



Kariong Sand and Soil Supplies (Lot 4 DP227279) Aboriginal Archaeological Assessment

FINAL REPORT

Prepared for Jackson Environment and Planning Pty Ltd on behalf of Mr & Mrs Ray and Sue Davis

14 March 2018

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- Mathew Smith – Archaeological Survey and reporting.
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Glossary

AHIMS	Aboriginal Heritage Information Management System
APSNSG	Australia Plants Society North Shore Group
BP	Before present (BP)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
LEP	Local Environment Plan
LGA	Local Government Area
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
SSD	State Significant Development
Study area	90 Gindurra Road, Somersby, New South Wales, Lot 122 DP 3060
The Code	<i>The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW 2010)

Summary

Biosis Pty Ltd has been commissioned by Jackson Environment and Planning Pty Ltd on behalf of Mr and Mrs Ray and Sue Davis to undertake an Aboriginal Archaeological Assessment of the Kariong Sand and Soil Supplies project located at 90 Gindurra Road, Somersby, New South Wales (Study area) (Figure 1 and Figure 2). The purpose of the Aboriginal archaeological assessment is to inform the client of responsibilities with regards to Aboriginal cultural heritage in the area proposed for development, to be assessed as a State Significant Development (SSD) under Section 89(c) of the *Environmental Planning and Assessment Act 1979 NSW* and Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. The project will be assessed by the Planning Assessment Commission (PAC) under delegation from the Minister of Planning.

As part of the Aboriginal archaeological assessment, background research was undertaken for the study area, including a search of the Aboriginal Heritage Information Management System (AHIMS) database and a review of regional and local archaeological survey reports. The AHIMS search identified 35 Aboriginal archaeological sites within a 5 x 5 kilometre search area that encompassed the study area. None of these recorded sites were located within the study area. Previous surveys within the local and regional areas and their findings have been assessed in association with the geology and soil landscape characteristics of the study area to provide a series of predictive statements of the study area's archaeological potential. From the results of the desktop assessment the study area was assessed to possess low to moderate archaeological potential, as it did not possess landscape features that were closely associated with site distribution patterns for the region.

An archaeological survey of the study area was undertaken on the 2 February 2018, with two representatives of the Darkinjung Local Aboriginal Land Council, Anthony Freeman and Timothy Oliver. The field investigation was conducted in accordance with requirements 5 to 10 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* 'the code' (DECCW 2010). The field investigation involved the recording of the disturbances within the study area, and focussed on the identification of areas that may possess potential for Aboriginal archaeological sites and objects. The exposure and ground surface visibility (GSV) within the study area was also noted. Areas of exposure were investigated in order to identify any Aboriginal objects/sites that might be present upon the surface. The study area was observed to be highly disturbed by human activity within the area. Poor levels of ground surface visibility and the lack of appropriate sandstone exposures and overhangs suitable for rock engravings, shelters and grinding grooves within the area also contributed to the low potential for identifying these dominant site types within the study area.

The results of the assessment indicated that the study area possessed low archaeological potential.

The following management recommendations have been developed for the study area and are influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
 - Ethos of the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS 1999)
 - The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b) (the code).

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required in areas of disturbance or low potential.

No further archaeological work is required in the study area due to the high degree of disturbance and assessed low archaeological potential. This recommendation is conditional upon recommendations 2 and 3.

Recommendation 2: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the National *Parks and Wildlife Act 1974*. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 3: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains
2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
3. Not recommence work at that location unless authorised in writing by OEH.

1 Introduction

1.1 Project background

Biosis Pty Ltd has been commissioned by Jackson Environment and Planning Pty Ltd on behalf of Mr and Mrs Ray and Sue Davis to undertake an Aboriginal archaeological assessment of the Kariong Sand and Soil Supplies project located at 90 Gindurra Road, Somersby, New South Wales (Study area) (Figure 1 and Figure 2). Industrial development is proposed for the study area, including the installation of security fencing, construction of on-site roads, parking areas, stormwater run-off and drainage/treatment infrastructure, an office and maintenance workshop, hardstand area and storage bays.

The proposed development will be assessed as a State Significant Development (SSD) under Section 89(c) of the *Environmental Planning and Assessment Act 1979 NSW* and Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. The project will be assessed by the Planning Assessment Commission (PAC) under delegation from the Minister of Planning.

1.2 Location of the study area

The study area is located within the suburb of Somersby, in the Central Coast Local Government Area (LGA), Parish of Gosford, County of Northumberland (Figure 1). It encompasses approximately 10.8 hectares of private land and the adjacent road reserves. It is currently zoned as IN1 General Industrial.

1.3 Planning approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979 NSW* (EP&A Act). Other relevant legislation and planning instruments that will inform the assessment include:

- *National Parks and Wildlife Act 1974* (NSW) (NPW Act)
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Gosford Local Environmental Plan 2014* (LEP)
- *Gosford Development Control Plan 2013* (DCP)

1.4 Scope of the assessment

The following is a summary of the major objectives of the assessment:

- Conduct background research in order to recognise any identifiable trends in site distribution and location, including a search of the Aboriginal Heritage Information Management System (AHIMS).
- Undertake archaeological survey as per Requirement 5 of the Code, with particular focus on landforms with high potential for heritage places within the study area, as identified through background research.
- Record and assess sites identified during the survey in compliance with the guidelines endorsed by the Office of Environment and Heritage (OEH).
- Determine levels of archaeological and cultural significance of the study area.

