Roads and Traffic Authority

Pacific Highway Upgrade - Oxley Highway to Kempsey

Aboriginal Heritage Working Paper

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Appendix E

Sub-surface investigation – cultural context and expected nature and distribution of evidence

1 Cultural context

Although a number of predictions regarding Aboriginal site location, particular relating to different environmental variables such as landform unit, slope, geology, aspect and proximity to water sources, have been made during the course of previous archaeological studies in the locality (for example, Davies 1991a, Collins 1995), a comprehensive model of Aboriginal occupation is not readily apparent.

The basic elements of a local model of Aboriginal occupation were proposed, based on the known pattern of site distribution, ethnohistorical and ethnographical evidence, and the results of the limited archaeological work undertaken to date in the locality. Such a model can attempt to explain Aboriginal activity and settlement patterns at a local level. Given the relative paucity of detailed archaeological investigation in the locality (such as excavation), the model involves hypotheses to be tested by further research, including the present program of sub-surface investigation.

The basic elements of a local model of Aboriginal proposed include:

- Occupation was predominantly focused on the relatively more abundant and diverse resource rich zones within the tribal territory (for example, the junction of multiple resource zones) particularly along the margins of the coast, estuaries, lakes, wetlands and rivers. Within these *primary resource zones*, such occupation could include nuclear/extended family base camps, community base camps and occasional larger congregations of groups where resources permitted, along with less intense occupation such as encampments by small parties of hunters / gatherers and nuclear / extended family groups during the course of the seasonal round, hunting and gathering activities by small parties of men and/or women and children, and transitory movement. Encampments in more favourable locations (for example, abundant resources and water) may have been the subject of stays of longer duration and more frequent episodes of occupation than in other areas (for example, secondary resource zones, refer below).
- Outside of the primary resource zones sporadic occupation of *secondary resource zones*, focused on the watercourses, particularly within close proximity of higher order watercourses and associated flats and terraces. These zones were utilised for encampments by small parties of hunters/gatherers and nuclear / extended family groups during the course of the seasonal round. There was a strong preference for camping on level ground, adjacent to reliable water sources and more abundant subsistence resources. A greater range and frequency of activities were undertaken at the encampments, rather than in the surrounding landscape. Camp sites along the watercourses were occupied by these small groups of people for varying lengths of time (but of typically short duration), during both the course of the seasonal round and in different years. Occupation of these camp sites was predominantly sporadic, rather than continuous.

- Occupation outside of the primary resource zones and secondary resource zones tended to involve hunting and gathering activities by small parties of men and/or women and children, along with transitory movement between locations and procurement of stone materials. However, the utilisation of these areas (for example, lower order watercourses) was far less intense than along the higher order watercourses or coast / lake / estuary margins where encampments were situated and potable water and more abundant resources present. These areas outside of the primary and secondary resource zones were probably typically exploited during the course of the normal daily round by inhabitants of encampments located in the primary or secondary resource zones, foraging within an area of up to ten kilometres radius from their campsites.
- Occupation outside of the primary and secondary resource zones also involved special purpose journeys (for example, to procure stone from a known source or to access an area for ceremonial / spiritual purposes) and non-secular activities (such as ceremonial activities).
- Thus, occupation extended over the entire tribal territory, with varying intensities and involving different activities, and occurring at different times of the year and different periods within the overall time-span of occupation.
- Occupation predominantly occurred within the past 10,000 years, after climatic change and rising sea-levels transformed the environment of the region, although occupation may have extended as far back as 40,000 years. However, few landscape contexts exist in which archaeological evidence of older occupation would be conserved.
- Activities such as food procurement (hunting, gathering and land management practices such as burning-off), food processing, food consumption, maintenance of wooden and stone tools, production of stone tools (including systematic production of types such as backed artefacts, as well as hafting of implements and casual, opportunistic production of other items on an as needed basis), production of wooden tools and other implements, procurement of stone, erection of shelters, children's play, ceremonial activity, spiritual activity, human burials and social and political activity are among the types of pursuits engaged in by the local Aboriginal people across the tribal territory.
- Activities varied in frequency and occurrence within the landscape (and between the different occupation site types), probably in relation to numerous variables such as topography, distance to resource zones, distance to water, aspect, slope and cultural choice. However, few activities are evident within the archaeological record other than those involving the use of stone, or where preservation conditions permit, other materials such as bone, shell and wood. The majority of evidence within an archaeological context will relate to the reduction of stone, but some evidence will exist of hearths, food processing, food procurement and ceremonial and other activities.
- Volcanic and metamorphic stone materials were favoured for stone working activities, with the relatively intensity of use of each material dependent upon the proximity of local sources.
- Stone was typically procured during the course of normal daily and seasonal movements, without the need for special purpose trips. The conservation of the most commonly used stone materials was not a priority. However, high quality less commonly utilised materials may have been procured from more distant sources by special purpose journeys and/or trade.

