DIDO STREET – SPRING CREEK, KIAMA NSW

Aboriginal Heritage Due Diligence Assessment

Prepared for APP Corporation Pty Ltd
on behalf of Boral Shared Business Services Pty Ltd and Kiama Municipal Council

Kiama Municipal Council Local Government Area

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1 Introduction

1.1 Project Background

Boral Shared Business Services Pty Ltd and Kiama Municipal Council are preparing a draft development control plan (DCP) in order to develop three parcels of land for residential purposes in Kiama, NSW. Three properties comprise of: Lot 2 DP805229, Lot 11 DP810839 and Lot 45 DP800176, located in the Kiama Municipal Council Local Government Area (LGA). Subject properties are referred to as the 'study area' and are shown in Figure 1. They are located within the township of Kiama and its suburb of Bombo, approximately 120 kilometres south of Sydney, in the Illawarra region.

The proposed activities include the development of the study area for residential purposes. The draft DCP will be produced in order to form the basis of development application to subdivide the three properties. A series of technical studies will provide background information that will be utilised in order to build the Draft DCP. APP Corporation Pty Ltd on behalf of Boral Shared Business Services Pty Ltd engaged Kelleher Nightingale Consulting Pty Ltd ('KNC') to undertake an Aboriginal heritage due diligence assessment for the study area.

1.2 Assessment Process

A due diligence archaeological assessment of the Aboriginal archaeological heritage within the study area was undertaken in accordance with the Office of Environment and Heritage (OEH) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010a).

The due diligence assessment process is a step by step method designed to give proponents a baseline level of information outlining opportunities and constraints related to heritage. The relevant steps are:

- Determine if the proposed activity will disturb the ground surface or any actual or potential Aboriginal heritage items, objects and places
- Database searches: Aboriginal heritage information management system (AHIMS) search and other relevant heritage registers and information sources for known Aboriginal heritage
- Landscape assessment
- Impact avoidance assessment
- Desktop assessment and visual inspection of the study area

The due diligence process specifies that if the initial assessment identifies that heritage objects will or are likely to be harmed by the proposed activity, then further investigation and impact assessment will be required.

The OEH process involves "taking *reasonable and practical measures* to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm" (OEH 2010:4).

1.3 Summary of findings

The due diligence assessment and associated inspection of the proposed development area identified two areas of archaeological potential located within the study area. Alluvial flat within limited levels of previous disturbance located north of Spring Creek and east of the drainage line that empties into the Spring Creek is assessed as containing high potential for Aboriginal archaeological material to be present. One area of moderate archaeological potential for Aboriginal cultural material is identified at the easternmost portion of Lot 11 located within the remnant sand dune, adjacent to the Spring Creek's tidal flat and associated estuary. The remainder of the study area was found to have low to no archaeological potential due to past land use practices and unsuitable landforms.

The proponent should take into consideration the proximity of the two identified areas of potential archaeological deposits during the design and construction phases of the proposed subdivision and development works in the vicinity. The two areas should be avoided to ensure no impact to the potential archaeological deposit at these locations. If the areas of high and moderate archaeological potential cannot be avoided, test excavation would be required to determine the presence/absence, nature and extent of archaeological deposit at these locations. The remainder of the study area was found to be within landforms that have no archaeological sensitivity or they have been highly disturbed by past land use practices and no Aboriginal objects or additional areas of Aboriginal archaeological potential were identified.

A fig tree located within the drainage depression in Lot 2 might have cultural significance to local Aboriginal people. Consultation with Local Aboriginal Land Council should be undertaken in order to assess its significance.

Provided that the two areas assessed as having archaeological potential are avoided by the proposed works, due diligence assessment of the study area did not identify the potential for harm to occur to Aboriginal objects. No further Aboriginal archaeological objects/sites were identified within the study area. Based on the results of this assessment and provided that the identified two areas are avoided, the proposal is unlikely to impact on Aboriginal heritage and according to the OEH *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and best practice guidelines, the proposed works can proceed with caution.

Figure 1. Location of the study area

Figure 2. Study Area and Hydrology

2 Assessment Process

2.1 Determine if the proposed activity will disturb the ground surface

A draft development control plan (DVP) will be prepared in order to develop the land for residential purposes. As part of the DCP Aboriginal heritage constraints need to be identified in order to inform the final design to subdivide properties and maximise the development potential. Subsequent residential development will involve significant ground disturbances to the proposed allotments. Residential development is likely to include:

- Earthworks (including cut/fill works)
- Construction of houses and other structures
- Installation of associated utilities
- New local roads, paths and access ways

Although the scale and extent of these activities will differ based on the finalised future layout plan developed for the site, these activities will impact the ground surface and have the potential to impact on any Aboriginal heritage that may be present. Some level of ground disturbance is unavoidable for the proposal as a whole. As a result, the due diligence process progressed to the next step.

2.2 Database searches and known information sources

2.2.1. Aboriginal heritage register searches

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by OEH, regulated under section 90Q of the *National Parks and Wildlife Act 1974*. AHIMS contains information and records related to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places (as defined under the Act) in NSW.

A search of AHIMS was conducted on 22 January 2018 to identify registered (known) Aboriginal sites or declared Aboriginal places within or adjacent to the study area (AHIMS Client Service ID: 323285). The search results are attached as Appendix A.

The AHIMS Web Service database search was conducted within the following coordinates (GDA, Zone 56):

Eastings:	302200 - 303100
Northings:	6162100 - 6162900
Buffer:	1 kilometre

The AHIMS search results showed:

2	**Aboriginal sites are recorded in or near the above location**
0	**Aboriginal places have been declared in or near the above location**

The distribution of recorded Aboriginal sites within these coordinates is shown on Figure 3. The frequencies of site types (site context/features) within the AHIMS database search area are listed in Table 1.

Table 1. Site features and site context from AHIMS database search

Site Context	Site Feature	Number	*% Frequency*
Open	Shell; Artefact	1	*50*
	Burial	1	*50*
Total		2	*100*

No previously recorded AHIMS Aboriginal sites or places are located within the study area.

Figure 3. Aboriginal heritage AHIMS database search results

2.2.2. Other heritage registers and database

A search was undertaken of the following statutory and non-statutory heritage registers for Aboriginal heritage items:

- State Heritage Register and State Heritage Inventory
- Kiama Local Environmental Plan 2011
- Roads & Maritime Section 170 Heritage and Conservation Register
- Sydney Water Section 170 Heritage and Conservation Register
- National Heritage List
- Commonwealth Heritage List
- Australian Heritage Database (Register of the National Estate – Non-statutory archive) and
- Australian Heritage Places Inventory (Register of the National Estate – Non-statutory archive).

No Aboriginal heritage sites or items were identified on these registers within the study area.

2.2.3. Previous Aboriginal archaeological investigations

No previous Aboriginal archaeological assessments were undertaken that encompass the study area. A limited number of Aboriginal archaeological surveys, assessments and excavations have been undertaken in the vicinity of the current study area. These have primarily been undertaken for residential development, land use assessments, infrastructure and quarry projects mainly within the Shellharbour Local Government Area that is within similar environmental conditions, and within the same traditional boundary of the Wodi Wodi that stretches from Wollongong to the north to Shoalhaven River to the south (Navin Officer 2004; KNC 2017a, b).