- Make recommendations to mitigate and manage any cultural heritage values identified within the study area.

1.5 Aboriginal consultation

Consultation with the Aboriginal community is not a formal requirement of the due diligence process; however, it is recognised in NSW that Aboriginal people are the primary determinants of the significance of their cultural heritage. A landscape may hold intangible values that can be assessed only by the Aboriginal community.

This assessment has been prepared with consultation with the Darkinjung Local Aboriginal Land Council (DLALC). Two representatives of the DLALC, Anthony Freeman and Timothy Oliver attended the field survey on 02 February 2018. Anthony noted an area of sandstone outcropping which he was aware of to the east of the study area. This outcrop was visited and was determined to be located outside of the study area. No evidence of Aboriginal occupation was observed at the sandstone outcrop. Anthony also suggested monitoring be undertaken in the area of vegetation that could not be surveyed, if it was to be impacted.

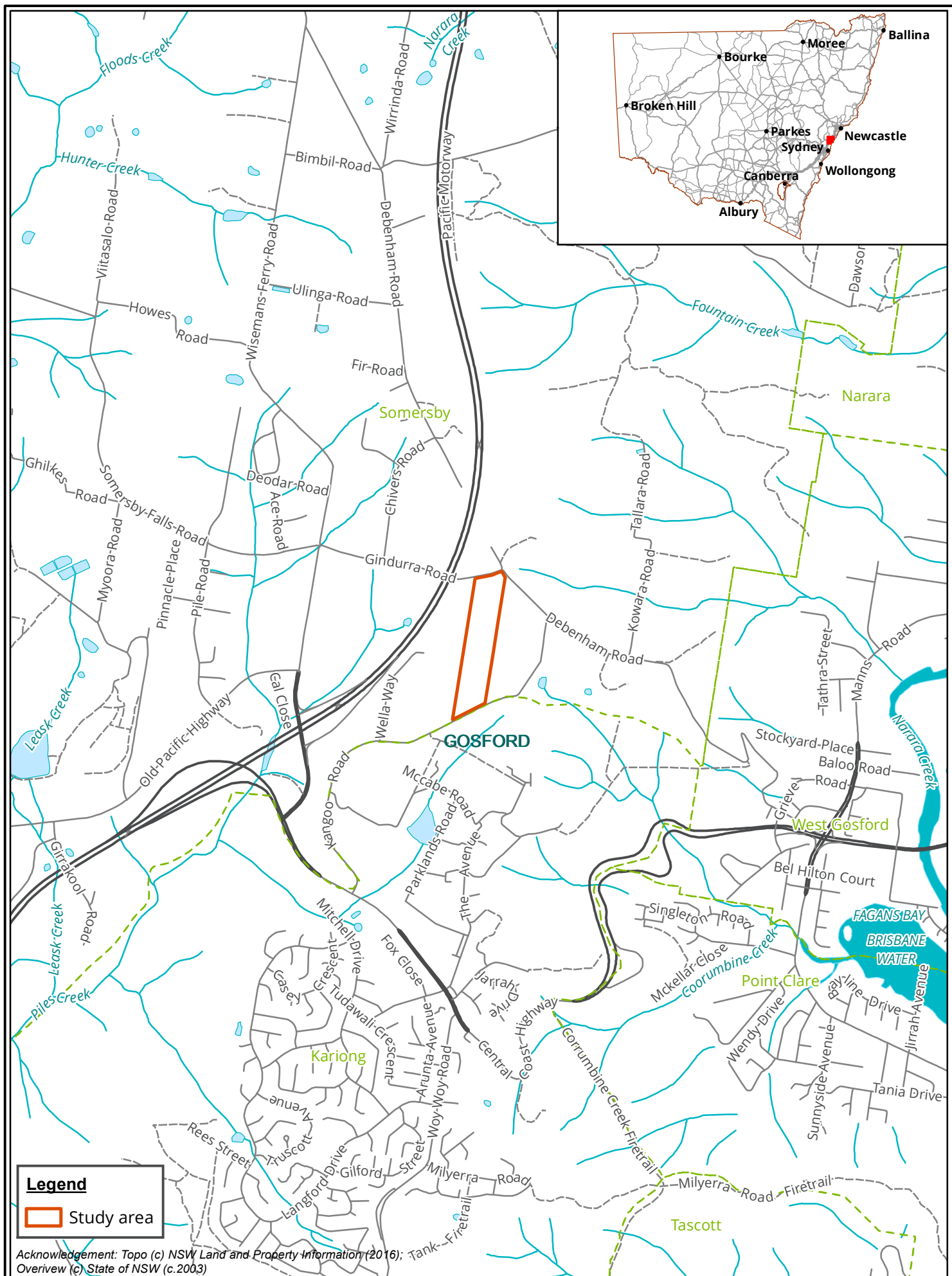
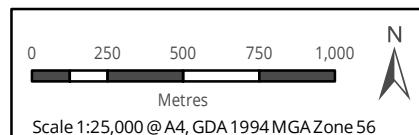


