

Proposed subdivision of Lot 711, DP1128593, South Pambula
Due Diligence Assessment

Date: 8 October 2021

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Local Government Area: Bega Valley Shire Council



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INTRODUCTION

New South Wales Archaeology Pty Ltd has been commissioned to undertake a Due Diligence Assessment of a proposed 15 lot residential subdivision of Lot 711 DP1128593, South Pambula. Proposed lots 4 and 5 have existing dwellings.

A Due Diligence Assessment is required by Bega Valley Shire Council to support a Development Application.

The property is cleared farmland dominated by non-native vegetation including kikuyu grass. Small stands of regenerating woodland occur in the northwest and southeast. The Princes Highway is located directly adjacent to the eastern boundary. Figure 1 shows the location of the property.

This assessment has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*¹ (NSW DECCW 2010). It has included consultation with Eden Local Aboriginal Land Council (ELALC), a desktop study and field assessment.

For the purposes of this project, due diligence means ‘taking reasonable and practical steps to determine whether a person’s actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm’ (NSW DECCW 2010: 18).

The *Due Diligence Code* outlines a number of steps to be adhered to in order to exercise due diligence when activities are undertaken that have the potential to cause harm to Aboriginal objects. The code stipulates that these steps should be followed in order to:

- identify whether or not Aboriginal objects are or are likely to be present in an area;
- ascertain whether or not the proposed activities are likely to harm Aboriginal objects (if present); and
- determine whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

If Aboriginal objects are present or likely to be present *and* an activity will harm those objects, an AHIP is required.

¹ Hereafter referred to as the *Due Diligence Code*.

This report has been set out in response to the steps outlined in the *Due Diligence Code* and in a format that addresses the code's requirements in sequential order.

A comprehensive field inspection has been undertaken with Lesa Arvdison, representing ELALC. A copy of this report has been provided to ELALC. Tyrone Maher, has provided email advice dated 8 October 2021, that Eden LALC is happy with the report as well as the determination of low archaeological potential.

As a result of the assessment the following conclusions are made:

- There are no known previously recorded Aboriginal objects located in the property (AHIMS Site Search #608933).
- The property is obviously disturbed by previous impacts including, vegetation clearance, stock grazing, dam construction, and the installation of various services including an overhead transmission line.
- A part of the property has been subject to a previous heritage assessment, at which time no Aboriginal objects were recorded and the area was assessed to be of low archaeological and heritage potential (Dibden 2010).
- No Aboriginal object sites were found during the current field assessment. The property is comprised sloping land of generally moderate to steep gradient. It is drained by ephemeral streams.

Such landscape elements are not places that Aboriginal people are likely to have occupied habitually. Therefore, artefact discard is predicted to have been negligible in the property.

Furthermore, moderate to steep gradient slopes that are located away from abundant freshwater are known to be of little to no archaeological potential.

- The proposed impact areas cannot be characterised as a place with a high probability of possessing subsurface Aboriginal objects with high potential conservation value. Accordingly, archaeological test excavation is not recommended in respect of the proposal as it could not be justified (*cf.* NSW DECCW 2010a: 24).
- The property is assessed to be of negligible/very low archaeological potential. An AHIP is not required.
- Monitoring during construction for the purposes of identifying cultural material that may be uncovered during earth disturbance is a reactive

rather than proactive strategy, and as such, is not an ideal management tool in cultural heritage management. In the case at hand, the development of a monitoring strategy for the site is not considered necessary or appropriate.

1. IMPACT ASSESSMENT

The first question to be addressed in a process of due diligence is, *Will the activity disturb the ground surface or any culturally modified trees?* (NSW DECCW 2010: 11). If the proposed activity will disturb the ground surface there is a higher likelihood that Aboriginal objects will be harmed.

When machinery is used to dig, grade, bulldoze, scrape, plough or drill the ground, the accompanying disturbance to the ground surface is often significant, and consequently, there is a high likelihood for any Aboriginal objects which may be present to be harmed.

1.1 Proposed Impacts

It is proposed to subdivide the property into 15 rural residential lots. Access to the land will be from the Princes Highway and Summerhill Road. The location of the domestic footprint of each lot is defined and impacts would include the construction of houses and shed, gardens, the installation of services and so on (Figure 2).

It is noted that certain of areas of environmental value are excluded from the development proposal.

1.2 Impact Assessment

Machinery will be used during the development. Accordingly, impact to ground surfaces would occur during road construction and the progress of the domestic sphere in each lot. There is potential for Aboriginal objects, if present in or on the ground, to be disturbed.

The land is grassed where impacts would occur and, therefore, no culturally modified trees would be harmed.

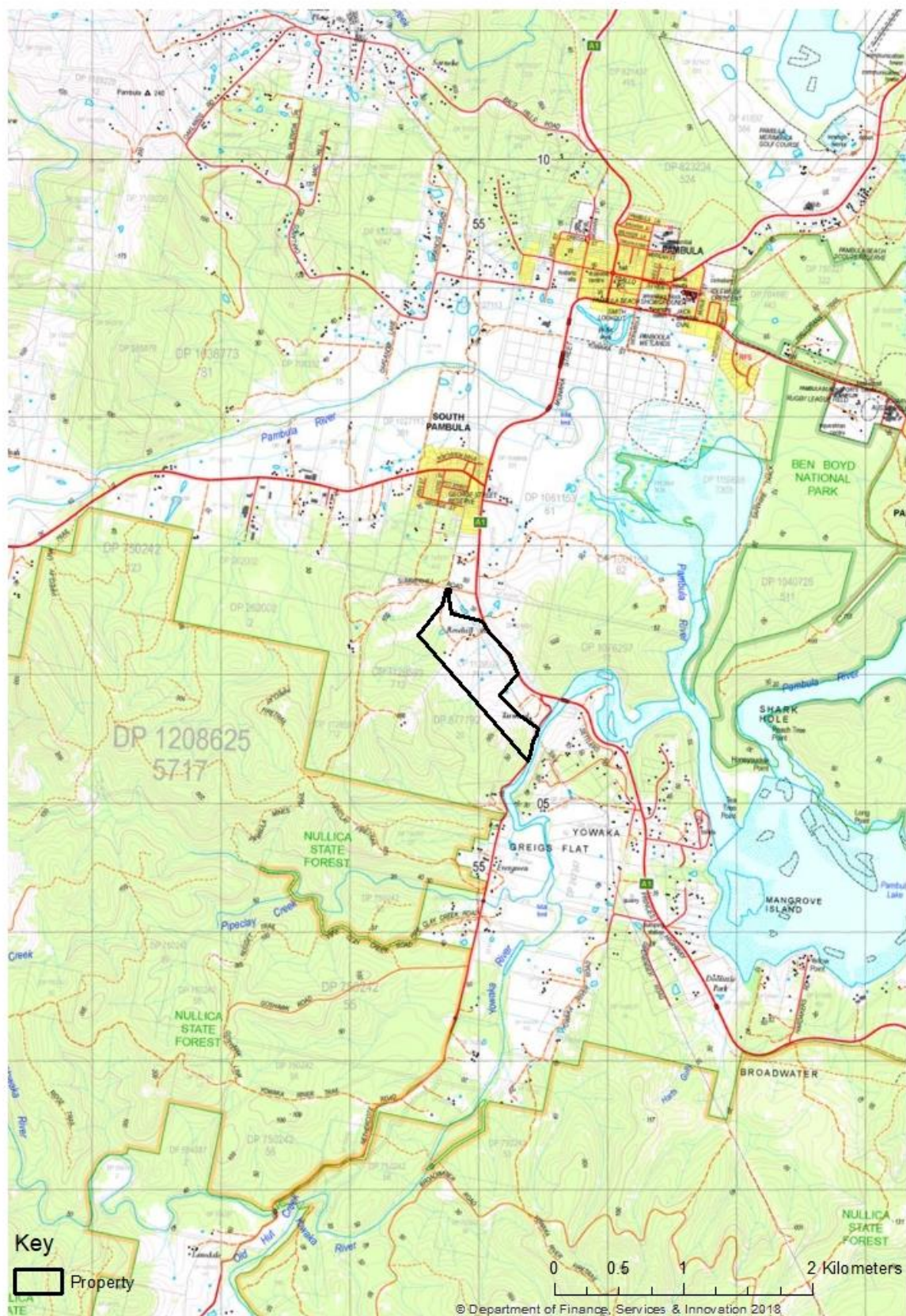


Figure 1 Location of the property in a topographic context.