Navin Officer Heritage Consultants (2004) were engaged by the Shellharbour City Council to undertake cultural heritage assessment for the Local Environmental Study (LES) 0f the Urban Fringe Lands. Two sections of the Council were assessed and included part of Dunmore Valley (98.4 ha) and part of Albion Park (280.5 ha). Dunmore is located approximately 5 kilometres south of the current study area, parts of which is coastal plain environment consisting of Gerringong Volcanics of Latite and a portion of Quaternary alluvial deposits (Navin Officer 2004: 11). Valley floor alluvium and estuarine fill deposits have formed on Quaternary sediments and include fluvial, estuarine and marine depositional sequences. Areas of archaeological sensitivity were identified to be within terrace edges, spurline crests, remnant dunes, banks of drainage lines and wetland basins. One PAD was identified in these environmental settings, SUFA 4, located on a gentle to flat ground between a deeply incised creek and a shallow gully, approximately 7 kilometres north of the current study area. It was deemed that the area has the high potential for colluvial deposits to at least 30 centimetres depth (Navin Officer 2004: 22). Test excavation was recommended for this PAD.

KNC (2017a) has undertaken archaeological investigations for the Dunmore Hard Rock Quarry located approximately 5 kilometres of the current study area to expand the westernmost section of the existing quarry (KNC 2017). Three test excavation areas were identified within the assessment area on a south east running spurline within proximity to a natural reservoir. Test excavations recovered a total of 86 artefacts. Raw materials recovered included primarily fine grained siliceous stone, classified as agate, chalcedony and chert. As well as smaller quantities of quartz, silicified tuff, mudstone, unidentified fine grained siliceous, jasper, unidentified medium grained siliceous, igneous, petrified wood and quartzite. Artefact types included a hatchet/anvil fragment which had been recycled for use as a core, modified cobbles, whole flakes and a backed artefact. The three areas were subsequently identified as three artefact scatter sites (Croome West AFT 1, Croome West AFT 2 and Croome West AFT 3. Croome West AFT 1 and Croome West AFT 2 were identified as having moderate archaeological significance and have subsequently been salvaged (*results in prep.*) in accordance with mitigation measures. Croome West AFT 3 was assessed as having low archaeological significance and no further assessment was deemed necessary.

KNC (2017b) has undertaken Aboriginal heritage due diligence assessment for installation of a pressure wastewater main along Dunmore Road within Shellharbour Local Government Area. The assessment and the site inspection found no Aboriginal objects or areas of Aboriginal archaeological potential in the area. The area was deemed to be heavily disturbed due to recent land use practices associated with road construction, ongoing residential development and related infrastructure projects (KNC 2017b: 3).

Archaeological heritage survey was undertaken in 2004 by Patricia Sanders on 6.7 hectares of proposed residential development known as Cedar Grove Estate. It is located west form Willow Gully Creek, a tributary creek to Spring Creek, and south form Jamberoo Road, approximately 400 metres south-west of the current study area. A study located no Aboriginal or historic archaeological sites and no further assessments were recommended.

Godden Mackay Logan (GML 2012) has prepared Aboriginal and historic archaeological due diligence assessment for residential rezoning at Cedar Grove, located at Jamberoo Road in Kiama, approximately 500 metres south-west of the current study area, to the immediate south of Cedar Grove Estate. The study area was within a low hill landform with shallow sandy clay loam soils that were deemed not suitable to yield intact archaeological deposits (GML 2012: 24).

Summary

Previous archaeological studies in the local area and wider region have identified a small number and types of Aboriginal archaeological sites. This small number of sites is due to a limited number of archaeological and cultural heritage assessments within the area. Presence of sites within mainly alluvial and sandy deposits indicates that these landforms retain archaeological evidence of Aboriginal activities and landscape use (Navin Officer 2004), variably affected by disturbance. The information from previous archaeological studies in the region indicates that stone artefact scatters and isolated artefacts are the most likely site type within the current study area. Sandy deposits might also contain shell middens and burials. The study area contains landforms identified as archaeologically sensitive in the wider region (alluvial flats above estuaries and sandy deposits).

2.2.4. Known Aboriginal heritage in proximity to the study area

There are two previously recorded AHIMS sites located within 1 kilometres of the study area boundary. None of these sites are in close proximity or would be affected by the proposed works. These sites are described below and their locations are shown in Figure 3.

Railway Parade (AHIMS 52-5-0264)

This site is a midden comprising of the shell material recorded approximately 1 kilometre south of the current study area. The site was located less than 300m west of the Kiama Harbour within lower slopes in erosional Kiama soil landscape. The site is a small remnant midden of estuarine species: Sydney Cockle *(Anadara trapezia)*, Sydney Rock Oyster *(Saccostrea glomerata)* and Sydney Mud Whelk, as well as one litorrinid mollusc *Bembicium sp*. Shell material is in a disturbed context associated with earthmoving and dumping of fill, and is of a low scientific significance. Consent to Destroy was issued by the OEH (former National Parks and Wildlife Services) in 1992.

North Kiama Cemetery (AHIMS 52-5-0349)

This site is a burial located at the Kiama Cemetery, approximately 30m east of the study area. Reference about this burial is found in Organ (1990: 370) from the *Town and Country Journal* dated 21 November 1906. It was reported that King Mickey Johnston, head of the South Coast Aboriginal tribe between Wollongong and Nowra, died at Minumurra River camp and was laid to rest in North Kiama Cemetery when Rev. T.V. Alkin officiated at the graveside.

2.3 Landscape Assessment

2.3.1. Geology

The study area is located in the central Illawarra coast within the Coastal Plain physiographic sub-region of the Sydney Basin region (Hazelton 1992: 2). The Sydney Basin is a large geological feature stretching from Batemans Bay in the south to Newcastle in the north and Lithgow in the west. The basin formed between the Permian and Triassic when sedimentary rocks were created by the deposition of sediment from fluctuating marine advance and regression onto older basement rocks of the Lachlan Fold Belt and Late Carboniferous volcanoclastic sediments (Mayne et al. 1974). Earth movements between 180 and 200 million years ago within the southern side of the basin forced the layers of sedimentary and volcanic rock upwards (Young 1980a). The combination of erosion and the downward movement of debris on the southern side of the basin produced the Illawarra Escarpment which stretches from the Royal National Park in the north to Berry in the south and overlooks the Illawarra Coastal Plain.