Figure 1: Location of the study area



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Albury, Ballarat, Melbourne,
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Date: 10 January 2018,
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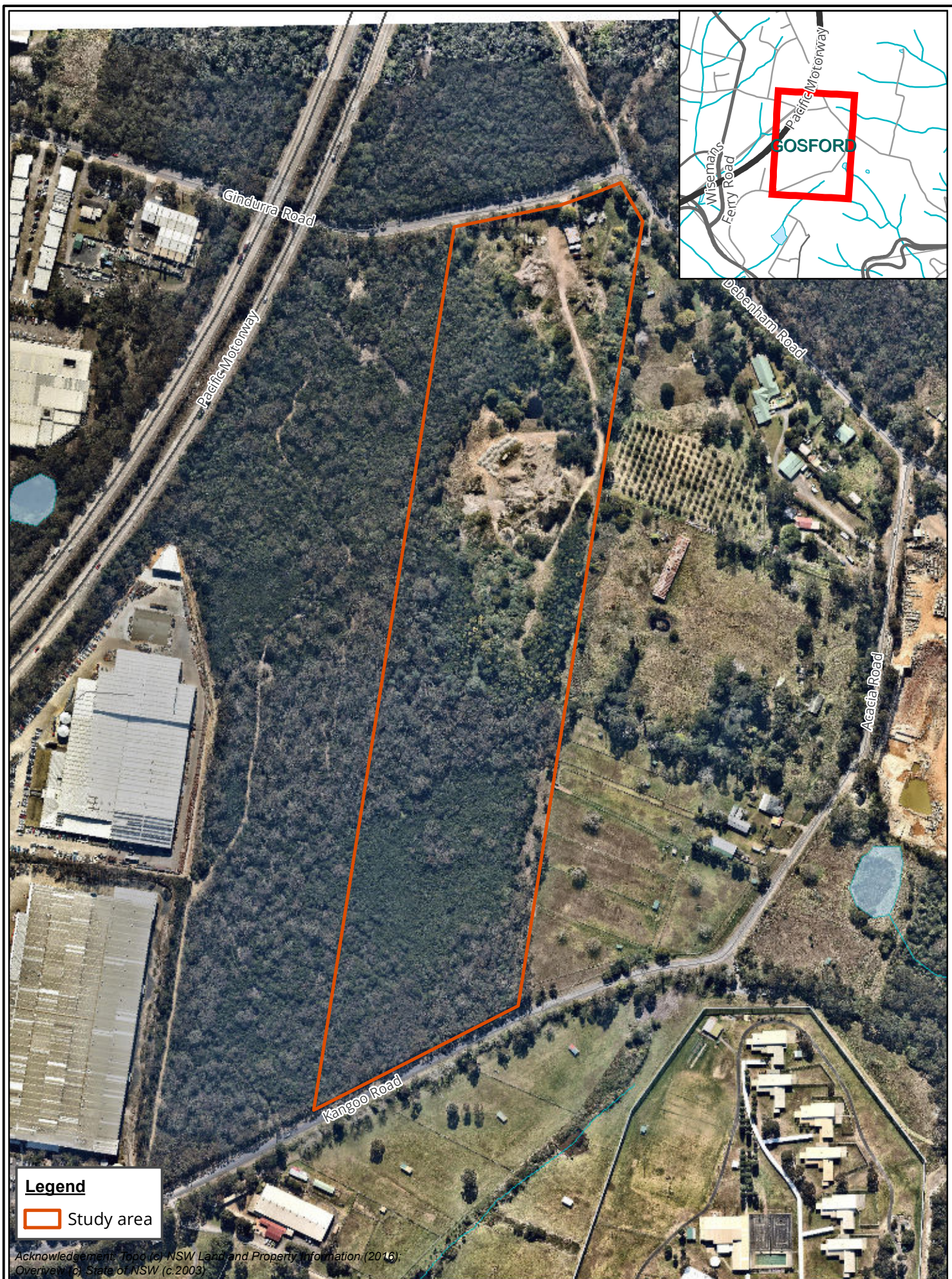


Figure 2: Study area detail

2 Desktop assessment

A detailed desktop assessment has been undertaken to review existing archaeological studies for the study area and surrounding region. This information has been synthesised to develop some Aboriginal site predictive statements for the study area and identify known Aboriginal sites and/or Places recorded in the study area. This desktop assessment has been prepared in accordance with requirements 1 to 4 of the Code.