- Production of backed artefacts was time-consuming and resulted in a considerable quantity of stone debitage at localities where it was undertaken. It is speculated that the end purpose (hunting or fighting spears armed with stone barbs) must have been highly desirable and socially valuable (*cf*. Kuskie and Kamminga 2000). Hunting larger animals with spears was also a high-risk subsistence activity (in terms of invested time, energy and the price of failure), whereas most dietary requirements could be adequately met through low-risk means (ie more reliable in terms of time, energy and return). Global scale analyses have demonstrated that in lower latitudes, with longer plant-growing seasons, plants and small land fauna are prominent in the economy of hunter-gatherer people *(cf* Binford 1980, Torrence 1983), along with seafood along the coast. The investment of considerable time and energy in the production and hafting of backed artefacts to hunting and fighting spears may well have been undertaken as much in relation to the social value of these items and tasks as strictly utilitarian need (Kuskie and Kamminga 2000).
- Casual and opportunistic reduction of stone or selection of flakes to meet requirements on an 'as needed' basis was a widespread occurrence. Suitable flakes (sometimes after being retouched) were used in domestic tasks such as fashioning or repairing a wooden implement, while a higher proportion of flaked products were simply discarded at the site of their manufacture, without use.
- A low frequency of items was knapped using bipolar technology. This technology is largely, although not entirely, restricted to the reduction of quartz. It is likely that this technology was mainly employed to reduce small pebbles rather than as strategy to prolong the life-use of existing cores.
- Plant foods were processed and consumed at temporary hunter/gatherer encampments, at family base camps, and where larger groups of people congregated, as well as at the sites of procurement. A range of plant resources was available in the region. Women played a much larger role than men in obtaining and processing plant foods.
- Animal and seafoods were processed and consumed at temporary hunter / gatherer encampments, at family base camps, and where larger groups of people congregated, as well as at the sites of procurement. Men hunted for larger game and fish, while women played a key role in obtaining smaller game, fish and shellfish.

This proposed basis of a model of occupation for the study area locality has been derived from archaeological, ethnographic, ethnohistorical and anthropological information. However, as these data are generally scant and subject to biases and other constraints, the proposed model is highly inferential and speculative in nature and subject to reassessment by more detailed future investigations throughout a wide range of environmental / cultural contexts in the region.

2 Expected nature and distribution of evidence:

The nature of occupation within the study area could represent a variety of circumstances (Kuskie and Kamminga 2000), for example:

- Transitory movement.
- Ceremonial activity.
- Hunting and / or gathering (without camping).
- Camping by small hunting and/or gathering parties.
- Nuclear / extended family base camp.

- Community base camp.
- Larger congregation of groups.

The evidence could represent a single episode or multiple episodes of one or more of the above types of occupations. The episodes of occupations could have occurred at different times over the entire time-span of occupation in the region. Each episode of occupation could also have been for a different duration of time.

Unless the archaeological evidence for individual activity events is readily identifiable, it can be highly problematic to determine the types of occupation, number of episodes, and times and duration represented by evidence at a particular site. Suitable circumstances are rarely present in open sites, due to mixing of evidence by post-depositional processes and the superimpositioning of evidence caused by repeated episodes of occupation.

Listed below is a brief description of the nature of each type of occupation and the material circumstances or evidence that may relate to such occupation types within the present study area (*cf*. Kuskie and Kamminga 2000):

Transitory movement

- May occur when an individual or group of people are moving between base camps, or from a campsite to resources or a ceremonial or other special purpose site.
- Duration would be less than a day and probably less than a few hours.
- Total numbers of people would be relatively small.
- Could occur on most topographical units and classes of slope, but possibly more frequently on ridge and spur crests and along watercourses and valley flats.
- Proximity to potable water was probably not important.
- Proximity to food resources was probably not important.
- Evidence may represent accidental discard, repair of hunting or gathering equipment, children's play or knapping activity.
- Quantity and density of evidence and range of artefact and stone types are expected to be low, consistent with 'background discard', unless repeated episodes have occurred causing superimpositioning. Shell middens will not be present, despite the proximity of shellfish resources.