The Coastal Plain lies between the Illawarra Escarpment and the sea, and consists of a number of geological features including: gentle rises of the Illawarra Coal Measures, rolling to steep low hills of volcanics, moderate to steep slopes of Berry Siltstone, undulating Budgong Sandstone and Quaternary alluvium. Underlying bedrock geology of the study area is comprised of Late Permian Bumbo Latite Flow of Gerringong Volcanic facies that is aphanitic to porphyritic latite (Bowman 1974: 37). Bumbo Latite is fine-grained basalt-like latite that ranges from mid grey to black in colour with commonly occurring columnar jointing, breccia zones and inclusion of metamorphosed sandstones. It is underlain and interbedded by Budgong Sandstone which outcrops on the lower slopes of Jamberoo Valley, approximately 10 kilometres west of the study area. Budgong Sandstone consists of red, brown and grey lithic sandstone with clasts of quartz, porphyritic andesite and basalt pebbles and cobbles (Bowman 1971). The quartz, andesite and other volcanics found within the Budgong Sandstone would have been suitable for small tool manufacture while basalt would have provided lithic material for stone axes. Bumbo Latite Flow covers the northern parts of the study area

More recent geologies developed and deposited during the Quaternary Period along the major watercourses. The nature of these deposits depends on the underlying lithology and the distance it has been transported. These deposits are the result of the developing network of deltaic, estuarine and alluvial landscape systems of the Coastal Plain and form a mixture of fluvial sands, gravels, silts, clays and mud in various proportions and compositions depending on the associated depositional system. Coastal Quaternary geology mapping (Troedson 2016) indicates that the southern portion of the study area is underlain by Quaternary alluvial and estuarine plains systems consisting of a number of units:

- Qhec - Holocene estuarine channel located to the south of the study area and consisting of marine sand, silt, clay, fluvial sand and gravel. Spring Creek at this point forms the mixture of fresh water creek and brackish lagoon.
- Qhef – Holocene tidal-delta flat located to the immediate east of the Spring Creek within the eastern portion of the study area. It consists of marine sand, silt, clay, shell and gravel.
- Qavf – Quaternary alluvial and colluvial fan located to the west of the Spring Creek and consisting of fluvial sand, silt, gravel and clay.
- Qhbd – Holocene dune located to the east of the tidal flat consisting of marine sand. Parts of this dune are present within the south-eastern sections of the study area.

2.3.2. Soil landscape

There are two soil landscapes located in the study area as mapped by Hazelton (1992). Northern part of the study area is situated on the Bombo Soil Landscape, and the southern part is on Seven Mile Soil Landscape (Figure 4). Bombo Soil Landscape occurs within rolling low hills with scattered benches on upper slopes, relief 40-100 metres and moderately inclined to isolated steep slopes. This soil landscape is associated with hillslopes within the study area. Soils are Brown Podzolic and Red Podzolic on mid and lower slopes consisting of up to 10 centimetres of black sandy loams as topsoils (Horizon A) that overlies 40 centimetres reddish brown sandy clay as the subsoil (Horizon B) overlain by <35 centimetres of reddish brown light clay. Bombo soil landscapes are erosional soils that are characterised by mass movement and rock outcrop, therefore are susceptible to erosional processes. Soil erosion that can be caused by both natural and human factors would have devastating effects on the preservation of archaeological material as it removes artefact bearing soil deposits or exposes archaeological material that could be then transported and deposited down the slope where it accumulates in a secondary, disturbed context.

Seven Mile Soil Landscape is an estuarine soil landscape that occurs on marine dune ridges and swales, and lagoons and swamps inland. They are associated with tidal flats and alluvial flats within the study area. Relief is usually <5 metres, slopes <5% and the watertable is at a depth of 2 metres. Soils are deep Siliceous Sands and Podzols on ridges and Peats in swamps. They consist of up to 30 centimetres of dull yellow sand or black organic peat occurring as the topsoil (Horizon A) that overlies <20 centimetres of brown clayey sand occurring as the subsoil (Horizon B); these soil materials are overlain by sandy organic pan and brown clayey sand to a total soil depth of <3 meters on ridges and 1.5 metres on swales and swamps. Fine sedimentary material is washed down from higher areas and deposited into an

estuary or delta; these fine articles consisting of sands, clays and silts are alluvial deposits. Estuarine environments often provide excellent conditions for preservation of archaeological material especially perishable items such as wood, shell and bones, as anaerobic salt marsh or tidal flats conditions preserve organic material. Although Seven Mile Soil Landscape has the capacity to conserve archaeological material, whether it would be in context or not depends on their location and the frequency and type of flood events, colluvial erosion of slopes and other disturbance factors, such as land use history.

2.3.3. Landform, hydrology and landscape resources

Topographically, the entire study area is located within the low hills landform pattern with alluvial and tidal flats associated with Spring Creek and its estuary. Low hills landform is of a low relief (30-90metres) with gentle to very steep slopes and erosional stream channels (Speight 1998: 52). Drainage depression and hillslopes generally are part of this landform pattern. Drainage depression is level to gently inclined open depression with rising to moderately inclined side slopes, eroded or aggraded by sheet wash; within the study area drainage depression is located within the western section and is an ephemeral creek line that has intermittent water flow. Hillcrest landform element is gently inclined to precipitous slope eroded by sheet wash or water-aided mass movement (Speight 1998: 31). This landform element within the study area is associated with the drainage depression and is present also to the north of alluvial flat (Figure 5). Alluvial flat within the study area is located to the north of Spring Creek and east of the drainage depression (Figure 5). It is a landform pattern with extremely low relief and frequently active erosion or aggradation from channelled or overbank stream flow, or landform may be relict from these processes (Speight 2008: 48). Tidal flat located to the east of Spring Creek within the study area is associated with the Spring Creek estuary. It is a level landform pattern with extremely low relief and slowly migrating deep alluvial stream channels; it is aggraded by frequently active tides (Speight 2008: 56).

The study area is located north of Spring Creek and is partly within its wetland reserved by the Kiama Municipal Council to rehabilitate the wetlands, different habitats and to protect the local wildlife. Spring Creek rises at the foothills of Saddleback Mountain, approximately 4 kilometres south-west, and enters the ocean approximately 250 metres east of the study area. It forms an estuary where the creek's current meets the sea tide. Different types of water habitats are located at the south and to the immediate south of the study area, including: fresh water creek, fresh water lake, brackish lagoon and Spring Creek tidal flat. This mixture of fresh and brackish water habitats supports a variety of flora and fauna.

The study area and its surroundings have been cleared of native vegetation for farmlands. In the recent times Kiama Municipal Council has reserved the Spring Creek Wetland (Figure 5) in order to rehabilitate the wetland and protect the wildlife. Shallow saline areas at the eastern part of the wetland support saltmarsh that are hunting grounds for a variety of birds and the reeds that border the wetlands provide protection for their nesting sites. Swamp oak forest would have occurred around the margins of the wetland that would give way to taller, more willowy river oaks alongside the fresh water of the creek toward the south-east. Rainforest species would have been interspersed amongst swamp and river oaks, and also grew along the banks of Spring Creek and on the hills around the wetland; the species include figs, lilly pillies, native daphne and cabbage palms. Wetland provides habitats for a variety of birds, reptiles and amphibians, as ponds and dams dry up during the summer months and wetland provides a vital refuge for birds from the surrounding districts. These environmental conditions would have provided Aboriginal people with a variety of resources that would have been utilised as foods, medicines, raw materials and fresh water supply.