2.1 Landscape context

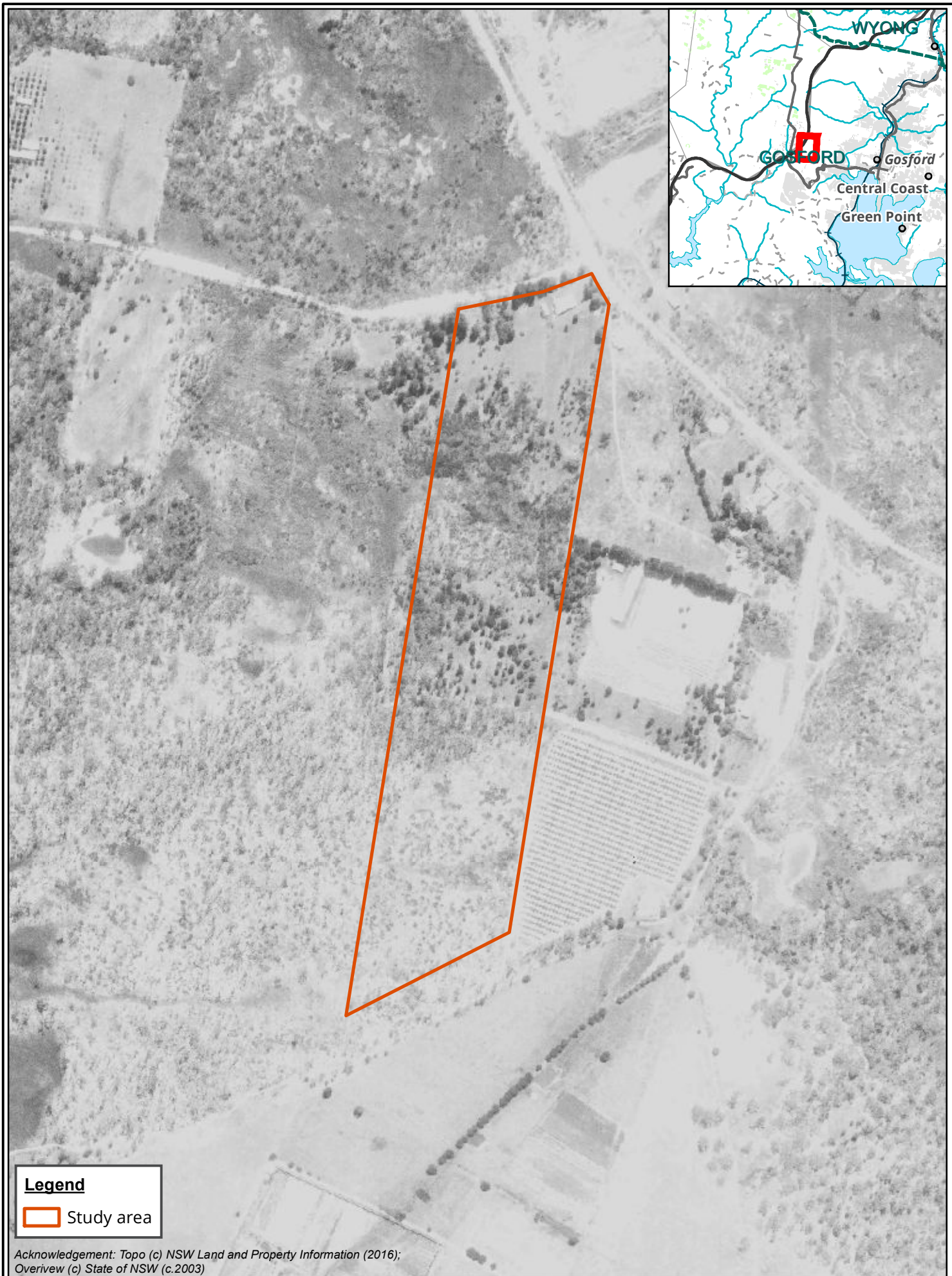
The study area is currently located in an area zoned for IN1 General Industrial purposes. The study area is situated betwixt plots of land utilised for industrial and residential facilities. The area zoned for industrial purposes is located west of the study area and extends for over 1000 metres. The Pacific Motorway is also located approximately 150 metres west of the study area.