Ceremonial activity

- May occur when a group of people gathers at a particular location to perform a ceremony.
- Evidence may be present of ceremonial site features such as earthen rings or stone arrangements, or ochre.
- Evidence of large encampments (similar to that expected for the 'larger congregation of groups' listed below) may be present nearby, particularly in locations with an aspect towards the ceremonial site.

Hunting and / or gathering (without camping)

- May occur when an individual, or more likely a small group of closely related people, engage in hunting activities (more likely to be a party of men) or gathering activities (more likely to be women and children).

- Duration would be less than a day, with people returning to a base to sleep.
- Total numbers of people would be relatively small.
- Would be expected to occur where food resources were available, which for different foods may be a seasonal or annual occurrence.
- Proximity to potable water was probably not important.
- Evidence may represent accidental discard, loss during use, repair of hunting or gathering equipment, children's play or knapping activity.
- Quantity and density of evidence and range of artefact and stone types are expected to be low, consistent with 'background discard'. Loss or discard of specific tool types may be a useful indicator (particularly items with use-wear/residue that are not in association with evidence of their manufacture or maintenance). Repeated visits to particularly food sources may cause a build up of unrelated evidence over a period of time in a specific location. Small shell middens, representing single meal events, would be expected close to shellfish sources, with potentially a build up of temporally unrelated meal events from repeated visits over time.

Camping by small hunting and/or gathering parties

- May occur when an individual, or more likely a small group of closely related people, that are engaged in hunting activities (more likely to be a party of men) or gathering activities (more likely to involve women and children) camp overnight near the resource being procured.
- Duration would be one or several days.
- Total numbers of people would be relatively small.
- Would be expected to occur close to where food resources were available, which for different foods may be a seasonal or annual occurrence.
- Proximity to potable water probably was important, although temporary sources may have been sufficient.
- Evidence may represent accidental discard, repair of hunting or gathering equipment, children's play, stone knapping activity, food processing or temporary camp fires.
- Quantity and density of evidence and range of artefact and stone types are expected to be low to moderate, and distinguishable from 'background discard'. A reasonably broad range of artefact and stone types may be discarded (although not as diverse as expected at a base camp). Shell middens representing single or multiple meal events would be expected close to shellfish sources. Items likely to be cached for future use at a base camp, or unlikely to be carried around on a hunting or gathering journey (such as grindstones) are not expected to occur. Time-consuming activities like construction and use of ovens or heat treatment pits are also unlikely to have occurred.

Nuclear/extended family base camp

- May occur when a single nuclear family or extended family camps together.
- Duration uncertain but probably dependent on availability of food resources and potable water in the locality.
- Total numbers of people would be relatively small.
- Probably situated on level or very gently inclined ground.

- Probably situated close to potable water.
- Probably situated close to food resources (for example, the conjunction of wetlands and forest zones).
- The encampment area may consist of a several small huts, dispersed in a spatial patterning depending on the social mix of the people.
- Evidence may represent accidental discard, repair of equipment, children's play, stone knapping activity, food processing, campfires, heat treatment of silcrete and manufacturing of tools.
- Quantity and density of evidence and range of artefact and stone types discarded are expected to be high. Shell middens representing multiple meal events would be expected close to shellfish sources, including middens of larger size. Repeated visits to a camp site or stays of long duration may cause a build-up of evidence over a period of time in a specific location. Items are likely to have been cached for future use at a base camp. Specific artefact indicators include grindstones. Evidence of casual knapping and production of tools is expected to be common. The significant differences with a temporary hunter / gatherer's camp include the possible presence of features such as heat treatment pits and ovens, broader range of artefact and stone types, presence of specific artefact indicators, higher density of evidence (reflecting more activity and longer duration of use) and relatively common evidence for the production of tools.