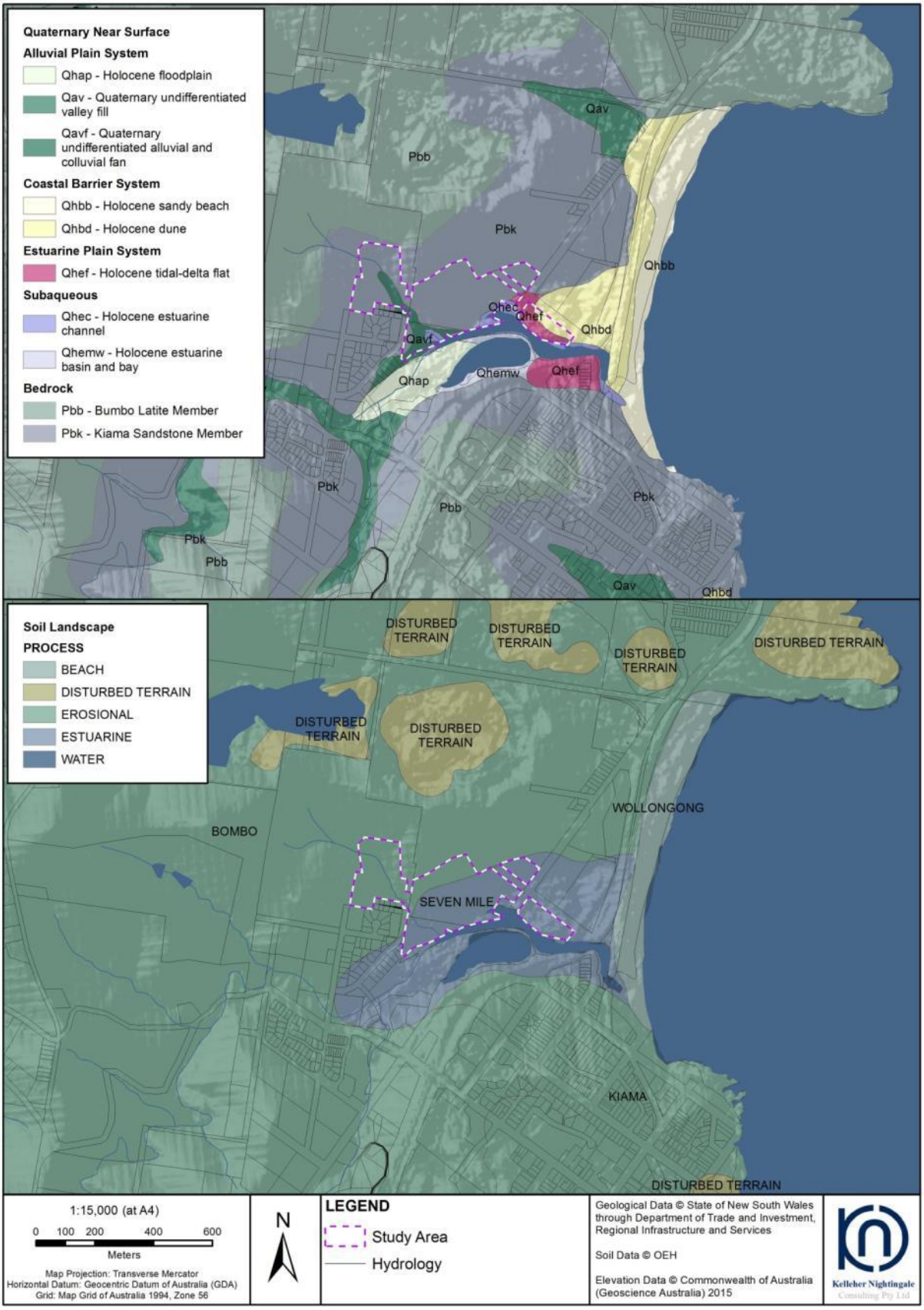

Figure 4. Geology and soil landscapes of the study area

Figure 5: Landforms within the study area.

2.3.4. Land use history of the local area

The study area has been cleared of native vegetation and is generally covered in short pasture grass. The exception is the southern portion that is located within the Spring Creek Wetland as it has been recently rehabilitated and replanted. The easternmost part of the study area contains farm house and its associated buildings and sheds.

The majority of the study area is located within the township of Kiama. Only the portion west of Riddell Street is within the suburb of Bombo. The Wodi Wodi Aboriginal people were the original inhabitants of Kiama and Bombo region prior to the European settlement. It is said that they have called the place 'Kiarama' or 'Kiarmai', translated as 'where the sea makes a noise', although 'fertile land', 'mysterious spirit' and 'plenty of food' have been suggested. The former is a reference to the blowhole located at the Blow Hole Point, approximately 1.7 kilometres south-east of the study area. The first European to get attracted by the blowhole was George Bass who wrote of the 'tremendous noise' this 'subterranean passage' produced when he anchored onshore in December 1797. An abundance of cedar drew the Europeans to the area and by 1820 some 90% of the Sydney Cedar was shipped from Kiama area.

In 1819 surveyor James Meehan surveyed the area by land and surveyor-general Oxley explored the area he called 'Kiarami', and in 1828 he reserved the land adjacent to the harbour for the township that was gazetted in 1839. The first settler in the region was David Smith, a sawyer, who built a permanent house in 1832 that became the village's first tavern, the Gum Tree Tavern, in 1837. Kiama developed as the shipping and service centre for local industries from the 1840's onwards. Dairying was a staple industry for the Illawarra region and shipping of butter directly to England was established in 1880's. Development of the harbour was completed in 1876 and that contributed towards the development of the basalt-quarrying industry in Kiama. The first quarry was established in 1855 where the Aquatic Centre is currently located, approximately 600 metres to the south. A boom of the quarry industry was triggered by the growth of Sydney's tramways, roadways and railways from 1879 and the basalt being laid between the tracks. In 1880 two quarries were opened in Bombo, and at that time around 400 tonnes of rock was transported from the area each day. The railway from Sydney that came to Bombo in 1887, and extended to Kiama in 1893 allowed for better and faster transport of people and goods. Kiama became attractive destination due to its ocean views, local scenery and mild climate as early as 1880's. With its butter and basalt industry as well as the direct rail link to Sydney, Kiama's future was guaranteed.

The study area is included in the Kiama Parish Maps dating from 1892 onwards. They show the entire study area is within proposed lots – sections, including Section 54, 62, 63 and 71, and roads running within the study area boundaries. Northern sections of Riddell and Dido streets are shown on the map but they were never constructed. Hutchinson Street was mapped running between Section 64 and 52 and across the lagoon and Spring Creek, and Vincent Street between Section 63 and 71, are also non-existent today (Plate 1). Parish map dating 1911 shows that the sections were by that time subdivided and granted to occupants. Area to the immediate north of Spring Creek was granted to John Taylor; land north of John Taylor's was granted to William King and David Smith; William King was also granted land east of the Spring Creek. Eastern part of the study area was granted to Charles Cameron to the north and Richard Bushnell to the south; there is Vincent Street outlined between these two properties but it was never constructed (Plate 2). Alexander King was granted the lagoon and the area south of Spring Creek (Plate 2). Parish map dating form 1932 show the same land occupants in the study area (Plate 3).