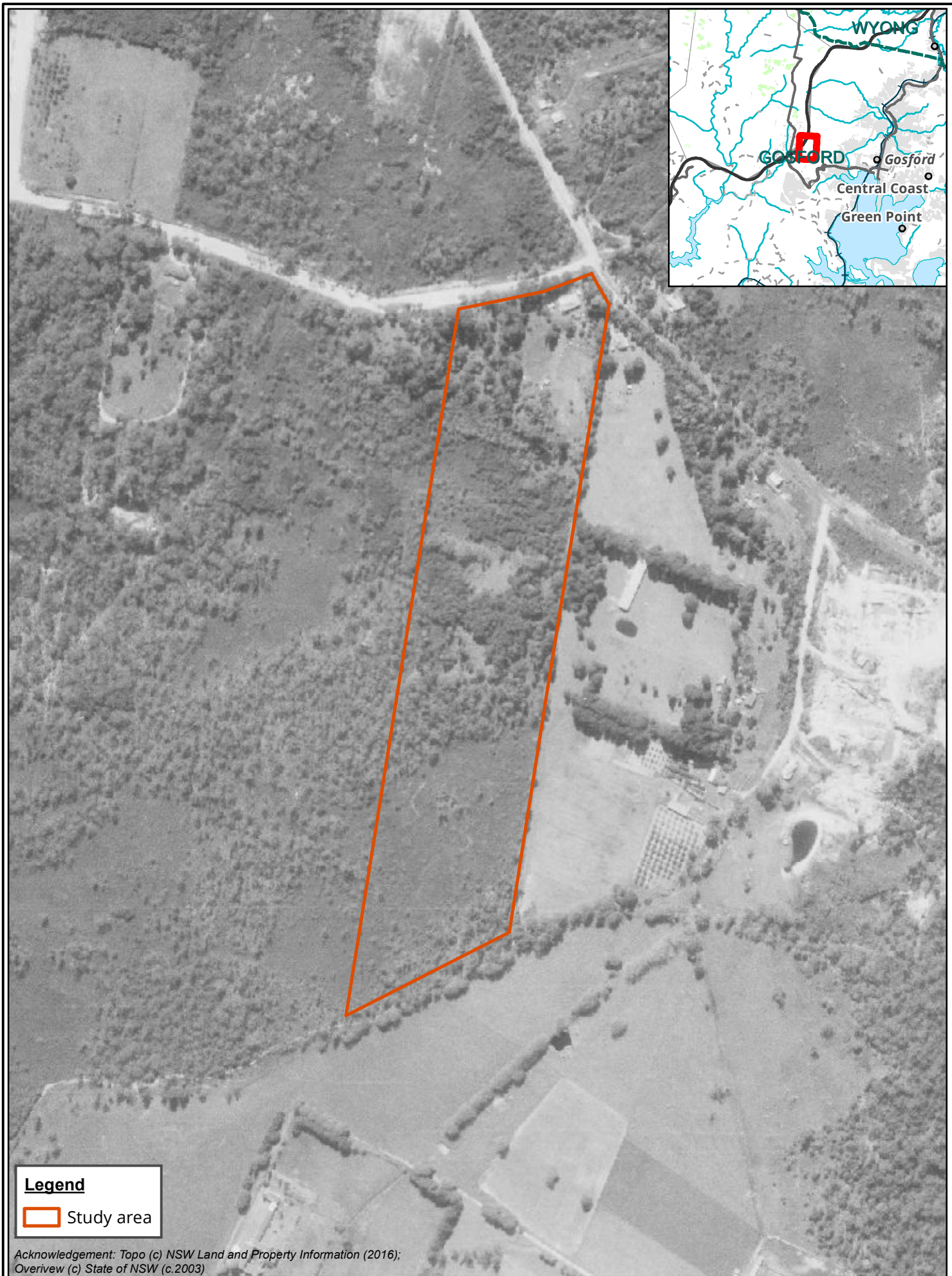
To the north-east, east, and south of the site are areas zoned for rural residential dwellings, and appear to be heavily cleared of vegetation. The closest residential dwelling is situated within 50 meters of the north-eastern site boundary. Commercial buildings are also located south of the site, including the Kariong Correctional Facility, where land has also been extensively cleared of any remnant vegetation that may have occupied the surrounding area.

2.2 Land use and disturbance

Historic imagery of the study area dating from 1966 (Figure 3) shows that the study area was less thickly vegetated and the northern section of the study area had been extensively cleared around a rural dwelling that occupied the north-eastern corner of the lot. Adjacent land located to the east of the study area is also occupied by various rural dwellings, and the land appears to have also been extensively cleared for farming and agricultural purposes.

Later historic imagery from 1984 (Figure 4) shows that the study area had experienced an increase in regrowth vegetation that resembles the current day study area (see Figure 2). The northern portion of the study area remains occupied by the rural dwelling shown in Figure 3 and an accompanying structure to the south. There is no indication of the present day quarry that currently occupies the site. The adjoining lands to the east remain occupied by rural dwellings, and continued use of the land for agricultural and farming practices is prevalent and an artificial dam has been installed.





2.3 Geology, soils and landforms

Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. Because they are defined by a combination of soils, topography, vegetation and weathering conditions, soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

The study area is located within Hawkesbury Sandstone geological unit which overlies the Narrabeen group of the Sydney Basin (Figure 5). The Hawkesbury Sandstone geological unit consists of medium to coarse-grained quartz sandstone with minor shale and laminate lenses with a maximum thickness of 290 metres. This dominant pure quartzose sandstone produces sandy soils, particularly upon flat ridgelines. The Hawkesbury Sandstone unit was formed by alluvial to deltaic processes which are evident from current bedding. Red-brown concentric bands present within the sandstone unit have been formed post deposition, and have been produced by weathering. The Hawkesbury Sandstone unit is highly resistant to erosion, and vertical cliff formations within this geological unit are formed from vertical joint fractures where sandstone breaks off along softer thin horizontal layer of shales within the sandstone formation (APSNSG 2011).

The Sydney Town soil landscape is present within the study area (see Figure 6). It is topographically characterised by undulating to rolling hills and moderately inclined slopes on quartz sandstone along the edge of the Somersby Plateau. The slope gradient of this soil landscape ranges from 5-25%. Sandstone beaches occasionally occur and are often exposed along narrow incised drainage lines. The soils within the landscape are highly permeable, and strongly acidic with very low fertility, and are subject to permanent waterlogging and present a very high erosion hazard (refer to Table 1).