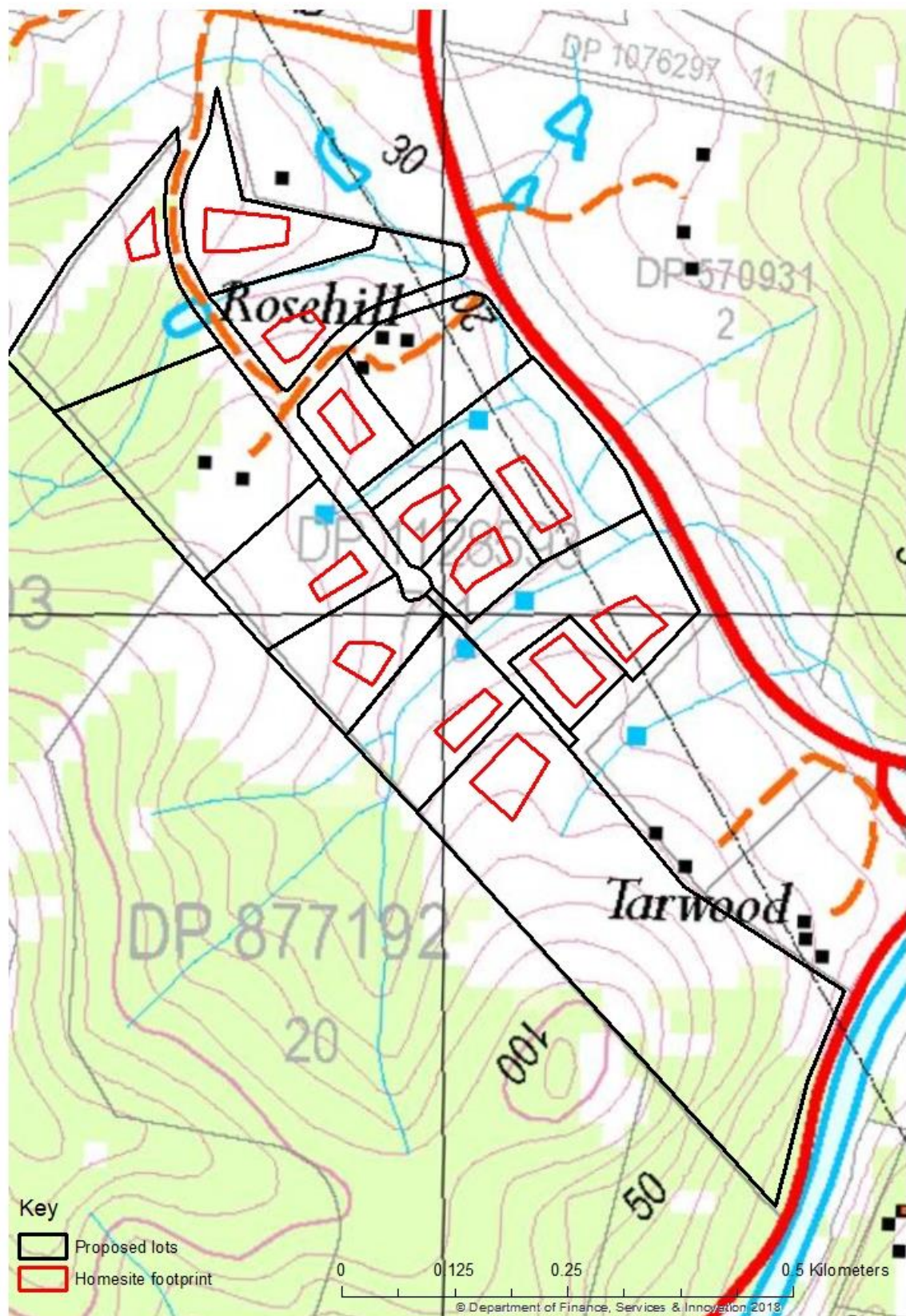


Figure 2 The subdivision layout.

2. AHIMS DATABASE SEARCH AND LANDSCAPE ASSESSMENT

2.1 AHIMS Site Search Results

A search of the Heritage NSW Aboriginal Heritage Information Management System (AHIMS) has been undertaken for this study (AHIMS Search Reference: #608933). The search covered an area measuring 25 square kilometres, encompassed by Eastings: 752000 – 757000 and Northings: 5903000 – 5908000, with a buffer of 50 metres (see Appendix 1).

The AHIMS Site Search results indicate that there are no previously recorded Aboriginal object sites located in the proposed activity area (Figure 3).

Two AHIMS sites are listed as ‘Restricted’ and are without locational information. We are advised by David Gordon, AHIMS (31/8/21), that these do not occur within the property.

It is worth noting, however, that the AHIMS register only includes sites which have been reported to the Heritage NSW. Generally, sites are only recorded during targeted surveys undertaken in either development or research contexts, none of which are known to have taken place previously in the study area. Accordingly, this search cannot be considered to be an actual or exhaustive inventory of Aboriginal objects situated within the local area or indeed within the subject area itself.

Searches have been conducted of the NSW State Heritage Inventory and the Australian Heritage Database. No Aboriginal heritage sites are listed on these as being in the subject area.

It is noted that for the purposes of Due Diligence, the AHIMS search results may be relied on for 12 months.