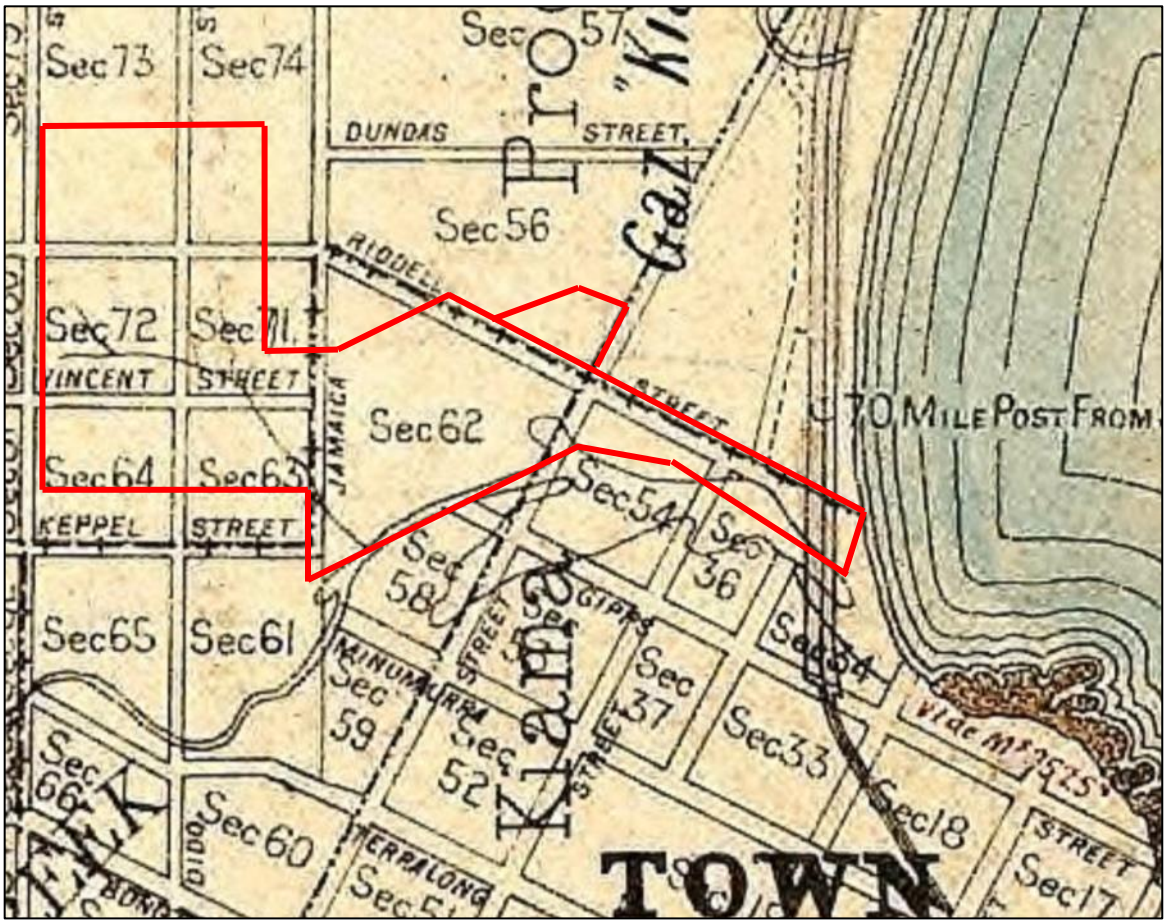

Plate 1: Parish of Kiama, County of Camden, 1892. Land & Water Conservation reference number 138368. Approximate location of the study area marked by red outline.

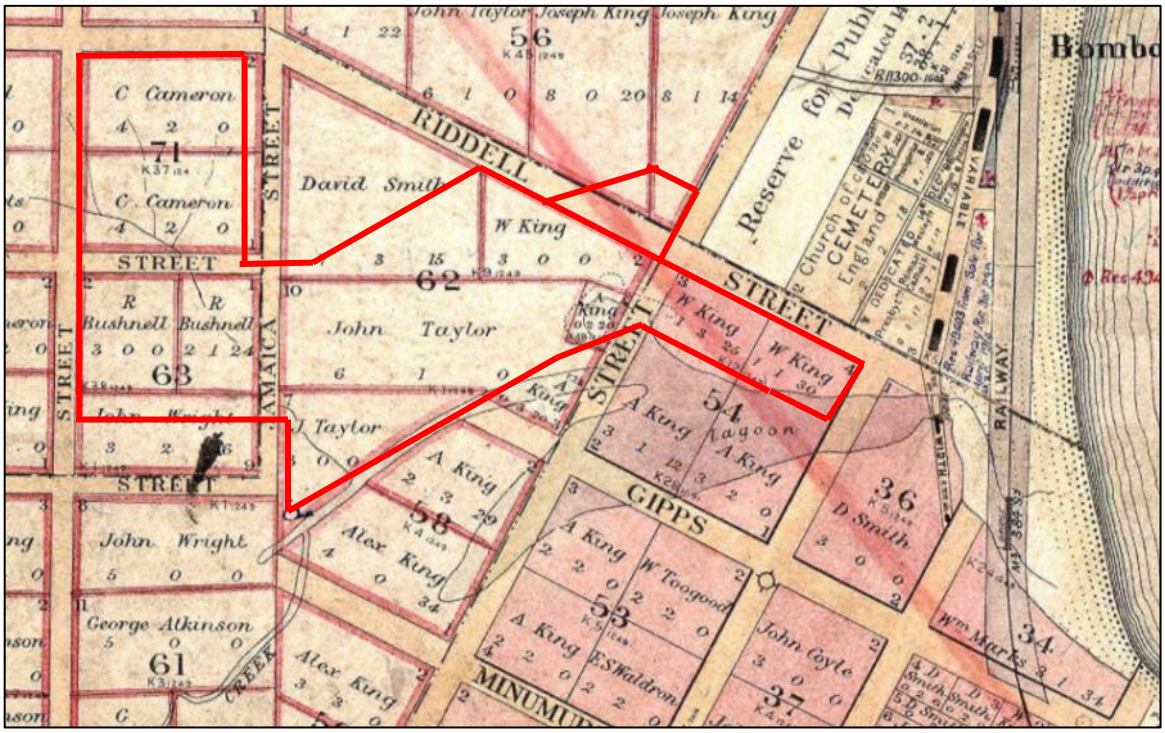

Plate 2: Parish of Kiama, County of Camden, 1911. Land & Water Conservation reference number 140597. Approximate location of the study area marked by red outline.

