in two locations, one north of the Hastings River and one north of the Wilson River. Within each of the locations selected for testing, the on-ground location of the excavation areas was selected with reference to factors such as the location of identified evidence, local conditions of ground disturbance and potential depth of sub-surface deposits. The size, nature and methodology were selected in relation to the aims of the investigation and the expected evidence. In consideration of these factors, the excavation methodology involved:

- Excavation of test units measuring 1 by 1 metres in area at 5 metre intervals along two perpendicular transects in each location.
- Retrieve samples and obtain radiometric dates where feasible.
- Record and plot the location of the excavations.
- Record and analyse the cultural material as specified below.

Initially, the surface was cleared of vegetation and the excavation pegged out in 1 square metre units. Excavation units were dug by shovel and trowel to the depth of the A unit soil / top of B unit soil or visible or predicted cultural deposits. Excavation units were dug in successive levels ('spits') of 10 centimetres depth in order to investigate integrity. Data was recorded for each excavation unit on an 'Excavation Unit Recording Form'. All of the units were backfilled as soon as practical after completion.

At the Hastings River location, 30 test units in total were excavated, on two perpendicular transects measuring 110 and 50 metres each (**Appendix G**). Several units along each transect could not be excavated due to stockpiles of timber.

At the Wilson River location, 29 test units in total were excavated, on two perpendicular transects measuring 95 and 50 metres each (**Appendix G**). One unit could not be excavated due to stockpiles of timber.

In total, 59 test units, each measuring 1 square metre in area were excavated, resulting in a total excavation area of 59 square metres. In total, 160 separate excavation unit spits (1 by 1 metre area by 10 centimetre deep 'spit') were excavated. On average, 2.7 spits were excavated in each test unit with a maximum of five spits (up to 0.5 metres depth) required. However, the Wilson River units were generally shallower (mean of 2.34 spits per test unit) compared to the Hastings River units (mean of 3.07 spits per test unit).

Soil from each level within an excavation unit was placed into separate buckets, labelled and transported to a sieving station to be separately sieved (refer to Plates 3 and 4). Wet sieving was used, with a sieve mesh of 2.5 millimetres (3.13 millimetre maximum aperture). After each bucket was sieved, all material (both natural and cultural) remaining in the sieve was dried and sorted by a qualified archaeologist to retain all probable and potential cultural items and dispose of the natural items. This represents application of the 'total sieve retrieval' methodology (Kuskie and Kamminga 2000).

A total volume of deposit of 20.195 cubic metres (20,195 litres) was excavated and wet-sieved. On average, about 342 litres of deposit was excavated from each unit, with a mean of 126 litres excavated from each unit spit.

**Plate 3**

**Plate 4**

Lithic item recording was undertaken by a qualified archaeologist with expertise in lithic analysis in laboratory conditions. All lithic items retrieved from the hand excavations were inspected under a low-magnification microscope, which assisted in the accurate identification of stone materials, artefact types, use-wear, retouch and other attributes. In order to address most research questions a minimal level of information was recorded for every artefact (provenance, reference number, stone material type and colour, lithic item type, size, weight, nature and quantity of cortex, presence and nature of any use-wear or residues and attributes of heat treatment). In addition, specific attributes were recorded for cores, including initiation surface (cortex, plain fracture, focused, multiple scar), number of platforms, number of flake detachments and flaking pattern, where relevant to the research objectives. For whole flakes, initiation surface, initiation type (Hertzian, bending, wedging), termination type (for example, axial, feather, high angle, hinge, outrepasse, retroflexed hinge and step), percussion length, width and thickness, platform width and thickness and overhang removal / faceting were recorded where relevant.

Photographs of selected individual lithic items retrieved during the sub-surface investigations are presented in Plates 5 to 8.

Following recording, individual items were bagged separately in resealable, labelled plastic bags, with provenance information recorded on waterproof ink on the plastic bag label strips. Artefact bags were grouped together for each excavation unit and further provenance information included on metal tags. All cultural evidence will be returned to the Dunghutti Elders for safe-keeping, in compliance with a Care Agreement to be issued by DECCW (pending).


**Plate 5**


**Plate 6**

**Plate 7**


**Plate 8**