

**AN ABORIGINAL HERITAGE IMPACT ASSESSMENT
OF A PROPOSED ETHANOL PLANT UPGRADE AT
SHOALHAVEN STARCHES, BOMADERRY,
SOUTH COAST OF NEW SOUTH WALES**

A report to

Manildra Group

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EXECUTIVE SUMMARY

South East Archaeology was engaged in July 2007 by the Manildra Group to undertake an Aboriginal Heritage Impact Assessment of their proposed Ethanol Plant Upgrade at Shoalhaven Starches. The investigation area is located at Bomaderry, near Nowra, on the South Coast of New South Wales.

The proponent, Shoalhaven Starches Pty Ltd, a subsidiary of the Manildra Group, currently operates the Shoalhaven Starches Environmental Farm on a 1,000 hectare property north of the Shoalhaven River and east of the Princes Highway. The key infrastructure, the Shoalhaven Starches Factory, produces a range of products for the food, beverage, confectionary and paper industries. During manufacturing processes, liquid effluent is produced that is disposed of by spray irrigation onto grazing pastures on the Environmental Farm.

The proposed Ethanol Plant Upgrade currently under investigation includes:

- ❑ Installation of a range of additional plant within the existing Shoalhaven Starches Factory and an adjoining industrial site at Bolong Road, Bomaderry;
- ❑ Installation of a gas pipeline along Bolong Road linking the Factory with the storage ponds on the adjacent Shoalhaven Starches Environmental Farm; and
- ❑ Installation of a raw water pipeline along Bolong Road linking the Factory with the nearby Paper Mill.

A Part 3A application under the *Environmental Planning and Assessment Act 1979* has been lodged with the Department of Planning (DoP) for this project, of which this Aboriginal heritage impact assessment will form a component.

The principal aims of the heritage investigation were to identify and record any Aboriginal heritage evidence within the study area, assess the potential impacts of the proposal on this evidence, assess the significance of this evidence, and formulate recommendations for the conservation and management of this evidence, in consultation with the local Aboriginal community.

The investigation proceeded by recourse to the archaeological and environmental background of the locality, followed by a field inspection undertaken with the assistance of the registered Aboriginal stakeholders in January 2008. It follows from two earlier investigations, one by Navin in 1992 of a 72 hectare area that encompassed the eastern portion of the pipeline routes currently under investigation, and the other by Kuskie in 2002 of proposed extensions to the Starches Factory, which incorporated a portion of the area at the Factory presently under investigation.

Development may involve substantial impacts to the ground surface associated with the construction of facilities. However, much of the proposed works will occur in locations that have already been totally impacted by recent land use and have negligible heritage potential. The remainder of the area has also been subject to high impacts and in consideration of Aboriginal land use modelling, is of very low heritage potential. No Aboriginal heritage sites are listed within the study area on any heritage registers or planning instruments, although two isolated artefacts occur in the immediate vicinity of the eastern end of the pipeline routes north of the existing Paper Mill. No other cultural values were identified to the consultants by the registered Aboriginal stakeholders during the course of the assessment. In the absence of appropriate management and mitigation measures, it is concluded that the impacts of the proposal on Aboriginal heritage will be very low.

The key recommendation made on the basis of legal requirements, the results of the investigation and consultation with the Aboriginal community is that:

- Provisions relating to Aboriginal heritage should be included in an Environmental Management Plan for the project. These provisions should be formulated in consultation with the registered Aboriginal stakeholders and specify the policies and actions required to manage the potential impacts of the proposal on Aboriginal heritage after Part 3A approval is granted. The plan should include management procedures for previously unrecorded Aboriginal heritage evidence and skeletal remains (should such evidence be identified during construction), procedures for further Aboriginal consultation should such evidence be identified, and mitigation measures involving surface collection for the identified isolated artefact site APPM Isolated Find 1 should it be subject to impacts. The Plan will, subject to Part 3A project approval, guide management of any Aboriginal heritage evidence *in lieu* of a Section 90 Consent.

After implementation of these management and mitigation measures, it is concluded that the risk of residual impacts to Aboriginal heritage from the proposal will be very low.

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1. INTRODUCTION

South East Archaeology was engaged in July 2007 by the Manildra Group to undertake an Aboriginal Heritage Impact Assessment of their proposed ethanol plant upgrade at Shoalhaven Starches. The investigation area is located at Bomaderry, near Nowra, on the South Coast of New South Wales (Figures 1 and 2).

The proponent, Shoalhaven Starches Pty Ltd, a subsidiary of the Manildra Group, currently operates the Shoalhaven Starches Environmental Farm on a 1,000 hectare property north of the Shoalhaven River and east of the Princes Highway. The key infrastructure (Shoalhaven Starches Factory) is located adjacent to Bolong Road and the Shoalhaven River, immediately east of Bomaderry (Figure 1). The factory produces a range of products for the food, beverage, confectionary and paper industries. During manufacturing processes, liquid effluent is produced that is disposed of by spray irrigation onto grazing pastures on the Environmental Farm.

The proposed Ethanol Plant Upgrade currently under investigation includes:

- ❑ Installation of a range of additional plant within the existing Shoalhaven Starches Factory and an adjoining industrial site at Bolong Road, Bomaderry (Figure 2);
- ❑ Installation of a gas pipeline along Bolong Road linking the Factory with the storage ponds on the adjacent Shoalhaven Starches Environmental Farm; and
- ❑ Installation of a raw water pipeline along Bolong Road linking the Factory with the nearby Paper Mill (Figure 2).

A Part 3A application under the *Environmental Planning and Assessment Act 1979* has been lodged with the Department of Planning (DoP) for this project, of which this Aboriginal heritage impact assessment will form a component. The key Environmental Assessment requirement of the Department of Planning (DoP) in relation to Aboriginal heritage is to "assess both Aboriginal and non-Aboriginal heritage impacts".

The principal aims of the Aboriginal heritage impact assessment are therefore to:

- ❑ Undertake research, register searches and an archaeological survey and consultation with the Aboriginal community to identify and record any Aboriginal heritage evidence, areas of potential evidence and cultural values within the study area;
- ❑ Assess the potential impacts of the proposal upon any identified or potential Aboriginal heritage evidence or cultural values;
- ❑ Assess the significance of any Aboriginal heritage evidence or cultural values identified;
- ❑ Provide details of any Aboriginal heritage evidence in accordance with Department of Environment and Climate Change (NSW) (DECC) requirements;
- ❑ Consult with the local Aboriginal community as per the DECC policy entitled *Interim Community Consultation Requirements for Applicants*;
- ❑ Present recommendations for the management of any identified Aboriginal heritage evidence, potential heritage resources or cultural values; and
- ❑ Prepare a formal archaeological report to meet the requirements of DECC and DoP.

The heritage investigation has proceeded by recourse to the archaeological and environmental background of the locality, followed by a field inspection undertaken with the assistance of representatives of the registered Aboriginal stakeholders. This investigation has been undertaken by an archaeologist (Peter Kuskie) with appropriate qualifications and experience in Aboriginal heritage, in accordance with the DoP and DECC requirements and guidelines.

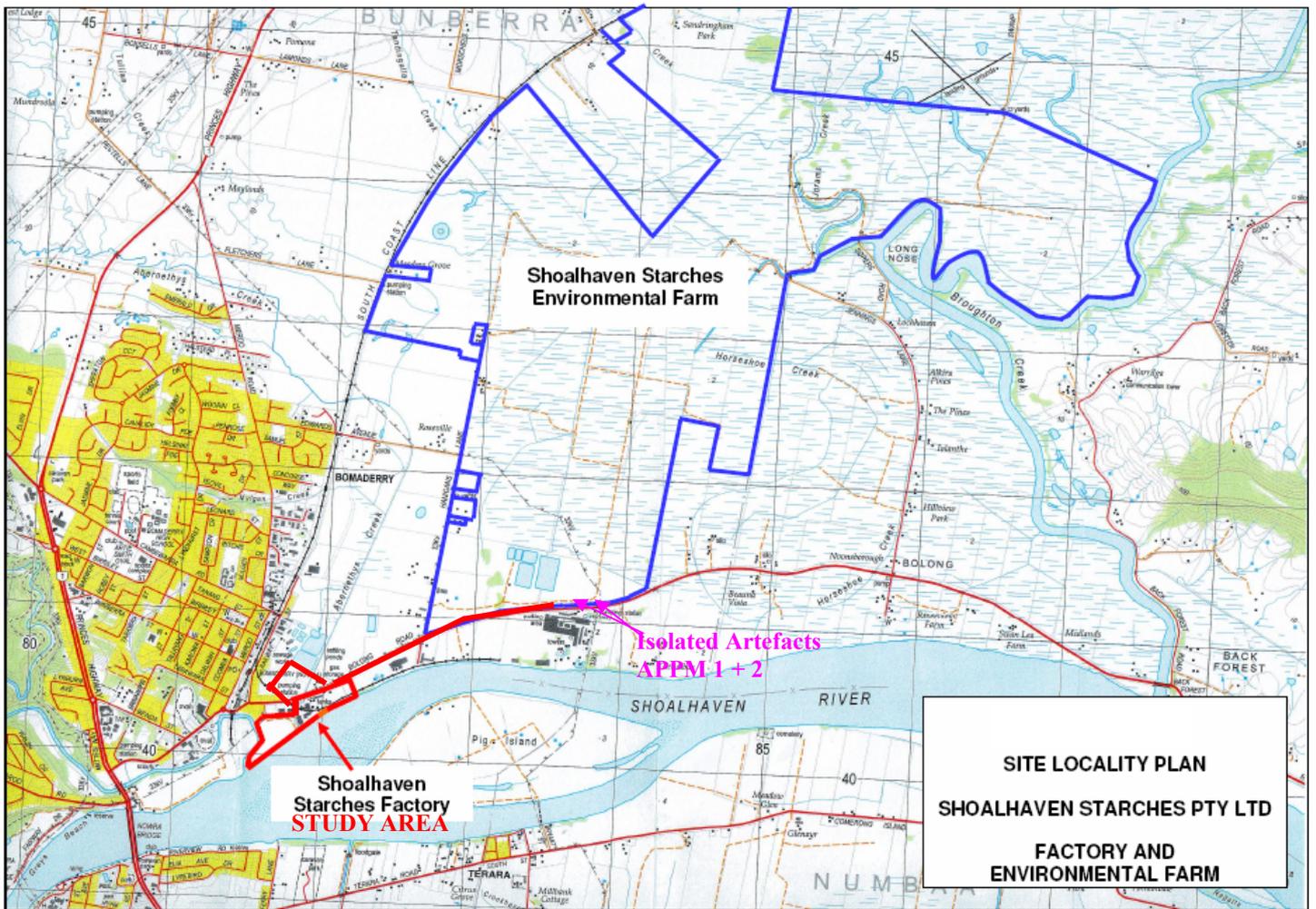
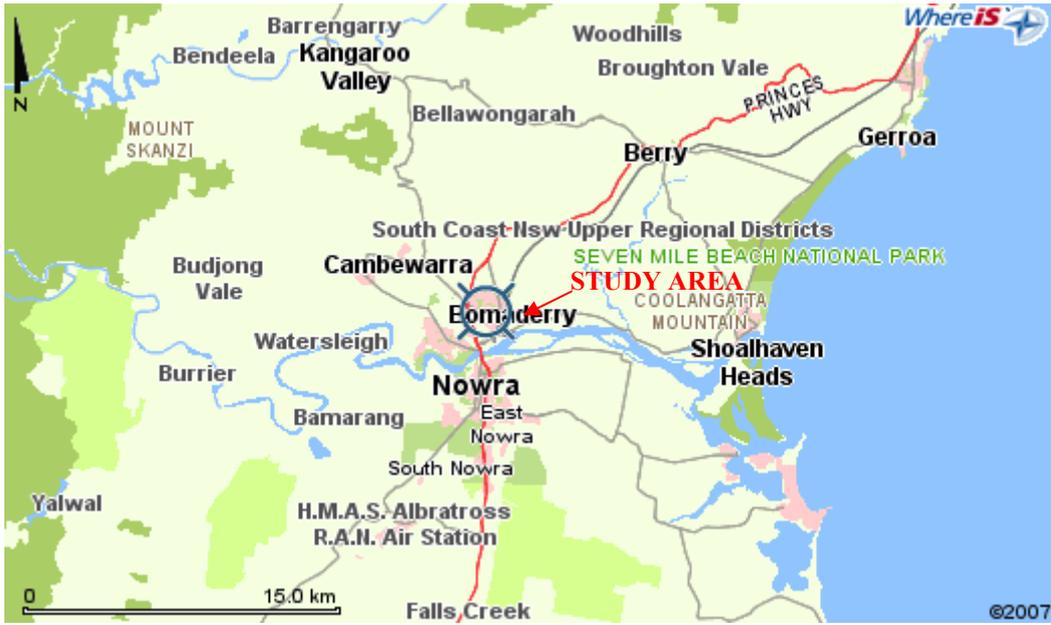


Figure 1: Location of Study Area and Relevant Previously Recorded Aboriginal Sites (Berry 9028-3N 1:25,000 topographic map, reduced; Aboriginal site data from DECC).