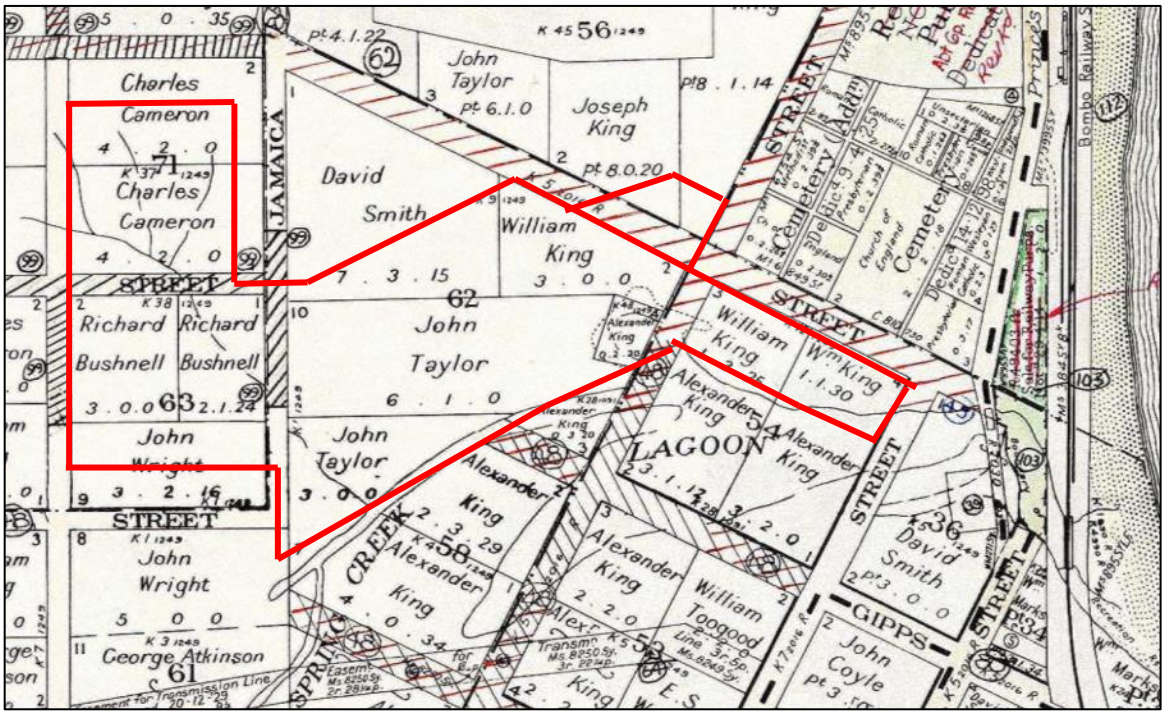

Plate 3. Town of Kiama, Parish of Kiama, County of Camden, NSW 1932. Land & Water Conservation reference number 103302. Approximate location of the study area marked by red outline.

Following the granting of early land parcels in the area, initial European activities in the region included timber clearance for farming and grazing practices. Major disturbances in the study area are associated with the construction of farm buildings and infrastructure, fences and tracks. House and associated buildings are located only within the eastern portion of Lot 11, and also one small shed at the western part of the study area, within Lot 2. Farming and agricultural activities include ploughing throughout the entire study area. Plant revegetation and landscaping works have been occurring in the recent times within the protected wetland, located at the southern edges of the study area. More recently extensive land clearings that most likely included soil scraping were observed on the aerial within Lot 45.

Disturbance from these landuse practices as well as from the natural agents within the study area is variable. Flooding is likely to have affected the lands bordering the Spring Creek to some degree, especially the lower lying, tidal flat to the east of the Spring Creek, within southern portion of Lot 11. Agricultural activities including land clearance, ploughing, as well as revegetation and landscaping works would have directly impacted on any Aboriginal scarred trees that might have been present. These practices would have also affected subsurface cultural material through disturbances to the upper soil horizons. Spatial and stratigraphic movements of cultural material could be expected, but these processes do not remove or destroy archaeological material. Some post-depositional movements of cultural material can also be expected due to erosion, especially on the hillslope landforms. Construction of farm buildings is considered to have caused significant ground disturbances as they would have removed and/or displaced soils that would have possibly contained cultural material.

The study area is located in proximity to landform features (within 200 metres of waterways) which are often associated with Aboriginal occupation/activity as determined by the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010a). Based on the landscape assessment, Aboriginal site predictive model and land use history, the study area has the potential to retain Aboriginal objects and archaeological deposit in contexts where the ground has not been subject to significant ground disturbance.

2.4 Impact avoidance

Background research did not identify any previously recorded Aboriginal heritage items or Aboriginal archaeological sites either within the study area. The closest recorded site is located at 30m from the study area boundaries. The study area does however contain landforms identified by previous studies in the region as displaying archaeological potential, namely the elevated terraces and alluvial flats bordering drainage lines. Previous investigations at nearby sites have demonstrated that subsurface archaeological deposit may be present at these locations. Previous assessment within the wider region identified areas of archaeological sensitivity to be within terrace edges, spurline crests, remnant dunes, banks of drainage lines and wetland basins (Navin Officer 2004). Landforms within the study area are also located within 200m of waters (an environmental context identified as sensitive by OEH under the *Due Diligence Code of Practice*).

The proposed activity is the subdivision and residential development of the study area into approximately 100 new lots, as well as construction of associated infrastructure including new local roads. The current draft development layout (as shown in Figure 2) indicates that the majority of the property will be impacted. Although the scale and extent of these activities will differ based on the finalised future layout plan developed for the site, these activities will impact the ground surface. Archaeologically sensitive landforms identified by OEH would be affected and the proposal therefore has the potential to impact on any Aboriginal or non-Aboriginal heritage that may be present.

As a result, the due diligence process progressed to the next step.

2.5 Desktop review summary

The desktop review and assessment combined results of heritage register searches, previous investigations and landscape assessment. No previously recorded Aboriginal archaeological sites were identified within the study area, although areas of high Aboriginal cultural heritage sensitivity have been identified within the alluvial flats and remnants of a sand dune adjacent to the tidal flat within the study area.

The Aboriginal archaeology of the wider region is characterised by low to moderate density surface artefact scatters, shell middens and a burial. Previous archaeological and cultural heritage assessments undertaken at a nearby site within low hills landform pointed out that it did not contain any potential for Aboriginal cultural heritage material due to the unsuitability for occupation within this landform and a very low level of preservation within the clay loam soils. The studies undertaken within the wider region indicated that there are landforms that are archaeologically sensitive, mainly alluvial flats and sand bodies. Both of these landforms are located within the study area. Alluvial flat is an elevated landform above the Spring Creek estuary that has an abundance of resources that were extensively utilised by Aboriginal people in the past. Review of the past land use activities indicated that levels of previous disturbance would partially impact the surface soil deposits. Remnant of a sand dune adjacent to the tidal flat located to the easternmost part of the study area with unknown levels of previous disturbance imply that there is a possibility for some of the Aboriginal cultural material to be present within lower sandy deposits.