Community base camp

- May occur when a number of nuclear families camp together.
- Duration uncertain but probably dependent on availability of food resources.
- Total numbers of people could be relatively large (30+).
- Probably situated on level or very gently inclined ground.
- Probably situated close to potable water.
- Probably situated close to food resources (for example, the conjunction of wetlands and forest zones).
- The encampment area may exceed 100 metres squared and consist of a number of individual groups and huts, dispersed in a spatial patterning depending on the social mix of the groups.
- Quantity and density of evidence and range of artefact and stone types discarded are expected to be high. Large shell middens representing multiple meal events would be expected close to shellfish sources. Spatially discrete evidence of individual camp sites would be expected (if the resulting evidence has not been affected by disturbance or superimpositioning). Items may not have been cached for future use. Specific artefact indicators include grindstones, relatively more common evidence of food processing and possibly ochre. Evidence of casual knapping and production of tools is expected to be common. However, features such as heat treatment pits may not occur.

Larger congregation of groups

- May occur in relation to special events (for example, major ceremonies) or when a particularly desirable food was most abundant.
- Probably of short duration (less than one to two weeks) but potentially for longer duration (up to several months).

- Total numbers of people could vary widely, but possibly exceed 100.
- Probably situated on level or very gently inclined ground.
- Probably situated close to potable water.
- Probably situated close to food resources.
- A large area or areas of encampments would be expected, possibly covering hundreds of square metres or more.
- Spatially discrete evidence of individual camp sites would be expected (if the resulting evidence has not been affected by disturbance or superimpositioning).
- Quantity and density of evidence and range of artefact and stone types discarded are expected to be high (similar to community base camp). Substantial shell middens representing multiple, contemporaneous meal events would be expected close to shellfish sources. Items may not have been cached for future use. Specific artefact indicators include grindstones, relatively more common evidence of food processing and possibly ochre, and possibly evidence of processing uncommon foods for which the gathering may be related. Evidence of casual knapping and production of tools is expected to be common. However, features such as heat treatment pits may not occur.

To distinguish whether single or multiple episodes of occupation occurred, several factors can be examined. Multiple episodes of occupation would tend to exhibit superimpositioning of artefact evidence (for example, a mix of unrelated stone materials and artefact types and activity areas). However, identifying which items belong to which activity events can be problematical. Also, distinguishing the effects of post-depositional disturbance from cultural superimpositioning is problematical (*cf* Koettig 1994). The analysis of distributions of stone material and artefact types is of benefit in some circumstances.

Another indicator of multiple occupation is an expectation of a relatively higher density of artefacts within a locality (combined with superimpositioning as discussed above). Larger areas of occupation may also result, when occupations only partially overlap (Camilli 1989).

Identification of different episodes of occupation over time would require *in situ* deposits with stratified or vertically separated evidence of activity events and datable material (such as charcoal or midden deposits).

Identification of the duration of individual episodes of occupation may prove very difficult. Where a single episode of occupation has occurred, a greater quantity of items, frequency of discrete activity events and size of contemporaneous shell midden deposit may be indicative of a longer stay.

Identification of the types of occupations when multiple episodes have occurred may prove highly problematical. Unless specific artefact indicators for different types of occupation are present, the superimpositioning of evidence from unrelated occupations (for example, transitory movement over a nuclear family base camp) may not be possible to determine.

In relation to the specific locations subject to the proposed sub-surface investigations, it was inferred on a preliminary basis that the primary activities represented at both the spur crest north of the Hastings River and the ridge crest north of the Wilson River would be camping by small hunting and / or gathering parties, nuclear / extended family base camps, hunting and / or gathering (without camping) and transitory movement. Both locations comprise elevated, well-drained and low gradient landform units in close proximity to subsistence resources from multiple zones (river, wetland / swamp, forest). Potable water may have been available, at least on an ephemeral basis, from small first order watercourses downslope from each crest. Both the Hastings and Wilson Rivers are saline near the study area and therefore would not have been sources of potable water. Potential constraints on the availability of potable water may be a key factor influencing the intensity of occupation, something that can be identified by the testing program. An informant during the survey indicated that both locations were likely corridors of movement for Aboriginal people (Mr Lindsay Moran, *pers. comm.*, 2007).

The bondi point on the ridge north of the Wilson River provides an initial indication that these locations may have been used at least for retooling (ie refitting of spear barbs onto spear shafts), probably by groups of males hunting in the locality, if not also for microblade and microlith manufacture (backed artefact production, in locations where the hunters may have had a vantage over their prey).

Environmental conditions have changed substantially in the locality of the study area during the time of Aboriginal occupation of eastern Australia, and with these changes may have been variations in the nature of occupation. If datable evidence from different time periods is identified, this issue may also be examined by the program of testing.