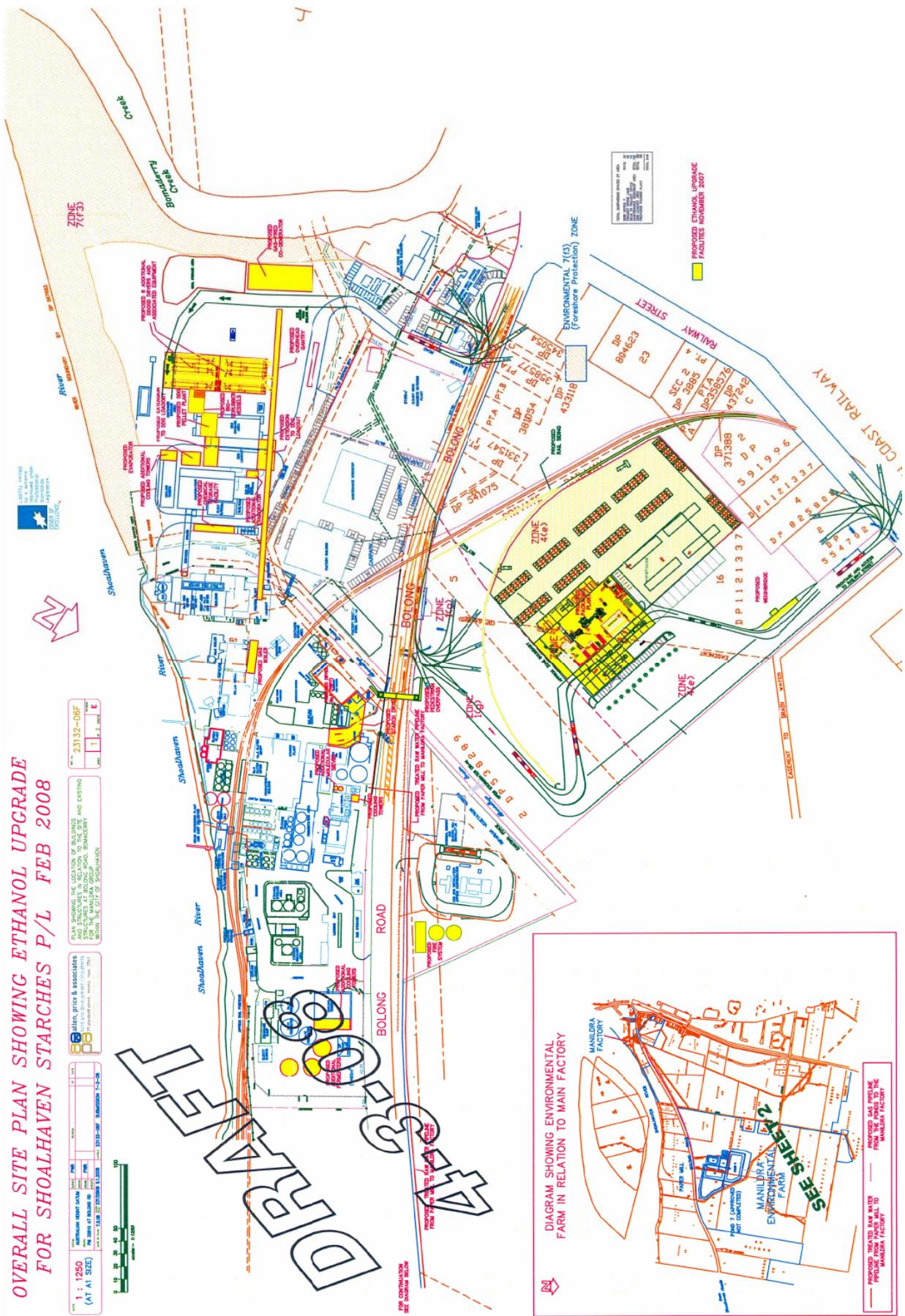


Figure 2: Plan of Proposed Upgrade (courtesy Cowman Stoddart).

2. ENVIRONMENTAL CONTEXT

The locations of the various components of the upgrade are marked on Figure 2. Most of the proposed facilities are located within the existing Shoalhaven Starches Factory on the southern side of Bolong Road and immediately north of the Shoalhaven River (Plates 1-3). Other facilities such as a packaging plant, fire system and ancillary works such as a rail siding, are to be located on industrial land on the northern side of Bolong Road and east of Railway Street (Plate 4). Minor impacts will also occur where a water pipeline is to be installed alongside Bolong Road, east from the Starches Factory to the storage ponds on the adjacent Shoalhaven Starches Environmental Farm. A gas pipeline will also be installed along this route to link the Starches Factory with the Paper Mill opposite the storage ponds (refer to Figures 1 and 2; Plates 5 and 6). Both pipeline routes extend over a distance of about 1.5 kilometres.

The study area is located in the coastal lowlands of the South Coast, on the extensive floodplain of the Shoalhaven River. The topographical context comprises the level/very gentle to gently inclined levee and flats of the Shoalhaven River. Soil deposits comprise recent alluvial soils over clay at depth (Quaternary alluvium). The study area is low-lying, poorly drained and often subject to standing water.

The study area has largely been impacted by the construction of existing facilities, including extensive earthmoving works, deposition of fill and buildings (Plates 1-3). These areas have negligible potential for any Aboriginal heritage evidence. The remaining parts of the study area, particularly the industrial land north of Bolong Road and the verges of Bolong Road, are vegetated by introduced grasses but have also been highly impacted by earthmoving works, road construction, drainage works and essential services (pipelines, telecommunications cables and electricity) (Plates 4-6). The locality has also previously been used for pastoral and agricultural purposes, including crops of beans and peas (Lena Bloxsome, *pers. comm.* 2002).

Originally, a closed forest (eg. rainforest) may have been present, at least close to the Shoalhaven River. Alexander Berry noted in 1822 "rich forest flats on the north shore (of the Shoalhaven River) abreast of the Island" (Pig Island) (Antill 1982:8). In poorly drained, swampy areas wetland or meadow vegetation may also have been present.

The upper soil horizon of the study area, in which Aboriginal deposits were most likely to have existed, has been considerably affected by recent land use practices. In many parts of the study area it has been totally removed or impacted in such a manner that there is negligible potential for any Aboriginal heritage evidence to exist. Elsewhere, in areas where soil has been retained, the dense cover of grass substantially limits surface visibility and the ability to identify unobtrusive evidence of Aboriginal occupation (eg. stone artefacts). However, the high levels of recent land use impacts in these areas has also reduced the potential for virtually all forms of Aboriginal heritage evidence to negligible.

3. ARCHAEOLOGICAL CONTEXT

3.1 Heritage Register Searches

A search (#19813) was undertaken in August 2007 of the DECC Aboriginal Heritage Information Management System (AHIMS), between AMG grid coordinates 277000-288000 east and 6139000-6146000 north. A total of 28 Aboriginal sites are listed on the DECC register within this area of 77 square kilometres, which encompasses the present study area. The sites identified in the broader search area include artefact scatters, isolated artefacts, rock shelters with deposit and/or art, and grinding grooves. Two isolated artefacts occur in the vicinity of the Shoalhaven Paper Mill on Bolong Road, within close proximity of the present study area. These artefacts (DECC #52-5-288, 52-5-289 and 52-5-290) were recorded by Navin (1992).

No Aboriginal heritage sites are listed within the study area on other heritage registers or planning instruments, including the *Shoalhaven Local Environmental Plan 1985 (as amended)*, State Heritage Register, or other registers under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, the *Environment Protection and Biodiversity Conservation Act 1999* or the *Australian Heritage Council Act 2003* such as the Register of the National Estate, Commonwealth Heritage List and National Heritage List.

3.2 Previous Archaeological Research

A number of archaeological surveys and excavations have been undertaken in the region for commercial contracting purposes and for academic research. Discussion of the most relevant investigations will highlight the range of site types and variety of site contents in the locality and broader region, identify typical site locations, assist with the construction of a predictive model of site location for the study area, and present a context for the discussion of survey results. Two investigations have previously encompassed portions of the present study area (Kuskie 2002 and Navin 1992).

South East Archaeology was commissioned in 2002 by Cowman Stoddart, on behalf of the Manildra Group, to undertake an Aboriginal heritage assessment within areas to be affected by proposed extensions to the Shoalhaven Starches Environmental Farm. The areas subject to assessment comprised a proposed employee car park and evaporation plant and other facilities adjacent to the existing Starches Factory, and an extension to an irrigation area on land located approximately 3.5 kilometres to the northeast. The study area encompassed a portion of the area at the Starches Factory presently under investigation (Plates 1 and 3).

The assessment (Kuskie 2002) involved a field survey undertaken on 18 November 2002 with the assistance of the Nowra Local Aboriginal Land Council (LALC) and Shoalhaven Aboriginal Elders. No Aboriginal heritage evidence was identified within the study area during the investigation or had previously been reported there. The primary reasons for the absence of evidence were assessed to include the genuinely low Aboriginal utilisation of the study area and impacts from recent non-indigenous land-use practices (Kuskie 2002). It was concluded that there remains a very low potential for Aboriginal heritage evidence to occur within the study area, particularly evidence that may be *in situ* or of scientific significance (Kuskie 2002).

Navin (1992) surveyed proposed extensions to the Associated Pulp and Paper Mill's (APPM) Shoalhaven Paper Mill. The 72 hectare area is located on the northern side of the Shoalhaven River, near Pig (Burruga) Island, about 1.5 kilometres east of Shoalhaven Starches and where the proposed water pipeline currently under investigation terminates (Plate 5). The investigation area included 22.5 hectares adjacent to the APPM paper plant for APPM's extensions and 50 hectares immediately north of Bolong Road where the Manildra Group proposed to establish a waste water treatment plant and ponds. Several of these ponds have since been constructed and one is presently under construction.

Navin (1992) identified two isolated artefacts, a ground edge hatchet (APPM Isolated Find 1, DECC #52-5-288 and 52-5-289) and a broken alluvial pebble (APPM Isolated Find 2, DECC #52-5-290) (Figure 1). The hatchet was identified within the wall of an artificial drainage channel on the northern side of Bolong Road, 0.3 metres below the present surface. Navin (1992) concluded that the item was not *in situ*. The hatchet was made from a fine-grained volcanic alluvial pebble, by bifacial grinding and minor unifacial flaking. The broken alluvial pebble was also located within a drainage channel on the northern side of Bolong Road and comprised a similar stone material. Navin (1992) interpreted this evidence as accurately reflecting the generally low archaeological sensitivity of the locality, with the possible use of the elevated river banks (levee) as an access corridor.

Several other surveys undertaken in low-lying terrain on the coastal plain east of Nowra have not resulted in the identification of any evidence of Aboriginal occupation. Kuskie (1995) surveyed a 26 hectare property bordering Worrigeer Swamp at East Nowra, 3.5 kilometres south of the present study area, and Paton (1990) surveyed a 90 hectare proposed residential subdivision in the same locality. No evidence was identified in either investigation. Kuskie (1995) concluded that the result was probably attributable to a genuinely low intensity of Aboriginal use of the locality and/or impacts caused by recent land-use practices. Corkill (1986) however, located a small artefact scatter and an isolated artefact around the margins of Brundee Swamp, south of the Shoalhaven River. Corkill (1986) proposed that sites in the coastal plain are likely to be located close to remnant landscape features (such as wetlands) associated with Holocene embayment infill.