Landscape assessment identified the potential for Aboriginal sites in the form of stone artefact scatters, PADs, shell middens, burials and isolated artefacts to occur within the study area. Soil types within the alluvial flat and sand dunes are generally conducive to the preservation of archaeological deposit where disturbance levels are low. Identified disturbance within the study area includes flooding, agriculture, construction of the house/outbuildings and tracks and installation of fencing.

OEH identifies particular landscape features that are often linked with the presence of Aboriginal objects, including landforms in proximity to waterways. These features occur within the study area. Given the presence of these landscape features, visual inspection of the study area was the next step of the due diligence assessment process.

2.6 Visual inspection

The study area was inspected and assessed on 23 January 2018 by Ana Jakovljevic (Archaeologist, KNC). Visual inspection aimed to identify items of Aboriginal heritage and assess the potential of the archaeologically sensitive landforms identified within the study area to contain items of Aboriginal heritage.

The visual inspection commenced at the southernmost end of the study area, within Lot 45, located within the alluvial flat north of Spring Creek. The area was covered in short grass that reduced ground surface visibility to approximately 10%. Areas of exposure were visible due to the local pedestrian and vehicle traffic. An artificial embankment was observed along the border with the drainage that empties into the Spring Creek (Plate 4). The entire area south of the drainage has been significantly scraped with some amount of gravel imported that was observed within the exposures (Plate 5). Although the area is within the alluvial flat, archaeologically sensitive landform, due to the amount of previous ground disturbance that most likely removed and/or displaced large areas of original topsoil, archaeological potential in this part of the study area was deemed as very low to nil.

Plate 4. View north across scraped area, between Spring Creek and dranaige line, southern end of Lot 45

Plate 5. Areas of exposure, southern end of Lot 45, facing north-east

The pedestrian walk continued along the northern side of Spring Creek and the edges of the wetland. Alluvial flat was observed to the north that was accessed from the eastern end of Lot 11. Ground surface visibility within the alluvial flat was low due to the grass cover (Plate 6). Exposures were observed around fence lines (Plate 7) and trees, and were closely inspected, but no Aboriginal cultural material was identified. Previous land use practices point out that alluvial flat has been through some disturbances, most likely land clearance, pasture and ploughing activities, as well as installation of fence lines and gates. The exact levels of these disturbances could not be determined by the site inspection. Alluvial flat is a levelled, elevated landform above Spring Creek and its estuary that was most likely frequently visited and occupied by Aboriginal people in the past. It has dry conditions for camping and an abundance of resources in the close proximity; soil conditions are also conducive to preserving cultural material. Given its landform context and low levels of previous disturbance, the alluvial flat was considered to have high archaeological potential for containing subsurface Aboriginal cultural material.

Plate 6. General ground surface visibility conditions within alluvial flat landform, Lot 11, facing north towards the hillslope

Plate 7. Areas of exposures within alluvial flat landform around fencelines and gates, Lot 11, facing south-west

Plate 8. Alluvial flat landform, Lot 11, facing south-west towards the wetland

Plate 9. View from the hillslope onto the alluval flat, facing south-west

Hillslope landform is present above the drainage line in Lot 2 and above the alluvial flat in Lot 11. Slope is gentle to moderate in Lot 11 (Plate 10) and steep to very steep in Lot 2 (Plate 11). Both properties are currently used for grazing and variable levels of ground surface visibility were observed, ranging from 0% within grassed areas to 20% within surfaces covered with rock. Some patchy areas of exposure were visible throughout the entire landform due to the cattle trampling and water runoff. Disturbances identified were associated with installation of fence lines, gates and modifying the drainage depression sides with rocks. These disturbances would have displaced/removed surface soil cover. Considering that natural soils in hillslope landform are very shallow, it is most likely that there is none or very little remnant topsoil in these areas. The rest of the hillslope landform is affected by erosion due to the cattle trampling and natural agents such water runoff. Archaeological sensitivity of hillslope landform is low due to the steep terrain that is not conducive to human occupation. It is most likely that the area was used by Aboriginal people in the past as the passing corridor and some isolated cultural material is possible to have been discarded or lost along the way. However, considering the shallow erosional soil conditions that cannot preserve archaeological material, the entire hillslope landform is assessed as having low archaeological potential. If any cultural material would have been located on the hillslope, it would have been washed downslope.

Plate 10. General ground surface visibility within hillslope landform, northern end of Lot 11, facing west

Plate 11. Very steep ground conditions in Lot 2, facing north

Scattered rocks were visible on the north-western part of Lot 11 (Plate 12). They were running in line but scattered and partially overgrown with grass. These rocks were not association with any Aboriginal heritage within the study area.

Plate 12. Rocks within Lot 11, facing south-west

Plate 13. Rocks visible on the surface in Lot 2, facing north

Drainage depression located within Lot 2 and extending to Lot 45 was carefully inspected. The drainage has ephemeral water with its banks gently inclined (Plate 14). Some erosion was however visible along the banks due to the cattle trampling and heavy rainfalls (Plate 15). The lower reaches of the drainage located within Lots 11 and 45 are overgrown with thick vegetation (Plate 16). One large fig tree was observed on its banks within Lot 2 (Plate 17). Fig trees are not considered Aboriginal objects, but are known to have cultural significance to Aboriginal people, as they are often associated as birthing sites. It is recommended that consultation with Local Aboriginal Land Council is conducted in the next phase of the development in order to determine cultural significance of the fig tree. There are no rock outcrops within the drainage line that would have been suitable for grinding or as a raw material. Drainage depression is assessed as having low archaeological potential for Aboriginal cultural material to be present.

Plate 14. Drainage depression, Lot 2, facing north-west

Plate 15. Conditions within drainage line banks, facing north

Plate 16. Conditions within drainage depression, Lot 45, facing north-west

Plate 17. Fig tree located within drainage depression in Lot 2, facing north

Tidal flat landform located to the east of Spring Creek, within the southern end of Lot 11, was inspected. It is associated with the Spring Creek estuary and its wetland. The entire area is within the wetland that has been recently revegetated and managed by the Kiama Municipal Council as a reserve for conservation and education, named Spring Creek Wetlands. Ground surface visibility varied between 0% where covered in grass and replanted vegetation, and 100% in cleared areas and formal tracks (Plate 18). Areas of exposure were observed within cleared areas (Plate 19). Remnants of the sand dune extending from Bombo Beach to the cemetery are located within the easternmost parts of Lot 11, adjacent to tidal flat; this area is revegetated. The entire inspected area is flat and sandy conditions were encountered.

Tidal flat is overgrown with thick vegetation, is regularly flooded and has swampy conditions. Estuarine environments have been extensively used by Aboriginal people in the past due to the abundance of resources; some isolated, lost or discarded, cultural material is possible to occur. Swampy conditions are known to well preserve archaeological objects, especially organic material. This cultural material, however, would not be *in situ* due to the regular submergence and exposure of the soil layers. Although tidal flats may contain random, isolated cultural material, due to their environmental conditions archaeological potential of the tidal flat landform is considered to be low.