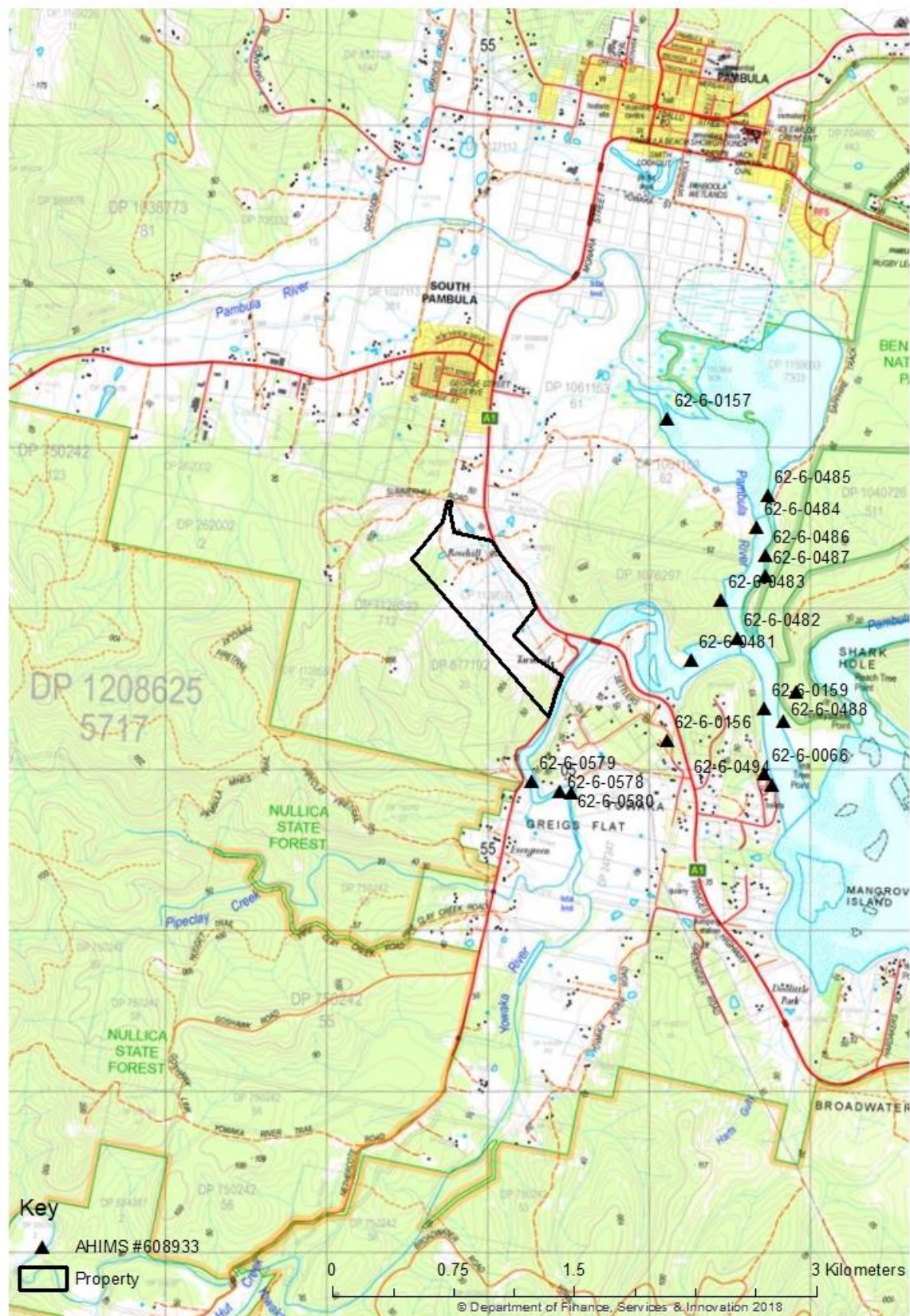


Figure 3 The location of AHIMS sites in the immediate local area.

2.2 Assessment of the Archaeological Sensitivity of Landscape Features in the Proposed Impact Area

Regardless of the AHIMS search results and whether or not they indicate the presence of Aboriginal objects, it is a requirement to consider if Aboriginal objects are likely to be in the proposed activity area. *The Due Diligence Code of Practice - Step 2b (NSW DECCW 2010)* lists the following landscape features that indicate the likely existence of Aboriginal objects.

Areas located:

- within 200 metres of waters (including the sea), or
- within a sand dune system, or
- on a ridge top, ridge line or headland, or
- within 200 metres below or above a cliff face, or
- within 20 metres of or in a cave, rock shelter, or a cave mouth; and
- on land that is not disturbed land (as defined on page 18 of the Due Diligence Code).

The Due Diligence Code of Practice does not, however, take into consideration other factors which could influence whether or not an area may contain Aboriginal objects, such as, for example, gradient (i.e. steep land is unlikely to contain Aboriginal objects), rockiness (i.e. very rocky land, irrespective of its location, may not be archaeologically sensitive) or the nature of a water source (landforms adjacent to ephemeral streams are not places Aboriginal people habitually occupied).

The Pambula area is located within the coastal lowlands system (Gunn *et al.* 1978). The local topography consists of crests, simple slopes, and flats.

The Pambula River is a major 5th order stream and would have provided Aboriginal occupants with a permanent, if not abundant fresh water source. In addition, the land adjoining the river is low lying and swampy. Swamps provided a rich source of flora and fauna such as eels and birds. Any elevated land situated in proximity to former swamps, and the river channel, have the potential to be archaeologically sensitive in the local area.

The study area is comprised of simple slopes of moderate to steep gradient. Such landforms are not expected to have been focal points of Aboriginal occupation. Minor 2nd order drainage line flows eastward through the property. Given their ephemeral nature the creek lines will not have provided Aboriginal occupants with a permanent or abundant water source.

Given this hydrological context, the area is unlikely to have been utilised by Aboriginal people for regular encampment.

The underlying geology is comprised of fluvial sandstone with mudrock and conglomerate (Bega-Mallacoota 1:250 000 geological sheet).

The property is obviously disturbed by previous impacts including, vegetation clearance, dam construction and stock grazing.

Prior to European land clearance the area would have been covered with forest or woodland. These zones were utilised by Aboriginal people for hunting and gathering (targeted species are likely to have included koalas, macropods, wombats, and possums). Such activity is likely to have resulted in the discard of limited suite of artefacts in sparse distributions and very low density.

The activity area is assessed to be of very low archaeological potential based on a consideration of the environmental context.

2.3 Desktop Assessment

A number of studies have been undertaken in an academic and consultancy context, in the Pambula region.

One of the first studies to be conducted on the south coast was undertaken by Geological Surveyor William Anderson, who recorded and excavated several Aboriginal midden sites (Anderson 1890). Anderson (1890) mapped the location of major 'shell-heaps' at Wagonga Inlet and Pambula Lake. He noted that the coastal zone in the area "... seems from all accounts to have been permanently inhabited by certain tribes of Aborigines, who occupied specialized areas in the district".

Anderson (1890) described the results of the excavation of two middens at Wagonga Inlet in some detail. Both contained deep deposits; one 5' deep and the other 3'. The skeleton of a dingo was retrieved from one midden. He excavated one mounded at Pambula River (Site 10) and the results led him to conclude that the Pambula mounds differed to Wagonga mounds in that they had more mud oysters and two species of mussel. Anderson also retrieved fish and 'vertebrate' bones (1890). Anderson mapped a large number (concentrations in 17 locations) of middens on the Pambula River shoreline.

Sullivan (1981; 1982b) later examined the middens of the south coast as the topic of her doctoral research. Sullivan (1982b) calculated that when Anderson inspected the Pambula middens approximately 57,000 cubic metres of shell midden was present on the shoreline. At the time of her inspections this was reduced to c. 55,000 cubic metres.

Sullivan (1982b) argued that the inlet of Pambula Lake seems to have been a focus of Aboriginal activity. The middens at Pambula River include primarily estuarine species such cockle, mud oyster, rock oyster, whelk and mussel with occasional rock platform species including abalone, warrener (*Cabestana splengleri*), nerite and *Austrochlelea*.

Test excavation was carried out by Sullivan (1982b) at one mounded midden on the shore of Pambula Lake. The age of the base of the midden was determined by radiometric analysis to be about 3,000 years BP. The shell was broadly divided into an upper, middle and lower midden. The upper midden was found to be composed mainly of edible mussel with a low proportion of hairy mussel which has had accumulated between 1,200 years BP and the time of European contact. The middle midden contained mainly hairy mussel and mud oyster and had accumulated between 3,000 and 2,300 years BP. The lower midden was made up primarily of mud oyster and its accumulation was found to have commenced at 3,000 years BP (Sullivan 1982b).