Kuskie and Ingram (2007) investigated the proposed Wondalga Sporting Facilities, a 25 hectare area situated adjacent to existing playing fields at Lyrebird Park, East Nowra. No Aboriginal heritage sites were identified during the investigation. Although the area was densely covered with pasture grass, which lowers surface visibility and limits the potential to identify evidence of Aboriginal occupation (particularly shell middens and stone artefacts), and levels of ground disturbance were high (potentially obscuring or removing any evidence), Kuskie (2007) concluded that the primary factor in the absence of items was the geomorphological history of the area. For virtually the entire Holocene period (last 10,000 years) the area had been inundated with water and had therefore not been conducive to Aboriginal occupation. Kuskie (2007) inferred that the only Aboriginal use of the area was likely to have involved exploitation of subsistence resources, initially from an estuarine environment and later in the Holocene period from brackish swamps, for which negligible evidence would remain.

Kuskie (1998) surveyed Lot 3 DP 596879, George Street, Berry, which is partially similar in environmental context to the current study area. One isolated artefact was identified within the 36 hectare property. Conditions of surface visibility were very low, due to a dense cover of pasture grass. Levels of ground disturbance were relatively high, a result of vegetation removal, the establishment and maintenance of pasture grasses, grazing and horse agistment.

ERM Mitchell McCotter (1998) surveyed the proposed Princes Highway Bypass at Berry, a route deviating marginally to the north of the existing urban area. No evidence was located, a result attributed to the very low conditions of surface visibility. Also in Berry, Paton (1999) concluded from a predictive study of three sewage pump stations within the urban area that there was very limited potential for heritage evidence to occur.

Paton (1994) investigated the Shoalhaven Water Supply Augmentation Scheme, including a proposed pipeline from Berry to the 'Glenmore' property, near Jaspers Brush Road, along with a new service reservoir at Berry. Paton (1994) considered that the pipeline route traversed landform units of very low archaeological potential, apart from several watercourse crossings. No sites were located, a result attributed to the low archaeological potential and extent of ground disturbance (Paton 1994).

West of the present study area, several studies have been conducted in the Nowra - Bomaderry locality. Williams and Barber (1993, 1995) investigated the route of Optus Communications' Sydney-Melbourne fibre optic cable. At Tapitallee Creek, North Nowra, Barber and Williams (1995) undertook sub-surface testing in an area identified as being of archaeological potential. Thirty-seven test units measuring around 0.3 x 0.3 metres in area were excavated, resulting in the recovery of two minor artefact deposits. Kuskie, Navin and Officer (1995) surveyed the route of the Eastern Gas Pipeline in this locality, recording a small artefact scatter on a low spur crest near Connolly's Creek (Kuskie *et al* 1995).

On more elevated terrain between North Nowra and Bomaderry, several kilometres west of the present study area, Navin (1991) located two rock shelters with deposit during an investigation of options for the Nowra-Bomaderry Creek link road. Lampert (1971a) excavated a rockshelter on Bomaderry Creek, revealing a shallow occupation deposit, mostly containing a low density of artefacts. In the Nowra Sandstone of the Shoalhaven region, numerous rock shelters with deposit and/or art have been recorded. Bindon (1976) and Officer (1991) have conducted extensive research into the rock art of the region.

Twelve kilometres northeast of the study area lies Moeyan Hill. A *bunan* ceremonial ground (DECC #52-5-135) is located on the hill and was initially recorded by R. H. Mathews (1896). Mathews (1896) described it as the initiation ground for the 'Shoalhaven River tribes' and that it was associated with carved trees and 'ground drawings'. A rock shelter site (#52-5-192), grinding grooves (#52-5-191) and the ceremonial ground around Moeyan Hill were re-investigated by Bell and Corkill. Navin and Officer (2000) investigated a proposed cabin development at the Woodside Park dairy farm, on the northern side of Moeyan Hill. A small, low-density artefact scatter was located on the upper slopes and crest of a spur-line (Navin Officer Heritage Consultants 2000).

On the coastal plain northeast of the current study area, studies have been undertaken by Colley (1988), Lance (1989), Paton and others of sand extraction operations near Gerroa. This locality has abundant and diverse subsistence resources, being situated at the northern margin of Seven Mile Beach, adjacent to Crooked River, the rocky headlands of Black Head, freshwater creeks and wetlands. Hence it contrasts significantly to the present study area. A number of shell middens and artefact scatters have been located in the Gerroa sand extraction area (*cf.* Lance 1989).

Clarke and Kuskie (2006) undertook the fourth stage of the *Lower Shoalhaven River Valley Aboriginal Heritage and Cultural Mapping Project* for DECC. Clarke and Kuskie (2006) developed a spatial model, using key environmental variables to predict Aboriginal site occurrence as a cultural thematic layer, for planning purposes. The model was tested on public land in consultation with the Aboriginal community, resulting in the recording of additional eight artefact scatters and four rock shelters with artefacts around Nowra. Clarke and Kuskie (2006) also provided recommendations for further targeted archaeological surveys and, following the field assessment, the predictive model was refined. Further community consultation and field inspection was undertaken in 2007 (Clarke 2007).

Following the research of Boot (2002, refer below), Clarke and Kuskie (2006) identified two main resource zones in the Shoalhaven region and presented a predictive model for the region:

- Primary resource zones were defined in terrain units in close proximity to the major Shoalhaven and Crookhaven Rivers. These zones have a higher probability of containing evidence for a wide range of occupation types, including congregations of large groups of people, community base camps, nuclear/extended family base camps, camping by small hunting and/or gathering parties, hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been regular and potentially longer in duration in the primary zones;
- Secondary resource zones were defined in terrain units in close proximity to higher order creeks and/or wetlands and their associated flats, slopes and terraces. These secondary zones have a high probability of containing evidence of nuclear/extended family base camps, camping by small hunting and/or gathering parties, hunting and/or gathering (without camping) and transitory movement. Occupation is likely to have been sporadic and relatively short in duration in the secondary zones;
- Areas outside the primary and secondary resource zones included terrain units distant from higher order creeks and/or wetlands, such as lower order drainage depressions and associated slopes and crests. Occupation in these areas is likely to have involved hunting and/or gathering (without camping) and transitory movement and is likely to have been sporadic and very short in duration;
- A variety of Aboriginal heritage site types occur in the Shoalhaven region. Artefact scatters are likely to be the most common site type in the area. There remains potential for stone artefact evidence to occur across virtually the entire region, albeit typically in a low density consistent with background discard, interspersed by occasional areas of higher density in which localised activity areas have occurred;
- Grinding grooves and rock shelters occur relatively frequently in the region. Rock shelters are more likely to occur in moderate to steep drainage depression or spur crest units, although can also occur in gently sloping terrain where suitable stone outcrops occur. Larger rock shelters in close proximity to a wide variety of resources may well have served as base camps, with smaller shelters being utilised on an 'as needed' basis during the course of the normal daily or seasonal round. Art sites may occur in any area with suitable surfaces and may comprise several forms, including paintings, drawings, pecked engravings and stencils; and
- Grinding grooves sites may occur in any area with suitable relatively homogenous stone outcrops (such as sandstone), generally with a relatively close water source. Numerous sandstone outcrops and open surface exposures of bedrock suitable for grinding are located within the region (Clarke & Kuskie 2006).

Lampert (1971b), after excavating a rock shelter on Burrill Lake, established that occupation on the South Coast commenced at least 20,000 years ago. A site excavated at Bass Point yielded a similar date of 17,000 BP (Flood 1980). Boot (1994) has excavated ten sites in the hinterland ranges. Bulee Brook 2 (#58-1-378), near Sassafras, yielded a date of 18,810±160 BP, which replaces Flood's (1980) 3,770±150 BP date at Sassafras 1 as the oldest evidence for occupation in the coastal ranges. These results indicate that from at least 20,000 years ago Aboriginal people were exploiting the coastal zone and from 18,000 years ago the coastal ranges.

3.3 Synthesis

The nature of Aboriginal occupation on the South Coast has been a matter of considerable academic debate (*cf.* Boot 1994:320-321). Until recently, researchers have identified higher site densities in the coastal zone than in the coastal hinterland.

Several models have been forwarded to account for this pattern of recorded site distribution (Boot 1994:320-321). Bowdler (1970) argued that occupation of the coast during summer was intensive, with some exploitation of the hinterland when coastal resources were less abundant. Lampert (1971a) proposed a mixed economic regime on the coast, involving exploitation of littoral, estuarine and land resources, but with a greater emphasis on the littoral component.

Poiner (1976) produced a model of occupation based on a strict seasonal regime: abundant coastal resources were exploited during summer, and the coastline and hinterland were both exploited during winter when resources were far less abundant. Flood (1980) argued that the hinterland was only used when coastal resources were in short supply during the winter season.

Attenbrow (1976) proposed a model in which the coast and hinterland were occupied all year round and that movement between the two zones occurred at the family or small group level, rather than at the large population level suggested by Poiner (1976). Attenbrow's model incorporates a higher proportion of terrestrial animal foods in the diet during winter. Hinterland river valleys and highland areas would have been occupied during summer. In winter, the population distribution would have been widespread, based on family groups.

Moving away from the seasonal model of exploitation, Vallance (1983) argued that a range of subsistence strategies would have existed, that varied both within and between seasons and even from year to year. Following Vallance's model, Boot (1994) suggested that if this were the case, larger archaeological sites could be expected in areas where large quantities of food were available on a single occasion or on a regular basis, and smaller sites would be the result of short term occupation during movement between such locations.

Surveys by Byrne (1983, 1984) of forests within the hinterland, began to reveal evidence challenging models of occupation focused primarily on the coastline. While the highest site densities were still identified near the coast, high densities were also found in the hinterland 13-18 kilometres from the coastline. Byrne (1983) found there was an absence of sites 3-10 kilometres from the coastline in the Five Forests study. Several researchers developed theories to account for this apparent paucity of evidence. Walkington (1987) suggested campsites were focused along the coastline and this section of the hinterland (3-10 kilometres distance) was only exploited on daily return journeys. Distances further than 10 kilometres inland would have required overnight camps in the hinterland (Walkington 1987).

More recently, surveys focused on the hinterland zone north of Batemans Bay, by Australian National University PhD scholar Philip Boot, have revealed a vastly different body of evidence (*cf.* Knight 1996, Boot 2002). Thousands of sites have been located within the hinterland areas, dramatically changing the pattern of recorded site distribution. It is apparent that the intensity of utilisation of the coastal hinterland is far greater than previously believed and previous researchers may have inadequately accounted for the coastal bias of earlier surveys (Boot 1994, 2002). The research of Boot (2002, refer below) has demonstrated that the currently available evidence does not lend support to many of the models listed above, with the exception of Vallance (1983). Boot's (2002) research has suggested that Aboriginal occupation tends to be more focused in areas of higher biodiversity and along the boundary or in close proximity to multiple resource zones.

Boot (2002) undertook extensive research into the hinterland of the South Coast of NSW. Using a variety of resources, including previous archaeological study results, ethnographic records, theoretical modelling, surface surveys and sub-surface excavations, Boot (2002:319-326) proposed a synthesis of South Coast hinterland occupation. The salient issues identified by Boot (2002) include:

- ❑ When Aboriginal people arrived in the area prior to 20,000 years ago, the (then) coastline may have been a marginal area in terms of the types of resources available. The coast may have been over 20 kilometres east of its present location and dominated by low-lying mud flats and a narrow range of estuarine resources (Boot 2002:321). The harsh Pleistocene environment may also have made occupation of inland rockshelter sites for longer periods of time favourable, with a greater range of resources available within the (then) hinterland;
- ❑ Between 17,000 and 11,000 years ago the intensity of occupation of the area was largely reduced and is associated with decreased rainfall, temperature and sea levels (Boot 2002:321). Fluctuations within this trend occurred (eg. occasional increases in occupation intensity) although this is attributed to higher rainfall episodes temporarily changing the hinterland forest environment;
- ❑ In the early part of the Holocene, the intensity of the (then) hinterland occupation was relatively low, with increased precipitation levels, rising sea levels and increased temperatures (Boot 2002:322). Coastal occupation may have increased with new littoral resources emerging; and
- ❑ By the mid-Holocene, with stabilising sea levels, reduced rainfall and warm and stable temperatures, significantly increased and widespread use of both the coastal and hinterland areas occurred. A range of complex environments developed in the hinterland, including open forests and woodlands with high biodiversity (Boot 2002:323). Small group mobility may have become lower, with the increase in resources available and exploitation of the hinterland by these groups for most of the year. However, congregations of much larger groups during warmer months also occurred. Camping sites for small extended family groups tended to be on open ridges and areas adjacent to creeks, rivers and swamps, especially in open woodlands and forests. Duration of local episodes of occupation is expected to have been less than a week, before people moved on to the next suitable area (Boot 2002:325).