Table 1 Sydney Town soil landscape characteristics (Murphy 1993)

Soil Material	Description
Sydney Town 1 (st1)	20 – 100cm of loose brown sand or sandy loam, with apedal single grained structure and porous sandy fabric that usually occurs as topsoil. Ranges from dark brown (10YR 3/2) when organic matter content is high to greyish yellow brown (10YR 6/2, 10YR 5/2, 10YR 4/2) when organic matter content is low. Soil colour often becomes lighter with depth. Sandstone fragments, charcoal and roots are common.
Sydney Town 2 (st2)	50 – 150cm of earthy bright brown sandy clay loam, with apedal massive structure and porous earthy fabric that usually occurs as a subsoil. Soil colours are bright and are commonly yellowish brown (10YR 6/8, 2.5YR 6/6, 2.5YR 6/7, 2.5YR 6/8) and brown (7.5YR 5/8). Sandstone fragments are common, but charcoal and roots become less.
Sydney Town 3 (st3)	50 - 150cm of strong pedal clay, with strong pedal structure when dry, and apedal when saturated. This soils possesses a rough-faced ped fabric and commonly occurs as subsoil from shale lenses within the Hawksbury Sandstone. Soil colour ranges from bright reddish brown (5YR 5/6) in well drained areas to light grey (10YR 8/1) in poorly drained areas. Stratified ironstone gravels are common within this soil material.
Sydney Town 4 (st4)	50 – 150cm of grey massive mottled sand clay loam with apedal massive structure and porous earthy fabric. This soil material generally occurs as a subsoil in wet areas. The soil colour is characterised by pallid grey soil colours such as light grey (2.5Y 7/1) and greyish yellow (2.5Y 6/2). In wet situations there are often rusty piped mottles around root traces. Sandstone and charcoal fragments are rare or absent, and few roots are present.

2.4 Flora and fauna

The study area would have originally been vegetated by low eucalypt open-woodland and scrub, which has been extensively cleared throughout the Sydney Town soil landscape. The Sydney Town soil landscape would have generally provided a number of resources used by Aboriginal inhabitants. Common native species would have included the scribbly bark (*Eucalyptus haemastoma*), brown stringy bark (*E. capitellata*), red bloodwood (*E. gummifera*), smooth-barked apple (*Angophora costata*), Sydney peppermint (*E. piperita*) and old man banksia (*Banksia serrata*). Common understorey shrubs would have included grey spider flower (*Grevillea* spp.), flaky-barked tea-tree (*Leptospermum attenuatum*) and drumsticks (*Isopogon* spp.). Poorly drained areas also would have provided support to scrubland of heath banksia (*Banksia ericifolia*) and dagger hakea (*Hakea teretifolia*) (Murphy 1993).

Plant resources were used in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002).

A variety of terrestrial native animals such as kangaroos, wallabies, and possum would have been an important food source. Animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record. Animals such as brush-tailed possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other. Kangaroo teeth were incorporated into decorative items, such as head bands (Attenbrow 2002).