The excavated midden was found to contain fragmented bones of fish, bird, and land and sea mammals. The bones of small marsupials including wallaby, potoroo, possum and other medium sized animals were interpreted as indicating consistent exploitation throughout time while larger animals including sea mammals and kangaroos occurred sporadically indicating irregular exploitation. The bones from 12 different species of fish were found. Their differential distribution through the deposit allowed Sullivan to infer a diversification of fishing methods through time (Sullivan 1982b).

The recovered flaked stone artefacts were made from silcrete, quartz and acid volcanic. Silcrete and backed artefacts were present in the earliest (lower) part of the deposit only and quartz (with low incidences of bipolar features) dominated the stone assemblage from 1,900 years BP. This pattern, argued Sullivan (1982b), corresponds to the previously defined Bondaian and Post Bondaian periods.

Attenbrow (1982) undertook a desktop predictive study for Aboriginal sites within the then named Bournda State Recreation Area. Based on a site register search, previous surveys in the area and environmental context, Attenbrow (1982) made the following predictive statements for the main environmental zones:

- coastline: middens, 'buried sites' and burials could occur in the dune systems or on the headlands at a density of between 1 and 3.3 sites per kilometre of coastline. Fewer sites are predicted to occur on the rocky coastline than on the sandy beaches south of Turingal Head;
- lakes, lagoons, wetlands, creeks and associated flats: artefact scatters and shell middens are predicted to occur and scarred trees may exist where mature trees remain;
- forested hinterland hills: small artefact scatters, predominantly of quartz, may occur, particularly on saddles and ridge crests, but also along creek banks. A density of 0.4-1.1 sites per km² was predicted. Scarred trees also have potential to occur where mature trees remain.

Attenbrow (1982) ranked various zones in terms of archaeological potential (in order of highest relative potential to lowest):

- headlands and foredunes of Bournda and Tura Beaches;
- hind portions of the beaches and headlands of embayments north of Turingal Head;
- shores of Wallagoot Lake, Bondi Lake and Bournda Lagoon, for up to 300 metres from the margin;

- elevated land adjacent to watercourses traversing flats near lagoons and lakes;
- ridges in hilly forested areas, particularly saddles and crests; and
- alluvial flats bordering watercourses in the hilly forested zone.

Following from Attenbrow's (1982) recommendations the NPWS engaged Geering (1983a) to investigate proposed visitor facilities within the State Recreation Area. Geering (1983a, 1983b) located an extensive artefact scatter on low flats around Scotts Bay. It was reported as extending for over 500 metres along a vehicle track. Geering (1983b) undertook a salvage collection and analysis of the artefacts. Apart from exposures along vehicle tracks, dense vegetation restricted visibility elsewhere. A total of 423 artefacts were collected from fifty 10 x 10 metre squares, primarily in areas of high visibility on basal slopes bordering a small lagoon. Artefact densities were typically low (<3 per m²), with a mean of 0.3/m² (adjusted for archaeological visibility). Eighty five percent of artefacts were flakes or flake fragments (broken flakes and 'flakes' without diagnostic attributes), eight percent cores, three percent retouched or utilised pieces, with minor frequencies of flaked pieces, hammerstone/anvils and a ground-edge hatchet. Five of the retouched pieces were backed blades. Stone materials were predominantly quartz (55%) and rhyolite (28%), with minor frequencies of quartzite, silcrete, porphyry, sandstone and others.

Hughes (1982a) investigated an area on the northern shores of Merimbula Lake. The property consisted of low sandy flats, cliffs and slopes above the lake. Six midden sites situated on the cliffline at the junction of the hill slopes and rock platforms and estuarine sand flats were recorded by Hughes (1982a). The relatively intact, large middens consisted almost entirely of estuarine species: rock oyster, mud oyster, cockle, mud whelk and mussel, the later being present in the upper parts of the middens only. Stone artefacts, charcoal, fish bones and scales were also noted in some middens (Hughes 1982a).

Hughes (1982b) also surveyed 24 hectares of hilly terrain one kilometre north-west of Merimbula. One small artefact scatter was located on a broad ridge crest. The scatter consisted of six quartz flakes and unmodified pieces and one acid volcanic flake.

Hughes (1983) conducted a further study of the Merimbula Lake foreshore and slopes above the lake. An additional nine sites, eight discrete middens/midden complexes and a stone artefact scatter were located. Hughes (1983) indicated that midden material is virtually continuous along

parts of the cliff line and estuarine sand flats fronting the lake. As a result of the analysis of this work Hughes (1983) argued that the archaeology in the Merimbula Lake area was found to differ to that in the Bega River estuary located to the north. While sites in the north are of a high density they tend to be predominantly surface scatters of stone artefacts with very few shell middens. Hughes (1983) argued that the relative lack of shell midden at the Bega River appears to reflect the low shell fish productivity of the estuary river mouth as compared to both the Merimbula and Pambula Lakes.

Aiken (1986) conducted a survey in response to a proposed housing development of a two square kilometre parcel of land situated north of Merimbula township. During that study the majority of each of the different environmental zones in the area was surveyed including lagoon margins, beach, ridgelines, slopes and creeks. Given the forested nature of the area visibility conditions were low with the exception of small areas of exposure. One Aboriginal site was recorded on the east side of Pages Creek on the footslope situated above Back Lagoon. The site consisted of 14 stone artefacts distributed over an 8 m x 30 m area. The lack of further archaeological recordings was assessed by Aiken (1986) to be a factor of low visibility variables rather than a true reflection of the archaeological status of the study area.

Aiken (1986) recommended subsurface investigation to be undertaken in the area of the recorded Aboriginal site and the remainder of the area which she assessed to be of moderate to high archaeological sensitivity. Lance (1987) subsequently conducted a limited program of subsurface investigations on the property in accordance with Aiken's (1986) recommendations. Auger and shovel pits were excavated in a number of locations. The results of Lance's (1987) works are summarized below:

- The beach barrier sand dunes and flats between Short Point Beach and Back Lagoon

The test pits conducted in this area revealed a sequence of beach sands with a humic rich soil formation overlain by a shallow band of bleached sand. A friable light grey sand derived from swamp deposits were encountered below the humic rich horizon.

The archaeological material recovered consisted of a dispersed scatter of marine shell which Lance (1987) thought probably originated from a larger shell midden.

- The foreshore of Back Lagoon and the smaller lagoon to the north
In the Back Lagoon area shallow sandy soils were found to overlie sandstone bedrock. Two artefacts were found on the surface however, test excavation revealed no further archaeological material. One surface artefact scatter was found in this area. The artefacts were located on a track on the lower slopes of gently sloping ground 60 m from the north east shore of Back Lagoon. Twelve artefacts were recorded over a length of track measuring 25 m long. Test excavation in the vicinity of the site revealed a shallow sandy soil overlying decomposing sandstone bedrock. Several fragments of marine shell were found suggesting that the exposed portion of the site would originally have contained shell midden which has been dispersed by vehicle and water movement. No artefacts were found in a subsurface context in association with the surface finds.
- The major ridge.
Augering revealed shallow sandy deposits overlying bedrock. No artefacts or shell were recorded in subsurface contexts. Lance concluded that the low artefact density recorded by Aiken (1986) during the surface survey was an accurate reflection of artefact numbers in the deposit.