Boot (2002:317-319) offers four new models of South Coast hinterland occupation in terms of temporal trends, subsistence strategies and intensity of site use, along with the types of evidence expected to occur and its locations:

1. Pleistocene occupation:

Identifiable Pleistocene hinterland sites were expected to be in large rockshelters in close proximity to potable water. The sites would contain a variety of evidence, potentially increasing in occupational evidence towards the terminal Pleistocene. Evidence would include a range of artefacts, including large silcrete and volcanic cores, along with small implements. Hinterland occupation during the Pleistocene was extensive and evidence of Pleistocene near-coastal occupation is expected to be rare.

2. Holocene occupation:

Occupation during the Holocene differed somewhat, with less preference for particular habitation sites or seasonal exploitation, although types of preferred locations included flat open areas within river valley woodlands and dry open forests, broad ridges in well watered open forest, tall damp forests adjacent to rainforests and well drained elevated ground above wetlands and swamps. Occupation is expected to have occurred within all topographic contexts, although the intensity of occupation is expected to be lower during the early Holocene than in the late-Pleistocene or late Holocene. The increase of hinterland use during the mid-Holocene is underpinned by favourable changes in the environment leading to an increase in the diversity of resources available.

3. Patterns of resource exploitation:

Subsistence strategies would be reflected by patterns of resource exploitation within a few kilometres of habitation sites and the diversity of evidence at each site would reflect the diversity of resources in the surrounding environment. Small groups of people or family groups travelling in the hinterland are expected to have exploited resources from the immediate surrounds of a site and rarely exported these resources elsewhere. Larger groups of people congregated where abundant short term resources occurred, and subsequently, greater intensity of occupation occurred where these abundant short term resources occurred more frequently. These locations are likely to be in regions of greater biodiversity and may coincide with sacred landscape elements. The range of stone implement types is expected to be narrow, but diverse in potential uses.

4. Changes in intensity of site occupation:

The intensity of site occupation is underpinned by the favourability of an environment to provide reliable, exploitable resources. As locations changed in terms of sustainability, locations more amenable to exploitation were substituted. Higher diversity areas of the hinterland meant that the distance between suitable locations may have been relatively low. Cultural memory of abandonment may have been relatively brief and some locations are expected to have been abandoned for extensive periods of time, while others may have experienced relatively brief hiatuses between occupational episodes.

Boot (2002: 326) has suggested that further archaeological work in the South Coast hinterland is needed in order to test these models and more fully understand occupational use of the region. This work could be in the form of more detailed surveys, functional technological analyses of implements from both open artefact scatters and sub-surface deposits, excavation of open sites and rockshelter sites, mapping of stone material distributions and more detailed and localised environmental reconstruction. Notwithstanding arguments largely underpinned by material culture, environmental factors and resource variation, Boot (2002:334) observes that *“the economy was secondary to the sacred and that, ultimately, the primary purpose of economic life was to sustain the sacred worlds of the Yuin”*. Significantly, Boot (2002:vii) notes that the descendants of the original inhabitants of the region retain strong attachments to the hinterland’s unique cultural heritage.

3.4 Local Aboriginal Culture

The study area lies close to the boundary of the Wodi Wodi and the Wandandian people (Tindale 1974). Tindale (1974) describes the territory of the Wodi Wodi as extending from north of the Shoalhaven River at Nowra to Wollongong and inland to Moss Vale. The Wodi Wodi people spoke the Dharawal language (Eades 1976). The Wandandian people are described as extending from the Lower Shoalhaven to the Ulladulla area, and inland to the Shoalhaven River north of Braidwood.

Boot (1994) has undertaken a wide-ranging study of ethnohistorical observations relating to the south coast region, based on original archival sources. Boot (1994) lists the following faunal and floral species which have been recorded in the ethnohistorical sources as having been utilised: fish species including bream, trumpeter, whiting, salmon and shark, eel, whales, seals, marine worms, shellfish including oysters and mussels, possum, kangaroo, wombat, birds, goanna, grubs, honey, kangaroo apple, native cranberry, honeysuckle, pigface, macrozamia, cabbage tree, fruit and yams. Observations of use of these food sources were made within ten kilometres of the coast (Boot 1994).

The material culture of the local Aboriginal population would have included a range of items related to subsistence, cultural and social activities and shelter. Ethnohistorical observations along the coast have been made of the following items: huts, gunyahs, canoes, spears, shell-barbed spears, fishing spears, bark/wood shields, waddy/clubs, spear throwers, boomerangs, hatchets, fish-traps, stone heat retainers, kangaroo teeth adornments, pierced nose adornments, bark drawings, possum skin cloaks, shell fish hooks and grass tree resin (Boot 1994). In the archaeological record few of these items survive. Stone, bone and shell are the materials most frequently represented in archaeological sites.

The Shoalhaven region was frequented by non-Aboriginal people from 1770, following its sighting by Captain Cook. Cane (1988) characterises the period between 1810 and 1840 as one of exploitation and hostility. This occurred in relation to the early cedar-getting and land acquisition. By the 1840s the Aboriginal population had been reduced to small remnant groups along the coast or subsisting around the fringes of the now permanent non-Aboriginal settlements. Coolangatta Estate was one of these settlements. Later there were a number of substantial Aboriginal camps or reserves in the region, including ones at Orient Point, Wreck Bay, Currumbene Creek and Ulladulla.

Between 1840 and 1900, there is limited historical documentation of the Aboriginal people of the region (Cane 1988:30). Through disease and disintegration of their traditional social structure, the population rapidly declined. In three census returns of the entire Shoalhaven District in 1834, 1838 and 1839, the total Aboriginal population was recorded as 170, 242 and 180 respectively (Berry 1834, 1838:608, 1839).

A number of Aboriginal people had lived at Alexander Berry's Coolangatta Estate from the earliest non-indigenous settlement in the area right up until its break-up in 1889. During this time the managers cared for them in various ways. However, after the Estate's break-up, the local Aboriginal people were relocated to Roseby Park under the 'care' of the Aborigines Protection Board.

A large and vibrant Aboriginal population remains on the South Coast and in the Nowra region today, which is actively involved in the identification and management of their heritage.

3.5 Predictive Model of Site Location

A predictive model of site location is constructed to identify areas of high archaeological sensitivity (ie. locations where there is a high probability of archaeological evidence occurring), so it can be used as a basis for the planning and management of Aboriginal heritage. Predictive modelling involves reviewing existing literature to determine basic patterns of site distribution. These patterns are then modified according to the specific environment of the study area to form a predictive model of site location. A sampling strategy is employed to test the predictive model and the results of the survey used to confirm, refute or modify aspects of the model.

The use of land systems and environmental factors in predictive modelling is based upon the assumption they provided distinctive sets of constraints that influenced Aboriginal land use patterns. Following from this is the expectation that land use patterns may differ between each zone, because of differing environmental constraints, and that this may result in the physical manifestation of different spatial distributions and forms of archaeological remains (Hall & Lomax 1993:26).

The predictive model is based on information from the following sources:

- ❑ Identification of land systems and landform units;
- ❑ Previous archaeological surveys conducted within the region;
- ❑ Distribution of recorded sites and known site density;
- ❑ Traditional Aboriginal land use patterns; and
- ❑ Known importance of any parts of the study area to the local Aboriginal community.

In certain circumstances, such as where low surface visibility or recent sediment deposition precludes effective assessment of the potential archaeological resource, sub-surface testing may be a viable alternative for further testing the model and assessing the study area.

The following is a brief description of the site types that may occur within the Shoalhaven Starches study area:

ARTEFACT SCATTERS: In most archaeological contexts, an artefact scatter has been defined as either the presence of two or more stone artefacts within 50 or 100 metres of each other, or a concentration of artefacts at a higher density than surrounding low density 'background scatter'. The definition of an artefact scatter 'site' is often an arbitrary one, which offers benefits for planners and cultural resource managers, but is a source of various theoretical/analytical problems for archaeologists. Due to the nature of the underlying evidence, its identification only within exposures created by erosion or disturbance, and the limited suitability of existing definitions, artefact scatter sites are defined within this study as the presence of one or more stone artefacts within a *survey area* (cf. Kuskie 2000). The boundaries of the site are defined by the boundaries of the visible extent of evidence. However, a potential resource exists within the same survey area that may involve similar evidence. The survey areas are based on discrete, repeated environmental contexts termed *archaeological terrain units* (eg. a particular combination of landform unit and class of slope).

An artefact scatter may consist of surface material only, which has been deflated by erosion, or it more typically involves a sub-surface deposit of varying depth. Other features may be present within artefact scatter sites, including hearths or stone-lined fireplaces, and heat treatment pits.

Artefact scatters may represent the evidence of:

- ❑ Camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of stone or wooden tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;
- ❑ Hunting or gathering events;
- ❑ Other events spatially separated from a camp site (eg. tool production or maintenance); or
- ❑ Transitory movement through the landscape.

The detection of artefact scatters depends upon conditions of surface visibility and ground disturbance and whether recent sediment deposition has occurred (*cf.* Dean-Jones and Mitchell 1993). Vegetation cover and deposition of sediments generally obscures artefact scatter sites and prevents their detection during surface surveys. High levels of ground disturbance can also obscure or remove evidence of a site. Within the study area, artefact evidence has a low potential to occur along the levee of the Shoalhaven River and on the flats/floodplain. Two isolated artefacts have been recorded nearby.

BORA (*BUNAN*) GROUNDS/CEREMONIAL SITES: Bora (*bunan*) grounds are a type of ceremonial site associated with initiation (*bunan*) ceremonies. They are usually made of two circular depressions in the earth, sometimes edged with stone. Bora (*bunan*) grounds generally occur on soft sediments in river valleys, although occasionally they are located on high, rocky ground where they may be associated with stone arrangements.

Although a site is recorded at Moeyan Hill, there is negligible potential for this site type within the study area, due to the extent of impacts from recent land use practices.

BURIALS: Human remains tended to be placed in hollow trees, caves or sand deposits. Usually burials are only identified when eroding out of sand dunes or creek banks, or when disturbed by development. The probability of detecting burials during fieldwork is extremely low. Aboriginal communities are strongly opposed to the disturbance of burial sites.

The potential for burials to occur within the present study area is assessed as very low, but cannot be discounted.

GRINDING GROOVES: Elongated narrow depressions in soft rocks (particularly sandstone), generally associated with watercourses. The depressions are created by the shaping and sharpening of ground-edge axes.

Grinding grooves have potential to occur where sandstone bedrock is exposed in watercourses or rock shelters. Within the present study area, this potential is assessed as negligible.

LITHIC QUARRIES: A lithic quarry is the location of an exploited stone source (Hiscock and Mitchell 1993:32).

Sites will only be located where exposures of a stone type suitable for use in artefact manufacture occurs. This potential is assessed as negligible for the current study area.

MIDDENS: Shell middens are a common site type in the coastal region. Middens are deposits of shell, the remains of what formed part of the Aboriginal diet. Middens may also include stone, bone or shell artefacts, charcoal, or the remains of small terrestrial or aquatic fauna, which were also a part of the diet. Middens exhibit wide variation in terms of their size, preservation and contents, and can provide significant information on land-use patterns, diet, chronology of occupation and environmental conditions.

The study area is located adjacent to the estuarine Shoalhaven River, a source of fish and estuarine shellfish. However, the probability for midden sites to occur within the study area is assessed as very low, due to the extent of recent land use impacts.

MYTHOLOGICAL/TRADITIONAL SITES: Mythological sites, or sites of traditional significance to Aboriginal people, may occur in any location. Often natural landscape features are the locations of mythological sites. Other sites of contemporary significance include massacre sites (the location of violent clashes between early settlers and local Aboriginals) and contact sites.

Consultation with the local Aboriginal community is essential to identify these site types.

ROCK SHELTERS: Rock shelters include rock overhangs, shelters or caves which were used by Aboriginal people. Rock shelter sites may contain artefacts, potential archaeological deposits and/or rock art. These sites will only occur where suitable geological formations are present (eg. sandstone scarps and escarpments).

No suitable rock formations with potential to host rock shelter sites are located within the study area. Hence the potential for this site type to occur is negligible.

SCARRED TREES: Scarred trees contain scars caused by the removal of bark for use in manufacturing canoes, containers, shields or shelters.

Mature trees, remnants of stands of the original vegetation, have the potential to contain scars. This potential is very low or negligible within the present study area, due to the recent history of land use.