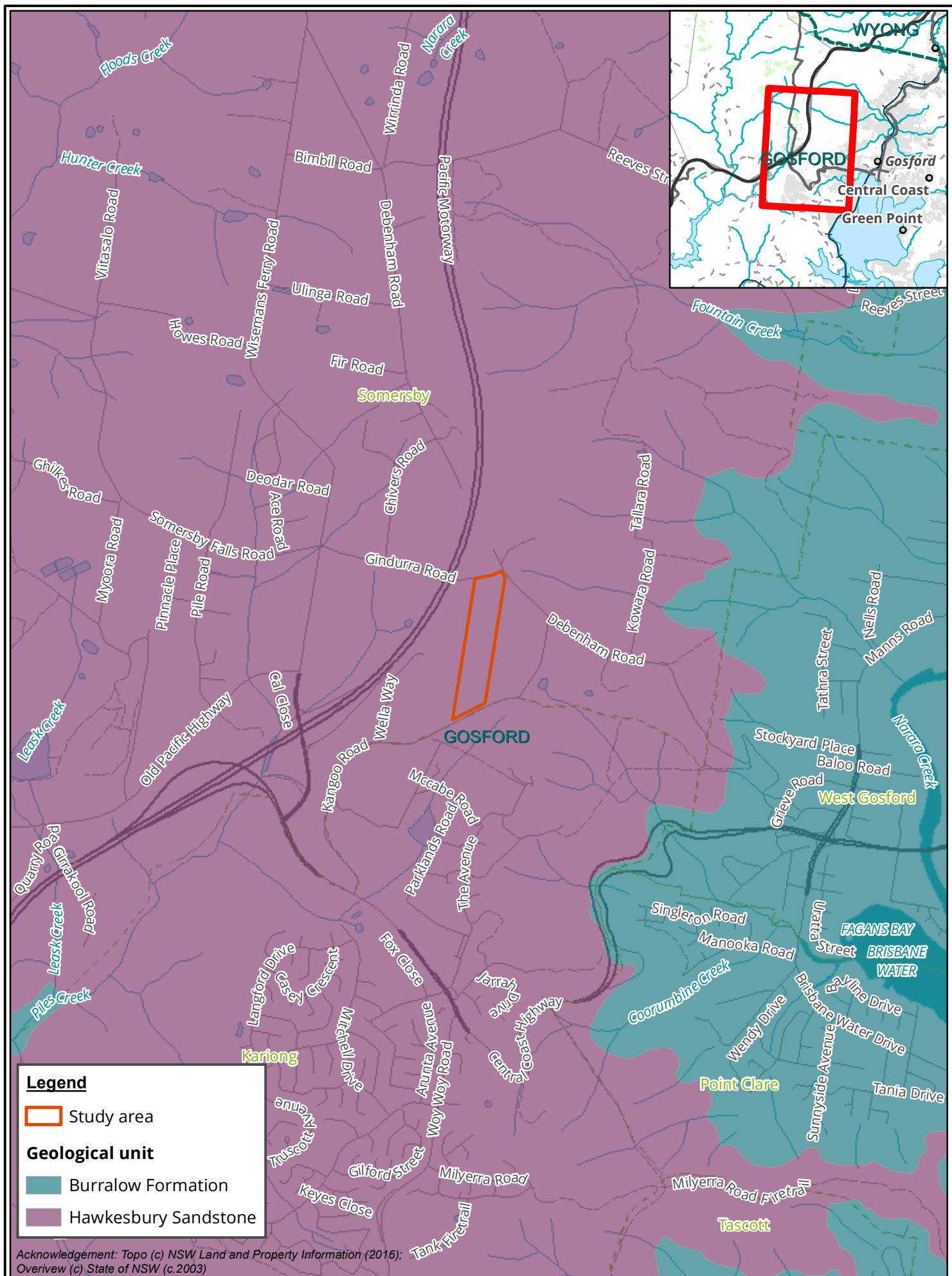


Figure 5: Geology of the study area

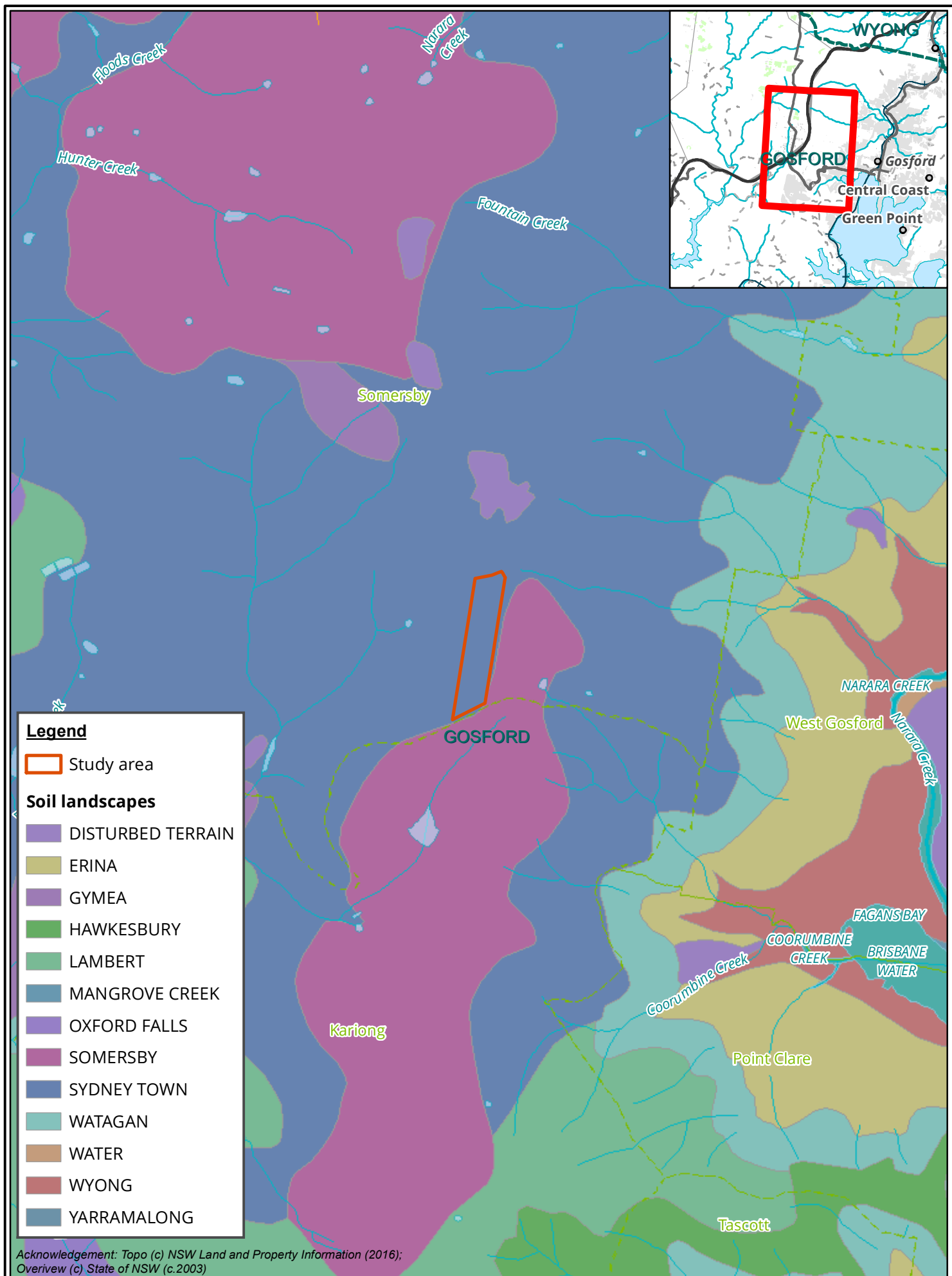


Figure 6: Soil landscapes within the study area

3 Aboriginal context

3.1 Ethnohistory and contact history

It is generally accepted that Aboriginal peoples have inhabited Australia for at least 65,000 years and possessed a distinctive stone tool assemblage (Clarkson et al 2017). Dates of the earliest occupation of the continent by Indigenous people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. The earliest undisputed radiocarbon date from the region comes from Mangrove Creek, approximately 15 kilometres northwest of the present study area. Of the excavated shelters, thirty-one shelters yielded dates, with the oldest date being 11,050 years BP at Loggers Shelter (Attenbrow 1981). The majority of excavated shelter and open sites in the region however yield much younger dates of around 3,000 years BP (Attenbrow 1987, Koettig 1985, McDonald 1985).