Lance (1987) concluded that low levels of archaeological material were present and that this represented low levels of prehistoric usage of the area. Lance (1987) argued that while additional material could be present in the area it was likely to be distributed at low density. Lance (1987) presented several reasons which might explain this situation; - that shallow lagoons did not provide a wide range of edible fauna and that therefore the area was less attractive than the nearby Merimbula Lake, that the sloping ground was an unattractive camping location and that geomorphological processes may have removed material from the area.

Egloff (1988) conducted an assessment at the proposed effluent disposal works site situated four kilometres south of Merimbula. One shell midden, one artefact scatter and three human burials were located.

Navin (1989) surveyed the route of three alternative Merimbula bypass routes at Millingandi. The study area included two landform areas – a moderately steep forested ridge line situated north of Millingandi Creek, and a flat river terrace south of the creek. Seven sites were recorded. Two sites are situated north of Millingandi Creek on ridge spurs. One site is situated on the northern bank of Millingandi Creek at the intersection of a

small stream. The remaining four sites are located on an elevated river terrace situated between creek flats and colluvial slope deposits. Artefacts recorded included silcrete, quartz and rhyolite.

Boot and Feary (1990) undertook further investigations for the NPWS in regard to various proposed works at Bournda National Park. Initially they recorded a large site complex and noted the existence of an extensive artefact scatter on an alluvial sand flat. Boot and Feary (1990) undertook further assessment which involved surface collection of artefacts from various sites and some subsurface test excavation. Over 3,000 artefacts along with numerous shell fragments were collected and analysed. A basal date of occupation was obtained from the Stockyard Midden of 2,990±190 years BP (Before Present) (ANU-7770) (Boot & Feary 1990).

Evans (1992) undertook research within the Bournda area for an Honours Thesis in archaeology at the Australian National University. While Evans' (1992) research focused on a lithic quarry site it also included survey and recording of a number of sites within Bournda National Park. Evans (1992) sought to investigate aspects of stone tool manufacture relating to the quarry site and implications for general models of Aboriginal technological and economic behavior. Evans' study area extended from Kangarutha Point south to Sandy Beach Creek (3-4 km south of Wallagoot Lake) and inland to the Kalaru-Merimbula Road. The survey by Evans (1992) resulted in the identification of 36 artefact scatters and one artefact scatter/midden, although several are re-recordings of previously identified sites.

Evans (1992:11-12) divided the main stone materials present into four types:

- quarry porphyry (which Evans acknowledges is a porphyritic rhyolite) is described as a light grey, coarse grained volcanic material with large crystalline inclusions;
- non-quarry porphyry is described as a fine grained volcanic material, generally light green-grey in colour, with smaller crystalline inclusions than the quarry porphyry;
- purple rhyolite (banded rhyolite) is described as a fine grained volcanic rock with flow bands and occasional small crystalline inclusions; and
- quartz.

A source of porphyritic rhyolite exists around the Aboriginal quarry on low spurs/basal slopes north of Wallagoot Lake. Evans (1992) could not identify a local source of the 'non-quarry porphyry'. Three sources of purple rhyolite were identified along Sandy Beach Creek which Evans (1992) argues were

exploited by Aboriginal people as a quarry. Quartz is noted as being local in occurrence and associated with the silicic volcanics. Evans' (1992) identified that the lithic quarry does not conform to typical models for extraction sites because little material from the quarry was present in the local site assemblages or appeared to have been removed from the local area. Evans (1992) suggested that the presence of sources of a technically more desirable material, purple rhyolite, in the nearby Sandy Beach Creek, is an explanation for this anomaly.

Evans (1992) identified that variations occurred in the way that different stone materials were curated. In general, the quarried porphyritic rhyolite tends to represent early stages of the reduction process whereas the banded rhyolite tends to be reduced to a greater extent. Evans (1992) proposed that the pattern of stone procurement and use in the Wallagoot Lake locality was determined by the presence of a local bedrock source (quarry porphyry) and a local secondarily deposited source (purple banded rhyolite) which were exploited by Aboriginal people during normal movement through the landscape. Purple (banded) rhyolite was preferred because of its greater amenability to controlled flaking.

Barber (1998) surveyed a small house lot on the foreshore of Merimbula Lake. Shell material was found across the disturbed topsoil of the property. Oakley (2000) also surveyed a small lot on Main Street, Merimbula situated on the isthmus separating Back Lagoon from Merimbula Lake. Shell material was identified but Oakley (2000) argued that the material may not have been of Aboriginal origin.

Williams (1998) later conducted an archaeological investigation of a 7.2 hectare portion of the same property in a section adjacent to Back Lagoon. The study was conducted in respect of a new proposal to develop the land as a health retreat. The study area included the main spur crest, upper, mid and lower side slopes, creek bottom and the lake foreshore. Visibility encountered was assessed to be generally very poor, however, Williams (1998) argued that the survey results are indicative of the survey potential of the area. One small Aboriginal site was recorded. The site is described as consisting of three stone artefacts located on a spur crest over an area of 15m. All artefacts were flakes made of purple rhyolite.

Kuskie (1998) conducted an investigation of areas on the northern margin of Wallagoot Lake and at White Rock Quarry. Nine sites (four artefact scatters, two middens, two isolated artefacts and one lithic quarry) were identified in the Turingal Head study area, while four artefact scatters were recorded at White Rock Quarry. Seven of these sites were new recordings.

Several of the previously recorded sites were combined on the basis of Kuskie's (1998) survey results. A small, dispersed shell midden site was recorded situated on a sand flat adjacent to the wetlands and Wallagoot Lake.

Kuskie (1998) found a continuous scatter of artefacts near the lithic quarry and situated on a low spur crest overlooking the northern shore of Wallagoot Lake. A total of 417 artefacts were recorded within an area measuring 1,712 m². Within the recorded sample artefacts occurred at a mean density of 93/m² of effective site area, despite earlier collections having reduced the number of artefacts. Densities between loci varied from 8 to 414 artefacts/100 m². Kuskie (1998) also recorded an extensive artefact scatter with a shell midden component situated within the vicinity of the Wallagoot Boat Club on the northern lake shore. At this site located on a low spur crest, basal side-slopes of the spur and an alluvial flat bordering Wallagoot Lake, 382 artefacts were recorded within an area measuring 1,935 m². Artefacts had previously been removed from the site but nevertheless occurred at a mean density of 52/100 m² of effective area. Artefact densities were found to vary between loci from 5-10 to 350 artefacts/100 m², being highest on the spur crest.

Boot (2001b) subsequently conducted subsurface test excavation at selected locations along the north shore to Wallagoot Lake. Sixty two stone artefacts were recovered from fifteen of twenty four excavated pits. The recovered artefacts were made of rhyolite, porphyry and quartz. The majority of the artefacts were identified to be porphyry. This result was expected given the close proximity of the test areas to the local quarry. Very few artefacts were found in the vicinity of ephemeral creeklines. Higher artefact densities were found in the eastern end of the study area in sandy deposits.