STONE ARRANGEMENTS: Stone arrangements include circles, mounds, lines or other patterns of stone arranged by Aboriginal people. Some were associated with bora grounds or ceremonial sites and others with mythological or sacred sites.

This potential is very low or negligible within the present study area, due to the recent history of land use.

4. METHODOLOGY

During the initial stages of the investigation, research was conducted into the environmental, historical and archaeological background of the study area, and a search was undertaken of the DECC 'Aboriginal Heritage Information Management System' and other relevant heritage registers and planning instruments.

Consultation and involvement of the Aboriginal community was undertaken as per the requirements of the DECC policy entitled *Interim Community Consultation Requirements for Applicants* (refer to Section 6).

A survey has previously been undertaken of the eastern portion of the pipeline routes currently under investigation, by Navin (1992). Navin (1992) investigated a 50 hectare area for extensions to the Shoalhaven Paper Mill, and 22 hectares for the adjacent Starches storage ponds. A survey has also been undertaken by Kuskie (2002) of proposed extensions to the Starches Factory, which incorporated a portion of the area at the Starches Factory presently under investigation. The survey was undertaken on 18 November 2002 with the assistance of the Nowra LALC and Shoalhaven Aboriginal Elders (Kuskie 2002).

Field inspection of the study area was undertaken on 30 January 2008 by Peter Kuskie of South East Archaeology, accompanied by Jason Davison of Dungarn Consultancy. Mr Greg Murphy of the Manildra Group familiarised the consultants with the study area and the nature of the proposal.

Given the high extent of existing land use impacts that have rendered the potential for heritage evidence negligible in most portions of the study area, along with the extremely low surface visibility due to grass cover in those portions of the study area not totally impacted by previous land use, the previous survey coverage (Navin 1992, Kuskie 2002) and the predictive model, minimal areas were inspected directly on foot. Much of the inspection consisted of visual reconnaissance, which encompassed the entire study area.

5. RESULTS AND DISCUSSION

The survey by Kuskie (2002) covered much of the area at the Starches Factory presently under investigation. A total area of 4,160 m² was inspected on the level-very gentle river levee on the western side of the Starches Factory and 2,240 m² on the levee on the eastern side of the Starches Factory. Subsequent works have been undertaken in these areas and the present inspection confirmed that due to the extensive impacts, there is negligible potential for Aboriginal heritage evidence in both of these areas, along with the other locations of proposed facilities within the Starches Factory (Plates 1-3, Figure 2).

Visual inspection was made of the area of the proposed facilities on industrial land immediately north of the Starches Factory and Bolong Road (Plate 4). This area has been highly impacted by earthworks, drainage works and other construction activities. Dense pasture grasses limit surface visibility to virtually nil and therefore detailed survey was not undertaken. Given the formation history of this low-lying floodplain, it represents an environment context that has not been conducive to Aboriginal occupation. The only Aboriginal use of this area is likely to have involved occasional exploitation of subsistence resources from marshes or swamps, for which negligible evidence could be anticipated to remain. In consideration of these factors, the potential for stone artefacts to occur in this area is assessed as very low and the potential for all other forms of Aboriginal heritage evidence to occur as negligible.

Visual inspection was made of the margins of Bolong Road, alongside which water and gas pipelines may be installed to connect the Starches Factory with the storage ponds and Paper Mill (Plates 5 and 6). The verges of Bolong Road are vegetated by introduced grasses and have been highly impacted by earthmoving works, road construction, drainage works and essential services (pipelines, telecommunications cables and electricity) (Plates 4-6). The dense cover of grass substantially limits surface visibility. The high level of recent land use impacts in these areas has also reduced the potential for virtually all forms of Aboriginal heritage evidence to occur as negligible, or in the case of stone artefacts, very low.

A survey has previously been undertaken of the eastern portion of the pipeline routes currently under investigation, by Navin (1992). Navin (1992) investigated a 50 hectare area for extensions to the Shoalhaven Paper Mill, and 22 hectares for the adjacent Starches storage ponds. Navin (1992) identified two isolated artefacts, a ground edge hatchet (APPM Isolated Find 1, DECC #52-5-288 and 52-5-289) listed twice on DECC AHIMS at AMG grid references 283650:6140940 and 283660:6140920, and a broken alluvial pebble (APPM Isolated Find 2, DECC #52-5-290) listed on DECC AHIMS at AMG grid reference 283500:6140900. The hatchet was identified within the wall of an artificial drainage channel on the northern side of Bolong Road, 0.3 metres below the present surface. Navin (1992) concluded that the item was not *in situ*. The hatchet was made from a fine-grained volcanic alluvial pebble, by bifacial grinding and minor unifacial flaking. The broken alluvial pebble was also located within a drainage channel on the northern side of Bolong Road and comprised a similar stone material. Both items appear to be located marginally adjacent to the proposed pipeline routes. The current status of both items is uncertain.

Navin (1992) interpreted this evidence as accurately reflecting the generally low archaeological sensitivity of the locality, with the possible use of the elevated river banks (levee) as an access corridor.

No Aboriginal heritage evidence or cultural values were identified within the study area during the present archaeological investigation. As discussed above, due to the extent of recent land use impacts along with the topographical nature of the locality, the potential for virtually all forms of Aboriginal heritage evidence (eg. scarred trees, carved trees, ceremonial sites, stone arrangements, rock shelters, lithic quarries) is negligible. In relation to the unobtrusive stone artefacts, although the levee may have served as a corridor for movement as identified by Navin (1992), the extent of ground disturbance renders the potential for artefacts within the Starches Factory as negligible and within the adjacent industrial land and the margins of Bolong Road as very low. Although the possible presence of a very low density of artefacts consistent with background discard cannot be discounted in areas not totally impacted by recent land use, there exists a very low potential for artefact deposits of sufficient integrity to be of research value. While people may have occasionally visited this portion of the study area, the resulting artefactual evidence is unlikely to be of a sufficient nature, integrity, research potential or representativeness to be of significance.

6. ABORIGINAL CONSULTATION

The Aboriginal heritage assessment has involved a comprehensive program of Aboriginal consultation that complies with the policy requirements of the Department of Environment and Climate Change (NSW) that were introduced on 1 January 2005. These requirements are specified in the policy entitled *Interim Community Consultation Requirements for Applicants* and involve the following procedures:

- 1) Providing written notification of the project to the Local Aboriginal Land Council, DECC, Registrar of Aboriginal Owners (Department of Aboriginal Affairs), NSW Native Title Services and relevant Local Councils, requesting that if they are aware of any Aboriginal persons/organisations who may wish to be consulted about the project to provide such advice in writing, with a minimum 10 day response period;
- 2) Providing written notification of the project directly to those Aboriginal persons/organisations that were identified in Step 1 above, requesting those who may be interested in participating in the project to register their interest in writing, with a minimum 10 day response period;
- 3) Placing a media advertisement to the same effect in the local press requesting any Aboriginal persons/organisations who may be interested in participating in the project to register their interest in writing, with a minimum 10 day response period;
- 4) Providing detailed information about the heritage impact assessment, including the proposed methodology, to the Aboriginal persons/organisations who registered their interest in writing in Steps 1-3 above, with a minimum 21 day response period for comments;
- 5) Comments received from registered Aboriginal persons/organisations in Step 4, including information on areas of cultural significance, potential culturally acceptable mitigation measures, the nature of the assessment methodology and any other relevant traditional knowledge or issues, must be considered in order to finalise the assessment methodology;
- 6) Field inspection in consultation with the registered Aboriginal stakeholders;
- 7) Notifying the registered Aboriginal stakeholders and the Local Aboriginal Land Council (even if not registered) of the availability of the draft Aboriginal heritage impact assessment report and their comments invited; and
- 8) Preparation of a final Aboriginal heritage impact assessment report that addresses and incorporates the input of the registered Aboriginal stakeholders.

Procedures #1-8 outlined above have been implemented, as documented in the consultation database in Appendix 2 and below.

Compliance with Procedure #1 was achieved through correspondence forwarded to the relevant organisations on 21 August 2007. Responses were received from the Office of the Registrar of the *Aboriginal Land Rights Act*, Shoalhaven City Council and DECC.

The Office of the Registrar of the *Aboriginal Land Rights Act* advised that there are no Registered Aboriginal Owners within this specific locality. Shoalhaven City Council advised that the Jerrinja LALC, Nowra LALC and Ulladulla LALC should be contacted. DECC advised that in addition to Nowra LALC, the Jerrinja LALC, Jerrinja Consultants, South East Coast Gadu Elders Aboriginal Corporation, Merrimans LALC, Ulladulla LALC, South Coast Aboriginal and Elders and Friends Group Organisation and Mr Lionel P Mongta should be contacted (refer to Appendix 2).

Compliance with Procedure #2 was achieved by writing to the organisations nominated above by DECC and Shoalhaven City Council with an invitation to register an interest as per the DECC policy. None of these organisations registered an interest.

Compliance with Procedure #3 was achieved by placing an advertisement in the Public Notices section of The Nowra South Coast Register on 24 August 2007, requesting any Aboriginal persons/organisations who may be interested in participating in the project to register their interest in writing. Mr Jason Davison of Dungarn Consultancy registered an interest. The client also elected to continue to involve the Nowra LALC in the assessment, even though a formal registration of interest was not received.

Compliance with Procedures #4 and 5 was achieved by writing to the two organisations that registered an interest or were considered to be registered (Nowra LALC and Dungarn Consultancy) on 13 December 2007 providing them with the proposed methodology for the assessment and requesting their comment. No comments were received.

Compliance with Procedure #6 was achieved by undertaking the field inspection in consultation with the registered Aboriginal stakeholders. The inspection was undertaken on 30 January 2008 by Peter Kuskie of South East Archaeology, assisted by Mr Jason Davison of Dungarn Consultancy. Despite prior arrangements, Mr Simms from the Nowra LALC was unable to attend, but was satisfied for the inspection to continue in his absence.

Compliance with Procedure #7 was achieved by providing copies of the draft archaeological assessment report to the Nowra LALC and Dungarn Consultancy with a request for their comment.

Compliance with Procedure #8 was achieved through preparation of this final Aboriginal heritage impact assessment report that addressed and incorporated any input received from the registered Aboriginal stakeholders. Written comment was not forthcoming from either of the registered stakeholders within the 32 day period provided for.

In addition to the consultation documented above, both the Nowra LALC and Shoalhaven Aboriginal Elders were involved in an earlier investigation of the Starches Factory by Kuskie (2002) and the Nowra LALC was involved in the previous investigation of the eastern end of the pipeline routes by Navin (1992).

7. STATUTORY OBLIGATIONS

The *National Parks and Wildlife Act 1974* (as amended) provides the primary basis for the legal protection and management of Aboriginal heritage sites within NSW. Implementation of the Aboriginal heritage provisions of this Act is the responsibility of the Climate Change and Environment Protection Group and Cultural Heritage Divisions of the Department of Environment and Climate Change (NSW) (DECC). The rationale behind the Act is to prevent unnecessary or unwarranted destruction of Aboriginal objects and to protect and conserve objects where such action is considered warranted.

With the exception of some artefacts in collections, the Act generally defines all Aboriginal objects to be the property of the Crown. The Act then provides various controls for the protection, management and destruction of these objects. An 'Aboriginal object' is defined as

'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains' [Section 5(1)].

In practice, archaeologists generally subdivide the legal category of 'object' into different site types, which relate to the way Aboriginal heritage evidence is found within the landscape. The archaeological definition of a 'site' may vary according to survey objectives, however it should be noted that even single and isolated artefacts are protected as objects under the Act.

Under the terms of the *National Parks and Wildlife Act 1974*, it is an offence for a person to:

- ❑ Knowingly destroy, damage or deface an Aboriginal object or place, or knowingly cause or permit the destruction, defacement or damage to an Aboriginal object or place, without first obtaining the consent of the Director-General of DECC;
- ❑ Disturb or excavate any land, or cause any land to be disturbed or excavated, for the purpose of discovering an object, without first obtaining the consent of the Director-General of DECC; and
- ❑ Collect on any land an object that is the property of the Crown, other than an object under the control of the Australian Museum, without obtaining appropriate authorisation from the Director-General of DECC.

Penalties for infringement of the Act include up to 50 penalty units or imprisonment for six months, or both (or 200 penalty units in the case of a corporation).