Remnants of the coastal sand dune are present within the easternmost part of Lot 11. Previous ground disturbance is due to the land clearings in the past and recent revegetation and landscaping works. These land use practices have caused disturbance to some ground level, but its extent could not be determined by the site inspection. Sand dunes are known to have a very high archaeological sensitivity for containing Aboriginal cultural material including shell middens and burials. Considering the proximity to the tidal flat and estuary, it is most likely that sand dune has a very high water table which would have mixed and/or displaced any cultural material. Easternmost parts of the Lot 11 have a moderate potential to contain archaeological material.

Plate 18. Remnants of sand dune, recently replanted, within the Wetland, Lot 11, facing south

Plate 19. Areas of exposure within the tidal flat, facing south-west

Summary
No Aboriginal objects were identified during the visual inspection. Areas of archaeological sensitivity were defined based on landform, levels of previous disturbance and on site predictive models developed from previous archaeological assessments. The likelihood of Aboriginal cultural material occurring throughout the study area (i.e. archaeological potential) was assessed as low, moderate or high, based on the archaeological sensitivity and levels of previous ground disturbance. One area of high and one area of moderate archaeological potential were identified during the site inspection. Area of high archaeological potential is identified within the alluvial flat landform, and area of moderate archaeological potential within the remnants of the beach sand dune.

Alluvial flat landform is located north of Spring Creek and its estuary. It is defined by the hillslope to the north and small drainage line to the west. The entire area has very limited previous ground disturbances and its potential to contain subsurface archaeological deposits is assessed as high.

Remnant of the westernmost part of the sand dune is located partially within the eastern section of Lot 11. It has been through land modifications but considering its very high sensitivity for containing Aboriginal cultural material, its archaeological potential is assessed as moderate.

A fig tree located within the drainage depression in Lot 2 might have cultural significance to local Aboriginal people. Consolation with Local Aboriginal Land Council should be undertaken in order to assess its significance.

The remainder of the study area, including hillslopes, drainage depression, tidal flat and the remainder of the alluvial flat was considered to display low to no archaeological potential due to low sensitivity landforms and/or high levels of previous land use disturbance.

Figure 6. Visual inspection results

3 Legislative Considerations

The *National Parks and Wildlife Act 1974* is the primary statutory control dealing with Aboriginal heritage in New South Wales. Items of Aboriginal heritage (Aboriginal objects) or declared Aboriginal places are protected and regulated under the Act.

An "Aboriginal object" is defined under the Act 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". As such, Aboriginal objects are confined to physical evidence and are commonly referred to as Aboriginal sites.

It is an offence to harm or desecrate an Aboriginal object, either knowingly [section 86 (1)] or unknowingly [section 86 (2)]. Harm includes to destroy, deface, damage or move. An Aboriginal heritage impact permit (AHIP) issued under section 90 (1) of the Act is required for any activity which will harm an Aboriginal object or declared Aboriginal place.

Section 87 (2) of the Act provides a defence against prosecution under section 86 (2) if "the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed". This defence appears to specifically relate to Aboriginal objects.

This due diligence assessment report was commissioned to:

- exercise due diligence in relation to Aboriginal objects;
- comply with the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*;
- identify if the proposal would harm an Aboriginal object and, if so, what measures can be taken to avoid that harm; and
- reasonably determine that no Aboriginal object would be harmed.

4 Conclusion

No previously recorded Aboriginal archaeological sites were found to be located within the study area. Visual inspection of the proposed subdivision and development area did not observe any Aboriginal objects or archaeological sites. The due diligence assessment and associated visual inspection identified one area of high and one area of moderate potential for Aboriginal cultural material to be present within the study area (Figure 6).

Area of high archaeological potential is within the alluvial flat defined by the Spring Creek to the south, drainage line to the west and the hillslope to the north. Area of moderate archaeological potential is located within the easternmost extent of Lot 11 and is defined by the tidal flat to the west and the property boundary to the east.

Two areas of archaeological potential should be avoided by all impacts associated with the proposed works, including access, placement of temporary construction or ancillary facilities and drainage works. Fig tree should be subject to further assessments in the next phase of the development if any impacts be proposed.

If the two areas of archaeological potential cannot be avoided, test excavation would be required to determine the presence/absence, nature and extent of archaeological deposit at these locations. The remainder of the study area was found to be within areas that do not exhibit archaeological sensitivity or are highly disturbed by the past land use practices, therefore no Aboriginal objects or additional areas of Aboriginal archaeological potential were identified.

Provided that the two areas of archaeological potential are avoided by the proposed works, due diligence assessment of the study area did not identify the potential for harm to occur to Aboriginal objects. No further Aboriginal archaeological objects/sites were identified within the study area. Based on the results of this assessment and provided that the identified areas of archaeological potential are avoided, the proposal is unlikely to impact on Aboriginal heritage and according to the OEH *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and best practice guidelines, the proposed works can proceed with caution.

5 Recommendations

Based on the findings of the due diligence assessment process, it is recommended that:

- Areas of high and moderate archaeological potential as mapped on Figure 6 within the study area should be avoided by the proposed works.
- Consultation with the Local Aboriginal land Council should be undertaken in order to assess the cultural significance of the fig tree located within the Lot 2 of the study area, as mapped in Figure 6, if any impacts are proposed.
- The proponent should take into consideration the proximity of the two areas of archaeological potential during the design and construction phases of the proposed subdivision and development works in the vicinity. The areas should be avoided to ensure no impact to the potential archaeological deposits at these locations.
- Should avoidance of the two areas of archaeological potential not be possible, then in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*, further investigation and assessment would be required. A program of archaeological test excavation would be required to determine the nature and extent of the archaeological resource. Test excavation should be conducted in accordance with the OEH *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (OEH 2010b).
- Depending on the result of the test excavation, an Aboriginal Heritage Impact Permit (AHIP) may then be required to allow impact to the area and any Aboriginal objects contained within the areas of archaeological potential.

Provided that the identified areas of archaeological deposits are avoided, the proposal is unlikely to impact on Aboriginal heritage and according to the OEH *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and best practice guidelines, the proposed works can proceed with caution.

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Appendix A AHIMS Search Results

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 1732

Client Service ID : 323285

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0264	Railway Parade;	AGD	56	303300	6161300	Open site	Valid	Shell : -, Artefact : -	Midden	99329
	Contact	Recorders	Rod Wellington					Permits	353	
52-5-0349	North Kiama Cemetery	AGD	56	303050	6162400	Open site	Valid	Burial : -	Burial/s	99329
	Contact	Recorders	Illawarra Mercury					Permits		

Report generated by AHIMS Web Service on 22/01/2018 for Kristen Taylor for the following area at Datum :GDA, Zone : 56, Eastings : 302200 - 303100, Northings : 6162100 - 6162900 with a Buffer of 1000 meters. Additional Info : to help with determining archaeological potential. Number of Aboriginal sites and Aboriginal objects found is 2

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

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