Dibden and Kuskie (1999) conducted further work at Bournda. Eighteen sites were identified within or adjacent to that study area comprising ten artefact scatters (including two with midden components), three shell middens and five isolated artefacts. These sites comprised twelve new recordings and five that have been previously recorded. Aboriginal sites were found to occur within the study area across virtually all of the landform units present. All sites were located in reasonably close proximity to potable water. In relation to landform unit's artefact densities were found to be generally higher on basal slopes. A variety of artefact types were present in the site assemblages with flaked pieces being the most common. In contrast to the northern side of the lake artefact types such as blades and cores were less frequent.

Kuskie and Gutierrez (2000) conducted a survey of the ten hectare Merimbula Cove property located on the northern shores of Merimbula Lake. Six Aboriginal sites were located including middens, one artefact scatter and one isolated stone artefact. The middens contained estuarine shellfish species of predominantly cockle with some mud oyster and whelk. Stone artefacts were made on locally available rhyolite and quartz and were interpreted to be representative of non-specific flaking activities and microblade production. Kuskie and Gutierrez (2000) found that sites were tethered to level to moderate sloping simple slopes and spur crests within 100 m or so of the lake margin.

Kuskie and Webster (2001) conducted test excavation at a midden site situated on a ridge crest overlooking Merimbula Creek. The investigation revealed the presence of three low density scatters of shell across site. No stone artefacts were recorded.

Kuskie (2002) surveyed 6 hectares of the proposed Lakewood residential development on the northern shore of Merimbula Lake. No Aboriginal sites were recorded and this result was explained to be a factor of the steepness of the hill slopes and accordingly the low archaeological potential of the area.

Wheeler and Douglas (2003) conducted a survey at the site of the Merimbula Public School situated on an isthmus between Merimbula Lake and Back Lagoon. While some areas of the site were found to be grossly modified, it was assessed that the majority of the site is undisturbed. Stone artefacts and midden material were recorded in surface exposures. Subsequent subsurface excavation was carried out on the site by Wheeler *et al.* (2003). In addition monitoring of selected locations was undertaken by representatives of the Bega Traditional Aboriginal Elders Council.

The subsurface work conducted at the school site revealed the presence of stone artefacts, shell midden and ochre within relatively intact soil profiles. Stone artefacts were found to be present in comparatively high densities representing tool maintenance and knapping activities. Raw materials utilised for stone working included silcrete, rhyolite and quartz. Backed artefacts dominated the 'finished implement' type and the analysis of material showed that blades were manufactured on site. The materials excavated led Wheeler *et al.* (2003) to conclude that the site is large, complex and repeatedly occupied.

Kuskie (2004) reports the salvage of a shell midden and artefact scatter site (MC7/A) identified by representatives of Bega Traditional Aboriginal Elders Council during a monitoring program of the Merimbula Cove Residential Development site. The MC7/A site was found on a ridge crest; in addition a further small shell midden (MC6/A) and an isolated artefact (MC6/B) was found on a simple slope.

Site MC6/A was found to contain *in situ* shell midden to a depth of 12 cm. In addition two stone artefacts and several pieces of bone and charcoal were retrieved. The midden, dominated by cockle (*Anadara trapezia*), was of a circular shape measuring 1.5 m in diameter. Mud oyster, mud whelk and edible mussel were also present but in lower frequencies. A single cockle shell was radiocarbon dated to 1192±30 years BP, equating to a calibrated age of 910-620 cal BP [Radiocarbon Date Number Wk14112] (Kuskie 2004).

Surface collection of stone artefacts and minor excavation by trowel of one midden locus was conducted at Site MC7/A. Of the forty seven stone artefacts recorded, banded rhyolite was found to dominate the assemblage, however silcrete was also present in moderate frequency. Flaking debitage dominated the artefact types, however the presence of one microblade and two microblade cores indicated on-site microblade technology. A single geometric microlith was retrieved from the *in situ* midden. Shell from that deposit was radiocarbon dated to 807± 30years BP (equating to an age calibration of 540-290 cal BP) [Radiocarbon Date Number Wk14110]. As Kuskie (2004) notes, this is a rarely documented finding in the south east, and strongly suggests the continuation of microblade technology into the recent past (however, *cf* Boot 2002).

ERM (2004) conducted a survey of an area measuring 20 square meters for a proposed sewage treatment plant at Tura Beach. A scatter of four stone artefacts was recorded.

Dibden (2004b) conducted a survey of the proposed Mirador subdivision area situated north of Back Lagoon in the area previously surveyed by Aiken (1986), Lance (1987) and Williams (1998). The artefact scatter previously identified by Aiken and Lance was relocated and found to be an extensive, but low density scatter on a spur landform. The site previously found by Williams (1998) was relocated and found to have been recently disturbed by earth works.

Dibden (2005a) conducted a survey at Millingandi in response to a caravan park redevelopment. The area was located adjacent to Merimbula Lake and

included an elevated flat landform (Tertiary) and bedrock slopes. A number of stone artefacts were recorded in sparse exposures. A program of subsurface test excavation has recently been undertaken revealing a subsurface distribution of stone artefacts across the entire area (Dibden 2006a).

Dibden (2005b) conducted a survey at Yellow Pinch, near Wolumla, for a proposal Telstra underground optic fibre cable. The proposed route extended for approximately 3 kilometres, westward from the Princes Highway along a Department of Environment and Conservation management trail and south along two sections of the cleared Bega–Pambula 66kV and 33kV power line easements (parts of which are present in the current study area). No Aboriginal sites were recorded during the survey and the study area was assessed to be of low archaeological potential and sensitivity.

In the Wolumla area Dibden (2006c) conducted a survey in relation to a proposed subdivision at Mine Lane, Wolumla. Surveying an area of c. 86 hectares, in conditions of generally low ground exposure three locales containing a total of seven Aboriginal objects were recorded. The findings of the study were that the majority of the study area was assessed to be of very low to low archaeological sensitivity. Nevertheless, a limited program of further archaeological work was recommended for the purposes of identifying the nature of any subsurface archaeological deposits.

Subsequent subsurface excavation at Mine Lane (Dibden 2007) across four landform units revealed stone artefacts to be widespread in a subsurface context but distributed in very low to low densities only.

Dibden (2009) surveyed the upgrade of the 66Kv transmission line between Eden and Bega. The survey traversed the current study area. Generally, the survey area was assessed to be of low archaeological potential and only three sites were recorded along the entire alignment.

Based on the review of prior research conducted in the area the following site predictions are made:

Stone Artefacts

Stone artefact distributions (located as either surface scatters or in subsurface contexts) are the most commonly recorded Aboriginal object in coastal hinterland contexts. Broad scale landscape based archaeological excavations conducted in the southeast region have revealed that stone artefacts are distributed in a virtual continuum across the landscape. However, the density and nature of the artefact distribution varies considerably in accordance with a number of behavioural factors which resulted in original artefact discard.

Differences in artefact density generally correspond to changes in environmental variables; very low and low density artefact distributions are found in large, amorphous landforms and in landforms with high slope gradients and locations which are situated away from sources of reliable water. Higher density artefact distributions are generally found in landforms which possess low slope gradients, are elevated areas and situated in close proximity to reliable water. Areas in which an abundance and variety of different natural resources are found can possess very high artefact densities; these are places in which Aboriginal people are likely to have occupied on a long-term and/or repeated basis.

Based on the research conducted for this assessment it is concluded that the proposal area is unlikely to be archaeologically sensitive. Artefact density is predicted to be very low to negligible.

Grinding Grooves

Grinding grooves are always located on sandstone exposures and are the result of the manufacture and maintenance of ground edge tools. Such tools were generally made of stone; however, bone and shell were also ground to fine points.