Consents regarding the use or destruction of objects are managed through a DECC permit system. The issuing of permits is dependent upon adequate archaeological assessment and review, together with an appropriate level of Aboriginal community liaison and involvement. To excavate or disturb land for the purposes of discovering an Aboriginal object, approval of a Section 87 'Preliminary Research Permit' application is typically required. To enable unmitigated destruction of objects, a 'Section 90 Consent' must normally be obtained (apart from Part 3A Major Projects). To enable the mitigated destruction of objects, involving measures such as collection and/or salvage excavation, a 'Section 90 Consent with Salvage Permit' is normally required. The Director-General may attach any terms and conditions seen fit to any Consent granted for the above activities. Failure to comply with a term or condition is deemed to be a contravention of the Act.

An appeals process is available whereby an applicant, dissatisfied with the refusal of the Director-General to grant Consent, or with any conditions or restrictions attached to Consent, may appeal to the Minister. The Minister may refuse to grant an appeal or partially or wholly grant an appeal. The decision of the Minister on the appeal is final and is binding on the Director-General and the appellant.

The Minister also has substantial powers under Section 12 to direct DECC to carry out works and activities, either generally or in a particular case, in relation to the identification, conservation and protection of, and prevention of damage to, Aboriginal objects and places.

Under the *National Parks and Wildlife Act 1974*, 'Aboriginal areas' may also be declared over private land, where Aboriginal objects or places are located, with the consent of the owner or occupier. The purpose of reserving land as an 'Aboriginal area' is to identify, protect and conserve areas associated with a person, event or historical theme, or containing a building, place, object, feature or landscape of natural or cultural significance to Aboriginal people, or of importance in improving public understanding of Aboriginal culture and its development and transitions (Section 30K).

Under Section 91AA of the Act, if the Director-General is of the opinion that any action is being, or is about to be carried out that is likely to significantly affect an Aboriginal object or Aboriginal place or any other item of cultural heritage situated on land reserved under the Act, the Director-General may make a stop-work order for a period of 40 days. A person that contravenes a stop-work order may be penalised up to 1,000 penalty units and an additional 100 units for every day the offence continues (10,000 units and 1,000 units respectively in the case of a corporation).

Under the Part 3A Major Project amendments to the *Environmental Planning and Assessment Act 1979* (EP&A Act), subsequent to approval being granted, Section 90 Consent to impact Aboriginal objects or a Section 87 Permit under the *National Parks and Wildlife Act 1974* may not be required. *In lieu* however, a Part 3A application involving a Statement of Commitments outlining proposed heritage management and mitigation measures must be approved. Also, under more recent Part 3A Major Project amendments (Section 75U{4}), a Section 87 Permit may not be required for investigation of artefact deposits where the investigation is being undertaken for the purpose of complying with environmental assessment requirements issued in connection with an application for approval to carry out a project or for a concept plan for a project.

While the primary legislation offering protection to Aboriginal heritage in NSW is enacted by the state, several Acts administered by the Commonwealth may also be relevant.

The *Aboriginal and Torres Strait Islander Heritage Protection Act, 1984*, provides for the protection of areas and objects which are of significance to Aboriginal people in accordance with Aboriginal tradition. The Act allows Aboriginals to apply to the Minister to seek protection for significant Aboriginal areas and objects. The Minister has broad powers to make such a declaration should the Minister be satisfied that the area or object is a significant Aboriginal area or object and is under immediate threat of injury or desecration. An 'emergency declaration' can remain in force for up to thirty days. It is an offence under the Act to contravene a provision of a declaration. Provisions are made for penalties of up to \$50,000 for a corporation found guilty of contravening the Act and up to \$10,000 and imprisonment for a maximum of five years, for a person found guilty of contravening the Act.

Under the Act, 'Aboriginal tradition' means:

'the body of traditions, observances, customs and beliefs of Aboriginals generally or of a particular community or group of Aboriginals, and includes such traditions, observances, customs or beliefs relating to particular persons, areas, objects or relationships' (Section 3).

A 'significant Aboriginal area' refers to:

An area of land or water in Australia being of 'particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 3).

A 'significant Aboriginal object' refers to:

An object (including Aboriginal remains) of 'particular significance to Aboriginals in accordance with Aboriginal tradition' (Section 3).

For the purposes of the Act, an area or object is considered to be injured or desecrated if:

- a) in the case of an area, it is used or treated in a manner inconsistent with Aboriginal tradition; or the use or significance of the area in accordance with Aboriginal tradition is adversely affected by reason of anything done in or near the area; or passage through or over, or entry upon the area by any person occurs in a manner inconsistent with Aboriginal tradition; and
- b) in the case of an object, it is used or treated in a manner inconsistent with Aboriginal tradition (Section 3).

A new national heritage system commenced on 1 January 2004, largely replacing the previous *Australian Heritage Commission Act 1975*. Its primary features under the amended *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Australian Heritage Council Act 2003* include:

- ❑ A National Heritage List of places of national heritage significance;
- ❑ A Commonwealth Heritage List of heritage places owned or managed by the Commonwealth;
- ❑ Creation of the Australian Heritage Council – an independent expert body to advise the Minister on the listing and protection of heritage places; and
- ❑ Continued management of the Register of the National Estate, a list of more than 13,000 heritage places around Australia that has been compiled by the former Australian Heritage Commission since 1976.

The study area does not contain any heritage items registered for indigenous values under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, *Environment Protection and Biodiversity Conservation Act 1999* or the *Australian Heritage Council Act 2003*.

Under the *Environmental Planning and Assessment Act 1979* the Minister may make various planning instruments such as Regional and Local Environment Plans. The *Illawarra Regional Environmental Plan No. 1 1986* and *Shoalhaven Local Environmental Plan 1985 (as amended)* (LEP) apply to the study area. The Plans set out objectives and controls for the development of land in this area. Schedules within each Plan list items of heritage significance within the local government area and region. No Aboriginal heritage items listed on either plan occur within the present study area. The Shoalhaven LEP does not contain generic provisions for unlisted Aboriginal heritage objects.

8. MITIGATION AND MANAGEMENT STRATEGIES

The Aboriginal heritage assessment reported herein has been commissioned in relation to a proposal by the Manildra Group to upgrade their existing ethanol plant at Shoalhaven Starches. The proposed upgrade includes:

- ❑ Installation of a range of additional plant within the existing Shoalhaven Starches Factory and an adjoining industrial site at Bolong Road, Bomaderry;
- ❑ Installation of a gas pipeline along Bolong Road linking the Factory with the storage ponds on the adjacent Shoalhaven Starches Environmental Farm; and
- ❑ Installation of a raw water pipeline along Bolong Road linking the Factory with the nearby Paper Mill (Figure 2).

Development may involve substantial impacts to the ground surface associated with the construction of facilities. However, much of the proposed works will occur in locations that have already been totally impacted by recent land use and have negligible heritage potential. The remainder of the area has also been subject to high impacts and in consideration of Aboriginal land use modelling, is of very low heritage potential. No Aboriginal heritage sites are listed within the study area on any heritage registers or planning instruments, although two isolated artefacts are in the immediate vicinity of the eastern end of the pipeline routes north of the existing Paper Mill (Figure 1).

General strategies for the management of the identified and potential Aboriginal heritage resources within the study area are presented below. A key consideration in selecting a suitable strategy is the recognition that Aboriginal heritage is of primary importance to the local Aboriginal community, and that decisions about the management of the sites should be made in consultation with the registered Aboriginal stakeholders.

Strategy A (Further Investigation):

In circumstances where a site is identified, but the extent of the site, the nature of its contents, its level of integrity and/or its level of significance cannot be adequately assessed solely through surface survey (generally because of conditions of low surface visibility or sediment deposition), sub-surface testing may be an appropriate strategy to further assess the site. Testing is also appropriate in locations where artefact or midden deposits are predicted to occur through application of a predictive model of site location, in order to identify whether such deposits exist and their nature, extent, integrity and significance.

Test excavations can take the form of auger holes, shovel pits, mechanically excavated trenches or surface scrapes. A Section 87 Permit is generally required from DECC to undertake sub-surface testing, unless Part 3A approval has been granted and *in lieu* a Statement of Commitments outlining such measures has been approved. Approval of a Section 87 Permit can take up to eight weeks, following receipt by DECC of all necessary information. A research design specifying the aims and methods is an essential component of a Permit application and therefore requires approval from DECC. Consultation is also required with the relevant Aboriginal stakeholders as per the DECC policy entitled *Interim Community Consultation Requirements for Applicants*.

This is a pro-active strategy, which should result in the identification, assessment and management of the Aboriginal heritage resource prior to any development activity occurring. Following assessment of each Aboriginal site, management strategies as outlined below (B - E) can be applied.

In relation to the proposed Starches upgrade, the inspection is considered satisfactory enough to present an effective assessment of the Aboriginal heritage resources potentially present within the study area. Test excavations are unlikely to add significantly to the present assessment or lead to alternative management strategies, and on this basis, the imperative for further investigation is considered to be very low.

Strategy B: Conservation:

The suitability of conservation as a management option has long been recognised. This strategy is suitable for all heritage sites, but particularly those of high archaeological significance and/or high cultural significance. Conservation is also highly appropriate for specific archaeological resources and environmental/cultural contexts, as part of a regional strategy aimed at conserving a representative sample of identified and potential heritage resources.

Options exist within development proposals that can be utilised for the conservation of identified or potential Aboriginal heritage resources, including exclusion of development from zones of high heritage significance or potential, or preservation of areas within formal conservation zones.

In relation to the proposed Starches upgrade, the imperative for specific conservation measures is limited by the small size of the proposed area of impact, high levels of existing ground disturbance, absence of identified heritage evidence of significance and the low potential for heritage evidence to occur. In consideration of these factors, specific conservation measures are not warranted.

Strategy C: Mitigated Impact (Salvage):

In circumstances where a site is of moderate or high significance within a local context, but the options for conservation are limited and the surface collection of artefacts or excavation of deposits could yield benefits to the Aboriginal community and/or the archaeological study of Aboriginal occupation, the strategy of salvage can be considered.

Salvage may include the collection of surface artefacts or systematic excavation of artefact or midden deposits, normally as part of a Section 90 Consent obtained from DECC. This strategy is the primary means of minimising impacts to Aboriginal heritage from development projects where the option of conservation is not feasible.

The specific aims of any salvage project and the methodology could only be finalised after consultation with the registered Aboriginal stakeholders and DECC, in relation to an application for a Section 90 Consent. The application would need to address the views and policy and legislative requirements of these key stakeholders. Consultation is required with the relevant Aboriginal stakeholders as per the DECC policy entitled *Interim Community Consultation Requirements for Applicants*. Alternatively, if a Part 3A approval is granted, Section 90 Consent may not be required but *in lieu* a Statement of Commitments outlining proposed heritage management and mitigation measures must be approved.

In relation to the proposed Starches upgrade, salvage measures are not warranted unless impacts cannot be avoided to one of the two isolated artefacts close to the project area (APPM Isolated Find 1). In this event, the ground-edge hatchet (Isolated Find 1), should be subject to surface collection if it is likely to be impacted and can be successfully relocated, as initially recommended by Navin (1992).

Strategy D: Unmitigated Impact:

The strategy of unmitigated impact involves the proponent making application to DECC for a Section 90 Consent for any known Aboriginal objects that will be affected by a proposal. This Consent must normally be obtained prior to the commencement of works affecting the evidence, because all objects are protected under the terms of the *National Parks and Wildlife Act 1974*. Alternatively, if a Part 3A approval is granted, Section 90 Consent may not be required, but *in lieu* a Statement of Commitments outlining proposed heritage management and mitigation measures must be approved.

The support of the registered Aboriginal stakeholders should be obtained, through further liaison, for any Section 90 Consent application or Part 3A Statement of Commitments. Consultation is required with the local Aboriginal community as per the DECC policy entitled *Interim Community Consultation Requirements for Applicants*. DECC guarantees to process applications within eight weeks, subject to receipt of all necessary information. This strategy is typically suitable when a site is of low scientific significance, the local Aboriginal community holds no objections, and it is unfeasible to implement any other strategy.

In relation to the proposed Starches upgrade, unmitigated impact is not warranted unless impacts cannot be avoided to one of the two isolated artefacts close to the project area (APPM Isolated Find 2) that does not require surface collection.

Strategy E (Monitoring):

An alternative strategy for zones where archaeological deposits are predicted to occur is to monitor construction, particularly any initial earthmoving and soil removal works, for the presence of artefacts, shell or skeletal remains.