The location of sites with grinding grooves is dependent on the presence of a suitable rock surface, usually fine-grained homogeneous sandstone, and a water source. Grinding groove sites may consist of a single groove, or a large number which are sometimes arranged in patterns and groups. They commonly occur as an open site, however, are sometimes found in shelter contexts. Usually grinding grooves are located on horizontal sandstone exposures, but they can occasionally be found on vertical surfaces.

A broad temporal framework for the age of grinding groove sites can be inferred on the basis of the age of ground-edge hatchet heads found within archaeological deposits. Across Australia, there is significant variation in the timing of the introduction of ground-edge hatchet technology, and in the

south-east, the earliest hatchet heads date to the fourth millennium BP (Dibden 1996: 35; Attenbrow 2004: 241), and no earlier than 3,500 years ago (Hiscock 2008: 155). Grinding groove sites in the local area can be no older than 3,500 years. Given that hatchets were used at the time of European occupation, the use of some grinding groove sites may have spanned this temporal range.

Grinding hatchet heads on stone creates indelible marks on the rock surface and land. Grinding groove sites may have become significant and meaningful locales over time given their reference to an important item of material culture and their strong material presence in the landscape. Sites containing high groove counts are now visually significant marked locales. While the original motivation which led people to choose to grind hatchet heads at a specific place is now not well understood, it is possible over time and as a place became increasingly embellished with grooves, that the meaning and significance of that locale was changed correspondingly. Grinding groove sites may have provided a physical and conceptual reference to the ancestral past and activities of previous generations (Dibden 2011). Because of the enduring materiality of grinding grooves, they may have been meaningfully constituted expressions of place and mnemonic of past events and personal and group history (*cf.* Peterson 1972: 16).

Given that there are no sandstone outcrops present in the study area, this site type will not be found during the study.

Burials sites

Burial sites have been recorded within the wider region usually in sand deposits. Given the topographic and geomorphological context of the activity area, burials are unlikely to be present.

Rock Shelter Sites

Rock shelters consist of any form of rock overhang which contains artefacts and/or art. Common archaeological features of rock shelter sites are: surface artefacts, occupation deposit such as stone artefacts, shell, bone and charcoal, rock drawings, paintings and stencils, engraved imagery, potential archaeological deposit and grinding grooves. Given the absence of large vertical stone exposures this site type will not be present in the study area.

Scarred and Carved Trees

Scarred and Carved trees result from either domestic or ceremonial bark removal. Carved trees associated with burial grounds and other ceremonial places have been recorded in the wider region. In an Aboriginal land use

context this site type would most likely have been situated on flat or low gradient landforms in areas suitable for either habitation and/or ceremonial purposes.

Bark removal by European people through the entire historic period, and by natural processes such as fire blistering and branch fall, make the identification of scarring from a causal point of view very difficult. Accordingly, given the propensity for trees to bear scarring from natural causes their positive identification is impossible unless culturally specific variables such as stone hatchet cut marks or incised designs are evident, and rigorous criteria in regard to tree species/age/size and its specific characteristics in regard to regrowth is adopted.

Nevertheless, the likelihood of trees bearing cultural scarring remaining extant and *in situ* is low given events such as land clearance and bushfires. Generally scarred trees will only survive if they have been carefully protected (such as the trees associated with Yuranigh's grave at Molong where successive generations of European landholders have actively cared for them).

The study area has been extensively cleared and all trees are relatively young or saplings. This site type is unlikely to be recorded.

Stone Quarry and Procurement Sites

A lithic quarry is the location of an exploited stone source (Hiscock & Mitchell 1993:32). Sites will only be located where exposures of a stone type suitable for use in artefact manufacture occur. Given the absence of stone outcrops in the proposal area this site type is unlikely to be recorded during the study.

Middens

Middens consist of deposits of shell and sometimes contain stone artefacts, bone and human burials. Middens are a commonly recorded site type in coastal areas. Middens will vary in their species composition which is generally a factor of environmental location. Rock platform species typically dominate sites situated on headland contexts, while estuarine species are dominant in sites found around estuaries such as the Pambula River. The potential for middens to occur in the property is low.

Ceremonial Grounds

Burbung and ceremonial sites are places which were used for ritual and ceremonial purposes. Possibly the most significant ceremonial practices known were those which were concerned with initiation and other rites of passage such as those associated with death. Sites associated with these ceremonies are burbung grounds and burial sites. Additionally, secret rituals were undertaken by individuals such as clever men. These rituals were commonly undertaken in 'natural' locations such as water holes.

In addition to site specific types and locales, Aboriginal people invested the landscape with meaning and significance; this is commonly referred to as a sacred geography. Natural features are those physical places which are intimately associated with spirits or the dwelling/activity places of certain mythical beings (*cf.* Knight 2001; Boot 2002). Boot (2002) refers to the sacred and secular meaning of landscape to Aboriginal people which has '... legitimated their occupation as the guardians of the places created by their spiritual ancestors'.

There are no known ceremonial sites in the study area and the potential to be present is low.

2.4 Field Survey Results

A comprehensive field assessment was conducted on the 14th September 2021.

The study area is situated on the eastern side of a minor elevated ridgeline. Accordingly, the terrain across the study area falls away to the northeast. The landform units which comprise the area are simple slopes and low crests, with a series of four ephemeral drainage depressions flowing similarly to the northeast (Plates 2 and 3). Generally, the gradient of these landforms is moderate to steep.

At the time of the field survey almost all areas were covered in thick grass. While some small patches of ground exposure were located, no Aboriginal stone artefacts were found to be present.

Prior impacts across the study area include the construction of paved roads, dams, incised areas of vehicle track, and the installation of an electricity transmission line. In addition, there are impacts from ongoing agricultural practices including fencing, ploughing and harvesting, the installing of subsurface waterlines and other.

It is proposed to subdivide the study area into fifteen blocks for the construction of thirteen new homes. Within each block an area has been defined within which houses and associated structures are to be built. In addition, there is allowance for vehicle driveways leading from the house sites to the main access roads. All thirteen proposed house site construction envelopes and associated driveways are positioned on landforms of moderate to steep gradient, ranging from six to fourteen degrees. All are proposed to be situated on slopes at some distance from any of the drainage lines present. Because of the degree of gradient, in combination to distance to reliable water, no area where proposed house construction envelope impacts are planned has been assessed to have more than very low archaeological potential. Indeed, eleven of the thirteen proposed sites were assessed to have negligible potential.

As well as house sites, it is proposed to construct vehicle access roads. Most of this proposed road construction area overlies existing paved roads. The main central road enters the property from Summerhill Road at the north and continues to midway into the site. A second paved road links to this from an entrance on the Princes Highway. It is also proposed to construct some further roadways at the southwest end of the study area to provide vehicle thoroughfare to house blocks. These proposed roads are situated on the same landforms as the house sites and the archaeological potential of this area of proposed impacts is similarly very low. The exception to this is where the proposed road crosses the ephemeral second order streams. These drainage lines are reasonably deeply incised with steep banks. Even after recent heavy rains at the time of field survey, the streams held minimal water in small, captured puddles. Given this, these areas and their steep fringes were assessed to have very low archaeological potential.

No Aboriginal objects were recorded during the field assessment. Ground exposure was very low due to a thick and consistent cover of grass and, accordingly, the potential to record artefacts was significantly hampered. The archaeological assessment was therefore reliant upon a consideration of the predictive model for the landscape in question. As discussed above, given the area is comprised of a steep gradient landforms and the water courses are ephemeral, the site is assessed to be of low to negligible archaeological potential.



Plate 1 Proposed house site in lot 11 in foreground, looking to lots 12 and 13 on far side of drainage line; looking 70°.



Plate 2 Proposed lot 12; looking 70°.

3. LEGISLATION

The National Parks and Wildlife Act 1974 (NPW Act) is the primary legislation for the protection of some aspects of Aboriginal cultural heritage in NSW. One of the objectives of the NPW Act is:

... the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including but not limited to: (i) places, objects and features of significance to Aboriginal people ... (s.2A(1)(b))

Part 6 of the NPW Act is administered by the NSW BCD and provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing or damaging an Aboriginal object or declared Aboriginal place, or moving an object from the land.

Section 86 of the NPW Act, *Harming or desecrating Aboriginal objects and Aboriginal places*, sets out the penalties for harming an Aboriginal object. For an individual, the penalty for harming an object the person knows is an Aboriginal object, is imprisonment for up to 2 years and a significant fine (>\$200,000).

Anyone proposing to carry out an activity that may harm an Aboriginal object or declared Aboriginal place must investigate, assess and report on harm that may be caused by the activity they propose. An Aboriginal Heritage Impact Permit (AHIP) may be required if harm to Aboriginal objects and declared Aboriginal places is proposed. When this is the case, an Aboriginal Cultural Heritage Assessment Report (ACHAR) is required to support the AHIP application. In this instance, an AHIP is not required in respect of the proposed activity.

Further archaeological investigations such as test excavations can be undertaken when an area is assessed to possess a high probability of possessing subsurface Aboriginal objects with high potential conservation value. Such work can be done within the provisions of the NSW DECCW (2010b) Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (the Code of Practice). Test Excavation undertaken in accordance with the Code of Practice, allows harm to Aboriginal objects to occur (during excavation) without the need for an AHIP. Such work would normally only take place if the Due Diligence

assessment concluded that further archaeological works were necessary. In this case, that conclusion has not been reached.

4. CONCLUSIONS AND RECOMMENDATIONS

The Due Diligence Code of Practice (NSW DECCW 2010) - Step 4 of the Due Diligence Code of Practice (NSW DECCW 2010) indicates that where the assessment or visual inspection does not indicate that there are (or are likely to be) Aboriginal objects, the proponent can proceed with caution without an AHIP application. Section 3 provides further summary information of the legislative context relating to Aboriginal heritage in development contexts.

The current assessment has concluded that the activity area is not archaeologically sensitive. No previously recorded Aboriginal objects are known to be present.

A comprehensive field assessment has been undertaken and no Aboriginal objects found. An AHIP is not required.

Given that no Aboriginal objects are known to be present, and the area is not predicted to have a high probability of possessing subsurface Aboriginal objects with high potential conservation value, further archaeological assessment is not required.

Monitoring during construction for the purposes of identifying cultural material that may be uncovered during earth disturbance can be implemented as a management strategy. However, monitoring is a reactive rather than proactive strategy, and as such, is not an ideal management tool in cultural heritage management. It is noted that Heritage NSW does NOT endorse monitoring except in exceptional circumstances such as when burials have some reasonable potential to be present. In the case at hand, the development of a monitoring strategy is not considered necessary or appropriate.

If Aboriginal objects are found while undertaking the activity the proponent must stop work and notify the Heritage NSW; an AHIP may need to be sought.

In the unlikely event that human skeletal remains are found the proponent must stop work immediately, secure the area to prevent unauthorized access and contact the NSW Police and Heritage NSW.

5. REFERENCES

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APPENDIX 1 – AHIMS DATABASE SEARCH

AHIMS Web Services (AWS) Extensive search - Site list report									
SiteID	SiteName	Date	Zone	Eastng	Northng	Context	SiteStatus**	SiteFeatures	SiteTypes
Your Ref/PO Number : Pambula Client Service ID : 608933									
62-6-0488	Yowaka - Bridge (9) Contact	AGD	55	756720	5905120	Open site	Valid	Shell :-	Permits
62-6-0580	Yowaka 3. Contact	AGD	55	755400	5904675	Open site	Valid	Grinding Groove : 1	Permits
62-6-0483	Yowaka - Bridge (4) Contact	AGD	55	756330	5905870	Open site	Valid	Shell :-	Permits
62-6-0494	Broadwater Contact	AGD	55	756645	5904718	Open site	Valid	Hearth :-, Artefact :-, Shell :-	Permits
62-6-0578	Yowaka 1 Contact	AGD	55	755333	5904685	Open site	Valid	Artefact : 1	Permits
62-6-0069	Shark Hole/Pambula Lake 4; Contact	AGD	55	756800	5905300	Open site	Valid	Shell :-, Artefact :-	Permits
62-6-0485	Yowaka - Bridge (6) Contact	AGD	55	756620	5906520	Open site	Valid	Shell :-	Permits
62-6-0486	Yowaka - Bridge (7) Contact	AGD	55	756610	5906150	Open site	Valid	Shell :-	Permits
62-6-0487	Yowaka - Bridge (8) Contact	AGD	55	756610	5906020	Open site	Valid	Shell :-	Permits
62-6-0066	Pembula Lake Contact	AGD	55	756600	5904790	Open site	Valid	Shell :-, Artefact :-	Permits
62-6-0579	Yowaka 2. Contact	AGD	55	755157	5904742	Open site	Valid	Fish Trap :-	Permits
62-6-0159	Pambula Beach 4;Pambula; Contact	AGD	55	756600	5905200	Open site	Valid	Shell :-, Artefact :-	Permits
62-6-0481	Yowaka - Bridge Contact	AGD	55	756150	5905500	Open site	Valid	Shell :-, Artefact :-	Permits
62-6-0484	Yowaka - Bridge (5) Contact	AGD	55	756550	5906320	Open site	Valid	Shell :-	Permits
62-6-0660	Restriction applied. Please contact ahims@environment.nsw.gov.au. Contact	AGD	55	756000	5907000	Open site	Valid	Artefact :-	Permits
62-6-0157	Pambula Beach 2;Pambula; Contact	AGD	55	756000	5907000	Open site	Valid	Artefact :-	Permits
62-6-0659	Restriction applied. Please contact ahims@environment.nsw.gov.au. Contact	AGD	55	756000	5907000	Open site	Valid	Artefact :-	Permits

Report generated by AHIMS Web Service on 31/07/2021 for Julie Dibden for the following area at Datum :GDA, Zone : 55, Eastings : 752000.0 - 757000.0, Northings : 5903000.0 - 5908000.0 with a Buffer of 0 meters. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Pambula
Client Service ID : 608933

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
62-6-0482	Yowaka - Bridge (3)	AGD	55	756430	5905630	Open site	Valid	Shell :-		
	Contact	Recorders								Permits
62-6-0156	Pambula Bch 1,Pambula,	AGD	55	756000	5905000	Open site	Valid	Shell :- , Artefact :-	Midden	
	Contact	Recorders								Permits
				ASRSYS						

** Site Status

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified to update its status in the system.

Report generated by AHIMS Web Service on 31/07/2021 for Julie Dibden for the following area at Datum :GDA, Zone : 55, Eastings : 752000.0 - 757000.0, Northings : 5903000.0 - 5908000.0 with a Buffer of 0 meters. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.