Monitoring is the primary strategy for managing the possible occurrence of Aboriginal skeletal remains. Monitoring for the presence of shell and stone artefacts is also often of value to the Aboriginal community, who may be seeking to identify and salvage material that was not visible on the surface during a preliminary study. The sieving of graded deposits is also a practical measure that enhances the benefits of monitoring for artefacts.

Monitoring for artefacts (in preference to sub-surface testing) is not a widely accepted method within the context of a scientific investigation, because it could result in substantial and costly delays to construction, late revisions to development plans, and/or cause undesirable impacts to sites of cultural or scientific significance. However, when Development Consent is granted, monitoring for the presence of artefacts and other features during initial earthworks can be of scientific benefit and benefit to the Aboriginal community. Monitoring undertaken in this circumstance may enable the identification and retrieval of cultural evidence that may not otherwise have been recorded or salvaged.

In relation to the proposed Starches upgrade, monitoring is not warranted as the potential for heritage evidence to occur is assessed as very low.

9. RECOMMENDATIONS

The Manildra Group proposes to upgrade their existing ethanol plant at Shoalhaven Starches, Bolong Road, Bomaderry (Figure 2). A Part 3A application has been lodged with the Department of Planning for this project. The development area has either been totally impacted by recent land use and has negligible heritage potential, or has been subject to high impacts and in consideration of Aboriginal land use modelling, is of very low heritage potential. No Aboriginal heritage sites are listed within the study area on any heritage registers or planning instruments, although two isolated artefacts occur in the immediate vicinity of the eastern end of the proposed pipeline routes, north of the existing Shoalhaven Paper Mill (Figure 1). In the absence of appropriate management and mitigation measures, it is concluded that the impacts of the proposal on Aboriginal heritage will be very low.

The following recommendations are made on the basis of legal requirements including the NSW *National Parks and Wildlife Act 1974* and *Environmental Planning and Assessment Act 1979*, the results of the investigation and consultation with the local Aboriginal community:

- ❑ Provisions relating to Aboriginal heritage should be included in an Environmental Management Plan for the project. These provisions should be formulated in consultation with the registered Aboriginal stakeholders and specify the policies and actions required to manage the potential impacts of the proposal on Aboriginal heritage after Part 3A approval is granted. The plan should include management procedures for previously unrecorded Aboriginal heritage evidence and skeletal remains (should such evidence be identified during construction), procedures for further Aboriginal consultation should such evidence be identified, and mitigation measures involving surface collection for the identified isolated artefact site APPM Isolated Find 1 (DECC #52-5-288 and 52-5-289) should it be subject to impacts. The Plan will, subject to Part 3A project approval, guide management of any Aboriginal heritage evidence *in lieu* of a Section 90 Consent;
- ❑ Under the terms of the *National Parks and Wildlife Act 1974* it is an offence to knowingly destroy, damage or deface an Aboriginal object without obtaining the prior written permission of the Director-General of DECC. Therefore, no activities or work should be undertaken within the Aboriginal site areas as described in this report and marked on Figure 1, in the absence of a valid Section 90 Consent or *in lieu*, Part 3A approval; and
- ❑ Three copies of this report should be forwarded to:

Manager
South Branch
Environment Protection and Regulation Division
Department of Environment and Conservation (NSW)
PO Box 2115
Queanbeyan NSW 2620.

After implementation of these management and mitigation measures, it is concluded that the risk of residual impacts to Aboriginal heritage from the proposal will be very low.

REFERENCES

- Antill, R. G. 1982 *Settlement in the South: A Record of the Discovery, Exploration and Settlement of the Shoalhaven River Basin 1803-1982*. Weston & Co. Publishers Pty Ltd: Kiama.
- Attenbrow, V. 1976 *Aboriginal Subsistence Economy on the Far South Coast of New South Wales, Australia*. Unpublished BA (Hons) thesis, University of Sydney, Sydney.
- Barber, M. and D. Williams 1995 *Subsurface Investigations for Optus Communications Fibre Optic Cable Route at Tapitallee Creek, Nowra, NSW*. Report to Purdon Associates Pty Ltd.
- Berry, A. 1834 *Return of Aboriginal Natives Taken at Shoalhaven June 4th 1834*. Papers Regarding Aborigines, Colonial Secretary, Letters Received, Special Bundles, 1826-1839. MS, Archives Office of NSW, pp. 61-64.
- Berry, A. 1838 *Recollections of the Aborigines*. NSW Supreme Court Office. Miscellaneous Correspondence Relating to Aborigines, 1797, 1804-6, 1814-16, 1824-40. MS, Archives Office of NSW, pp. 557-608.
- Bindon, P. 1976 *The Devil's Hands - A Survey of the Painted Shelters of the Shoalhaven River Basin*. Unpublished BA (Honours) Thesis: Australian National University.
- Boot, P. 1994 Recent Research into the Prehistory of the Hinterland of the South Coast of New South Wales. In, Sullivan, M, Brockwell, S. and Webb, A. (eds) *Archaeology in the North: Proceedings of the 1993 Australian Archaeological Association Conference*. NARU: Darwin.
- Boot, P.G. 2002 *Didthul, Bhundoo, Gulga and Wadbilliga: An Archaeological Study of the Aborigines of the New South Wales South Coast Hinterland*. Unpublished PhD thesis, Australian National University: ACT.
- Bowdler, S. 1970 Bass Point: *The Excavation of a South-East Australian Shell Midden Showing Cultural and Economic Change*. Unpublished BA (Hons) thesis, University of Sydney, Sydney.
- Byrne, D. 1983 *The Five Forests: An Archaeological and Anthropological Investigation*. Unpublished report to NSW National Parks and Wildlife Service.
- Byrne, D. 1984 *Aboriginal Sites in Wandella-Dampier State Forests: An Archaeological Survey Ahead of Scheduled Forestry Operations*. Unpublished report to Forestry Commission of NSW.
- Cane, S. 1988 *An Assessment of the Impact of Defence Proposals on Aboriginal Sites in Jervis Bay, NSW*. Unpublished report to Sinclair Knight and Partners.
- Clarke, E. 2007 *Aboriginal Heritage and Cultural Mapping Project: Lower Shoalhaven River Valley - Stage 4B: Aboriginal Sites and Community Consultation*. Unpublished report to the Department of Environment and Climate Change (NSW) National Parks and Wildlife Services South Coast Region.

- Clarke, E. and Kuskie, P.J. 2006 *Aboriginal Heritage and Cultural Mapping Project: Lower Shoalhaven River Valley - Stage 4A: Archaeological Predictive Modelling and Aboriginal Community Consultation*. Unpublished report to the Department of Environment and Conservation (NSW) National Parks and Wildlife Services South Coast Region.
- Colley, S. 1988 *An Archaeological Survey of a Proposed Sand Quarry Near Gerroa, South Coast, NSW*. Unpublished report by Anutech Pty Ltd to Dames & Moore Pty Ltd.
- Corkill, T. 1986 *Gaining Ground*. Unpublished BA (Hons) Thesis: University of Sydney.
- Dean-Jones, P. and Mitchell, P. B. 1993 *Hunter Valley Aboriginal Sites Assessment Project: Environmental Modelling for Archaeological Site Potential in the Central Lowlands of the Hunter Valley*. Unpublished report to NPWS.
- Eades, D.K. 1976 The Dharawal and Dhurga languages of the New South Wales South Coast. In *Australian Aboriginal Studies Research and Regional Studies No. 8*. AIAS: Canberra.
- ERM Mitchell McCotter 1998 *Berry Bypass: Archaeological Investigation of Indigenous Cultural Heritage*. Unpublished report to RTA.
- Flood, J. 1980 *The Moth Hunters: Aboriginal Prehistory of the Australian Alps*. AIAS: Canberra.
- Hall, R. and Lomax, K. 1993 *Grafton Management Area Supplementary Report - Archaeological Report*. Unpublished report to NSW Forestry Commission.
- Hiscock, P. and Mitchell, S. 1993 *Stone Artefact Quarries and Reduction Sites in Australia: Towards a Type Profile*. AGPS: Canberra.
- Knight, T. 1996 *The Batemans Bay Forests Archaeological Project: Site Distribution Analysis*. Unpublished NEGP report.
- Kuskie, P. J. 1995 *An Archaeological Assessment of Lots 1 and 2, DP 583161, Greenwell Point Road, East Nowra, New South Wales South Coast*. Unpublished report to Travers Morgan Pty Ltd.
- Kuskie, P.J. 1998 *An Archaeological Assessment of Lot 3 DP 596879, George Street, Berry, South Coast of New South Wales*. Unpublished report to Cowman Stoddart Pty Ltd.
- Kuskie, P.J. 2000 *An Aboriginal Archaeological Assessment of the Proposed Mount Arthur North Coal Mine, Near Muswellbrook, Hunter Valley, New South Wales*. Unpublished report to URS Australia Pty Limited.
- Kuskie, P.J. 2002 *An Aboriginal Heritage Assessment of Proposed Extensions to the Shoalhaven Starches Environmental Farm at Nowra, South Coast of New South Wales*. Unpublished report to Cowman Stoddart Pty Limited.
- Kuskie, P. and Ingram, I. 2007 *A Heritage Impact Assessment of the Proposed Wondalga Sporting Facilities at Nowra, South Coast of New South Wales*. Unpublished report to Shoalhaven City Council.

- Kuskie, P., Navin, K. and Officer, K. 1995 *An Aboriginal Archaeological and Anthropological Assessment of the Proposed Eastern Gas Pipeline Between Longford, Victoria and Wilton, New South Wales*. Unpublished report to Eastern Gas Pipeline Project Pty Ltd.
- Lampert, R. 1971a *Interim Report on Archaeological Fieldwork in December 1970, NSW South Coast*. Unpublished report to NSW National Parks and Wildlife Service.
- Lampert, R. 1971b *Burrill Lake and Currarong: Coastal Sites in Southern New South Wales. Terra Australis 1* Department of Prehistory, ANU: Canberra.
- Lance, A. 1989 *Archaeological Studies of a Sand Extraction Development at Seven Mile Beach, New South Wales*. Unpublished report by Anutech Pty Ltd to Dames and Moore Pty Ltd.
- Mathews, R. H. 1896 *The Bunan Ceremony of New South Wales. The American Anthropologist* 9:327-344.
- Navin, K. 1991 *Archaeological Survey of North Nowra-Bomaderry Creek Link Road (Option 2), and Three Bridge Alignment Options*. Unpublished report to Mitchell McCotter & Associates.
- Navin, K. 1992 *Archaeological Investigation: APPM, Nowra, Shoalhaven River, NSW*. Unpublished report to GHD Group.
- Navin Officer Heritage Consultants 2000 *'Woodside Park', Tannery Road, Berry, NSW - Archaeological Survey for Aboriginal Sites*. Unpublished report.
- Officer, K.L.C. 1991 *National Parks and Wildlife Service South East Region Rock Art Conservation Project, Volume 1*. Report to NSW National Parks and Wildlife Service.
- Paton, R. 1990 *Archaeological Investigation for a Proposed Rural Subdivision at East Nowra, LEP LP906*. Unpublished report to Shoalhaven City Council.
- Paton, R. 1994 *An Archaeological Assessment for the REF for Two Aspects of the Augmentation Scheme for the Shoalhaven Water Supply*. Unpublished report to Dames & Moore Pty Ltd.
- Paton, R. 1999 *An Archaeological Study of the Berry Sewerage Overflow Development, Southern New South Wales*. Unpublished report to NSW Department of Public Works & Services.
- Poiner, G. 1976 *The process of the year among Aborigines of the central and south coast of New South Wales. Archaeology and Physical Anthropology in Oceania* 11: 186-206.
- Tindale, N.B. 1974 *Aboriginal Tribes of Australia*. ANU: Canberra.
- Vallance, D. 1983 *Fishing, Weather and Site Location: An Esoteric Essay*. Unpublished Litt. B. thesis, Australian National University, Canberra.
- Walkington, M. 1987 *An Archaeological Survey of a Basalt Quarry Near Termeil, New South Wales*. Unpublished report to Mordek Pty Ltd.

Williams, D. and M. Barber 1993 *Archaeological Desktop Study for the Proposed Route of the Optus Communication Fibre Optic Cable Between Wollongong and the NSW/Victorian Border*. Unpublished report to Purdon Associates Pty Ltd.

Williams, D. and M. Barber 1995 *Further Archaeological Investigations of the Proposed Route of the Optus Communication Fibre Optic Cable Between Wollongong and the NSW/Victorian Border*. Unpublished report to Purdon Associates Pty Ltd.

ACKNOWLEDGEMENTS

The consultant wishes to acknowledge the assistance of the following people:

- ❑ Stephen Richardson, Cowman Stoddart Pty Ltd;
- ❑ Greg Murphy and Brian Hanley, Manildra Group;
- ❑ Sharlene Freeburn, DECC;
- ❑ Jason Davison, Dungarn Consultancy; and
- ❑ Henry Simms, Nowra Local Aboriginal Land Council.

DISCLAIMER

The information contained within this report is based on sources believed to be reliable. Every effort has been made to ensure accuracy by using the best possible data and standards available. The accuracy of information generated during the course of this field investigation is the responsibility of the consultant.

However, as no independent verification is necessarily available, South East Archaeology provides no guarantee that the base data (eg. DECC AHIMS) or information from informants (obtained in previous studies or during the course of this investigation) is necessarily correct, and accepts no responsibility for any resultant errors contained therein and any damage or loss which may follow to any person or party. Nevertheless this study has been completed to the highest professional standards.

APPENDIX 1: PLATES



Plate 1: Location of some of the proposed facilities in the southwestern portion of the existing Starches Factory, an area of negligible heritage potential.



Plate 2: Location of some of the proposed facilities in the mid-portion of the existing Starches Factory, an area of negligible heritage potential.



Plate 3: Location of some of the proposed facilities in the eastern portion of the existing Starches Factory, an area of negligible heritage potential.



Plate 4: Location of some of the proposed facilities in the industrial land immediately north of the existing Starches Factory (visible in rear), an area of very low heritage potential.



Plate 5: View west along Bolong Road from eastern end of proposed pipeline routes, with Shoalhaven Paper Mill to left (south side of Bolong Road) and Starches environmental farm water storage ponds to right (north side of Bolong Road), an area of high existing impacts, very low surface visibility and low heritage potential.



Plate 6: View west along Bolong Road from mid-section of proposed pipeline routes, an area of high existing impacts, very low surface visibility and low heritage potential.

APPENDIX 2: ABORIGINAL COMMUNITY CONSULTATION

Consultation Database:

Date	Person Contacted	Organisation	How Contacted	Contacted By	Organisation	Description
21/8/07	Joe Woodward	Exec. Director Operations, DECC	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy
21/8/07	Megan Mebberson	Office of the Registrar, Aboriginal Land Rights Act	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy
21/8/07	General Manager	Shoalhaven City Council	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy
21/8/07	CEO	NSW Native Title Services	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy
21/8/07	Sonny Simms	Nowra LALC	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy
24/8/07	General Public	-	Advertisement	P. Kuskie	SEA	Advertisement placed in Public Notices section of The Nowra South Coast Register calling for interested Aboriginal persons/groups to register an interest in the project.
29/8/07	P. Kuskie	SEA	Letter via email	Maurice Stewart	Office of the Registrar, Aboriginal Land Rights Act	Responded to request of 22/8/07 by advising that there are no Registered Aboriginal Owners within this specific locality.
30/8/07	P. Kuskie	SEA	Fax	Stephen Free	DG, DECC	Responded to request of 22/8/07 by advising that the Jerrinja LALC, Jerrinja Consultants, South East Coast Gadu Elders Aboriginal Corporation, Merrimans LALC, Ulladulla LALC, South Coast Aboriginal and Elders and Friends Group Organisation and Mr Lionel P Mongta should be contacted.
31/8/07	Adell Hyslop	Jerrinja LALC	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Graham Connolly	Jerrinja Consultants	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Maureen Davis	South East Coast Gadu Elders Aboriginal Corporation	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Manager	Merrimans LALC	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Shane Carriage	Ulladulla LALC	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Lena Bloxome	South Coast Aboriginal and Elders and Friends Group Organisation	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	Lionel Mongta	Yuin Traditional Owner	Letter	P. Kuskie	SEA	Official request to notify of Aboriginal stakeholders/register interest as per DECC policy and DECC advice of 30/8/07.
31/8/07	P. Kuskie	SEA	Letter	Marie-Louise Clark	Shoalhaven City Council	Responded to request of 21/8/07 by advising that the Nowra, Ulladulla and Jerrinja LALCs should be consulted.
5/9/07	P. Kuskie	SEA	Fax	Jason Davison	Dungarn Consultancy	Registered an interest in participating in the project.
13/12/07	Jason Davison	Dungarn Consultancy	Letter	P. Kuskie	SEA	Official notification of and request for comment on proposed investigation methodology as per DECC policy for those registrants wishing to be considered for participation in the field survey.

Date	Person Contacted	Organisation	How Contacted	Contacted By	Organisation	Description
13/12/07	Sonny Simms	Nowra LALC	Letter	P. Kuskie	SEA	Official notification of and request for comment on proposed investigation methodology as per DECC policy for those registrants wishing to be considered for participation in the field survey.
24/1/08	Sonny Simms	Nowra LALC	Telephone	P. Kuskie	SEA	Discussed survey, made arrangements for 30 January.
24/1/08	Sonny Simms	Nowra LALC	Fax	P. Kuskie	SEA	Confirmed survey arrangement details.
24/1/08	Jason Davison	Dungarn Consultancy	Telephone	P. Kuskie	SEA	Left message regarding survey arrangements for 30 January.
24/1/08	P. Kuskie	SEA	Telephone	Jason Davison	Dungarn Consultancy	Discussed survey, Jason indicated that he would attend on 30 January.
30/1/08	Jason Davison	Dungarn Consultancy	Meeting - fieldwork	P. Kuskie	SEA	Conducted field inspection of Starches area, met with Starches staff Brian Hanley and Greg Murphy to discuss project.
30/1/08	Sonny Simms	Nowra LALC	Telephone	P. Kuskie	SEA	Rang to enquire if attending survey as not present at time of survey. Sonny indicated that he would try and attend but otherwise to proceed in his absence.
13/6/08	Jason Davison	Dungarn Consultancy	Letter	P. Kuskie	SEA	Forwarded copy of draft report with request for comment.
13/6/08	Sonny Simms	Nowra LALC	Letter	P. Kuskie	SEA	Forwarded copy of draft report with request for comment.

Relevant Correspondence:



Peter Kuskie
South East Archaeology Pty Ltd
24 Bamford Street
Hughes ACT 2605

Dear Peter

Re: **Request - Search for Registered Aboriginal Owners**

I refer to your letter dated 21 August 2007 advising of your intention to undertake an Aboriginal Heritage Impact Assessment on the proposed ethanol plant upgrade at Shoalhaven Starches, Bomaderry, near Nowra, on the south coast of New South Wales.

I have searched the Register of Aboriginal Owners and the subject land does not have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act 1983 (NSW)*.

Regards

Maurice Stewart
Project Officer (*Aboriginal Land Rights Act 1983*)
29 August 2007

Office of the Registrar, *Aboriginal Land Rights Act 1983*
PO BOX 112 GLEBE NSW 2037
Tel. (02) 9562 6327 Fax. (02) 9562 63501

Our reference : Letter 21 August 2007
Contact : Stephen Free (02) 8298 0372

Mr Peter Kuscie
South East Archaeology
24 Bamford Street
HUGHES ACT 2605

FAXED
9:44am

Pete
Dear Mr Kuscie,

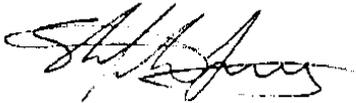
**WRITTEN NOTIFICATION OF PROPOSAL AS REQUIRED UNDER DEC INTERIM
COMMUNITY CONSULTATION REQUIREMENTS FOR APPLICANTS RE: PROPOSED
ETHANOL PLANT UPGARDE, SHOALHAVEN STARCHES, BOMADERRY NSW -
CULTURAL HERITAGE ASSESSMENT**

I refer to your letter dated 21 August 2007 to the Department of Environment and Climate Change (DECC) regarding the above matter.

Attached is the list of known Aboriginal parties that DEC feels is likely to have an interest in the development. Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the Interim Requirements.

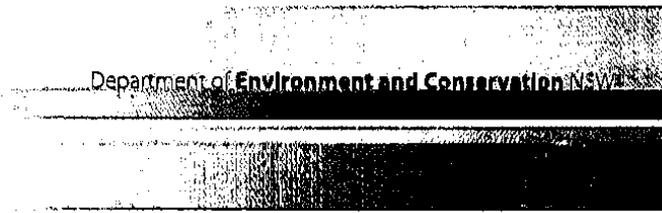
If you wish to discuss any of the above matters further please contact myself on (02) 6298 0372.

Yours sincerely



STEPHEN FREE
Acting Manager Planning & Aboriginal Heritage
Climate Change & Environment Protection Group South
August 2007

PO Box A290 Sydney South NSW 1232
59-61 Goulburn St Sydney NSW 2000
Tel: (02) 8985 5000 Fax: (02) 8985 5999
TTY (02) 8211 4723
ABN 30 841 987 271
www.environment.nsw.gov.au



Department of Environment and Conservation NSW

Organisation/Individual Name	Address	Contact Details
Jerrinja Local Aboriginal Land Council	PO Box 167, Culburra Beach NSW 2540	Ph: (02) 44474207 Fax: (02) 44474230 Mobile: 0417 402271 jalc@bigpond.com
Jerrinja Consultants PTY Ltd Primary Contact: Graham Connolly, representing the Jerrinja Traditional	PO BOX 5009, Nowra DC NSW 2541	Ph: (02) 44480980 Fax: (02) 44223878 Mobile: 0421457090
South East Coast Gadu Elders Aboriginal Corporation (SECGEAC) Secretary: Maureen Davis	193 Vulcan Street, PO Box 219, Moruya NSW 2537	Ph: (02) 44744188 Mobile: 0412089958
Merrimans Local Aboriginal Land Council	13 Umbarra Rd, Wallaga Lake NSW 2546	Ph: (02) 44737288 Mobile: 0408 118798 Fax: (02) 44737478 merrimanslalc.ozinet.net.au
Ulladulla Local Aboriginal Land Council	68 Deering Street, P.O. Box 520 ULLADULLA NSW 2539	Ph: (02) 4455 5883 Fax: (02) 4454 0440 ulladulla_lalc@ano.tcl.com.au
South Coast Aboriginal and Elders and Friends Group Organisation Secretary: Lena Bloxsome	6 Ernest Street, Nowra NSW 2541	Ph: (02) 44214026 Mobile: 0417 691679
South East Coast Gadu Elders Aboriginal Corporation	193 Vulcan Street, PO Box 219, Moruya NSW 2537	Ph: (02) 4474 4188 Fax:(02) 4474 4181 Mob: 0412 089 958
Mr Lionel P Monga , Yuin Traditional Owner	137 Princes Highway, PO Box 143, Bodalla NSW 2545	Mob: 0405 216 890

Att:

South East Archaeology
24 Bamford st . Hughes
ACT. 2605

Jason Davison
2 Copper Leaf pl,
Worrigee, NSW
2540
Ph:02 44232473
Mb:0412569318

I Jason Davison operating as Dungarn consultancy and having ongoing and traditional ties of the area of the proposed upgrading of the Shoalhaven Starches, Ethanol Plant , situated at Bomaderry wish to register an expression of interest in participating in the Cultural Heritage Survey being conducted by your company .

I look forward to further correspondence in this regard

Thank you

Jason Davison



City Administrative Centre

Bridge Road, Nowra NSW Australia 2541

Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra

Address all correspondence to

The General Manager, PO Box 42, Nowra NSW Australia 2541

COUNCIL REFERENCE: 3305
CONTACT PERSON: Michael Park / SOR
YOUR REF:

29 August 2007

Managing Director
South East Archaeology
24 Bamford Street
HUGHES ACT 2605

Dear Mr Kuskie

**Written Notification of Proposal
Proposed Ethanol Plant Upgrade, Shoalhaven Starches, Bomaderry**

With regard to correspondence received by Council on the above matter please be advised that Council is not an interested party.

Listed below are the names of Aboriginal organisations that may wish to be consulted with during the heritage assessment process.

- Nowra Aboriginal Land Council
- Ulladulla Aboriginal Land Council
- Jerringa Aboriginal Land Council

If you need further information about this matter, please contact Michael Park, Strategic Planning Group on (02) 4429 3139. Please quote Council's reference 3305.

Yours faithfully

A handwritten signature in blue ink, appearing to be 'MLC', is written over a light blue horizontal line.

**Marie-Louise Clark
Strategic Planner**

council@shoalhaven.nsw.gov.au • www.shoalhaven.nsw.gov.au