Our knowledge of Indigenous people and their land-use patterns and lifestyles prior to European contact is mainly reliant on documents written by non-Indigenous people. The inherent bias of the class and cultures of these authors necessarily affect such documents. They were also often describing a culture that they did not fully understand – a culture that was in a heightened state of disruption given the arrival of European settlers and disease. Early written records can, however, be used in conjunction with archaeological information and surviving oral histories from members of the Indigenous community in order to gain a picture of Indigenous life in the region.

According to Tindale (1974) the study area was traditionally inhabited by the Darkinjung, bordered closely by the Kuringai tribe who inhabited the land between them and the coastline. These two groups were on friendly terms, unlike the Awabakal groups that inhabited the region to the north.

The Darkinjung lands roughly extended from the Hawkesbury River northwards to Wollombi and the southern drainage of the Hunter River (Tindale 1974). Vinnicombe (1980) places the Darkinjung people as living between the Hawkesbury and Hunter Rivers.

Information gathered by R.H Matthews provides a valuable insight into the lives of the Darkinjung people, although this information was recorded within an already disjointed and numerically decimated community. He stated that all members of the Darkinjung community were segregated into two moieties Dilbi and Kuparthin, and each moiety was further divided into two sections (Matthews 1897). On the basis of these moieties and sections, totemic affiliation and marriage relations were determined. Totems consisted of animals or inanimate objects, such as plants, heavenly bodies, the elements or seasons.

It has been suggested that the Darkinjung would move to the coast, within Kuringai territory during summer months, to exploit the abundant coastal resources, and the reverse was true for the Kuringai who moved inland during winter months to participate in ritual kangaroo hunts (Vinnicombe 1980). These two groups had a cordial relationship, with reciprocal visits and regular trading of resources.

3.2 Regional context

Vinnicombe (1980) completed an archaeological survey of the Gosford/Wyong region, to collect sufficient site records and site type information to determine patterns of site distribution. The survey area was divided into three environmental zones, including coastal estuarine areas of the Brisbane Water/Bouddi Peninsular, marginal estuarine areas of lower Mangrove Creek and inland freshwater areas of Mangrove Creek. The initial large scale assessment involved systematic survey of 10 km² locations; however this initial work did not consider a number of environments and landforms, thus further areas of the open coast, Tuggerah

Lake/Central Coast Lagoons were surveyed. This survey work resulted in the recording of a number of middens, engravings and rock shelters.

The assessment identified regional patterns for site types within the various environmental zones. Site predictions indicated that the most frequently occurring site types were rock shelters with art and/or deposit, followed by axe grinding grooves, and engravings. Vinnicombe's analysis of the survey findings, ethnohistorical information and environmental context, indicated that resources were exploited seasonally along the coast during the summer months and throughout the hinterland during the winter months.

Attenbrow (1981) undertook a study of the Mangrove Creek Dam catchment, which included an inundation area of 1,215 hectares. The aim of the investigation was to assess the relationship between chronological and spatial site patterns within the Upper Mangrove Creek catchment, with demographic and human behavioural patterns within the area. This work involved the excavation of a number of Indigenous shelter sites, resulting in basal occupation dates at Mussel Shelter of $8,460 \pm 120$ BP (SUA-1560) and Loggers Shelter of $11,050 \pm 136$ BP (SUA-931). These results indicated the continual and extensive occupation of the Mangrove Creek catchment and that the 'coastal hinterland' was inhabited and exploited for longer and more intensively than first thought. Attenbrow compared the results from the excavated material at Mangrove Creek with sites in the MacDonald River Valley and Brisbane Waters region. This analysis identified variations within artefact types and available stone and faunal resources suggesting that site usage patterns varied within and between similar landscape units.

McDonald (2008) undertook a large scale study of engravings and rock shelter with art sites within the Sydney Basin. The survey area included the Hawkesbury catchment between MacDonald River and Broken Bay. The study focused solely on defining the nature and extent of art sites in the Sydney Basin. At the time of the study, over five thousand previously recorded Aboriginal archaeological sites had been recorded. 1370 of these were rock shelter sites with associated art, and 1450 were engraving sites. Based on information on the registered site records of engraving sites, 55.9% of engraving sites were located upon ridgelines, 41% on hillsides, and few sites were located in valley bottoms. Almost 70% of rock shelters with art sites were located on hillsides, 31.7% occurred on the tops of ridgelines and 16.7% occurred at the bottom of valleys.

Navin & Officer (1994) were contracted by Sinclair Knight and Partners to provide a preliminary cultural heritage assessment on behalf of Optus, for the proposed cable route to be installed from Sydney to Newcastle, and onwards to Orange. The purpose of the assessment was to provide a predictive model for site locations within the study area that would influence the cable route. Within the report the archaeological sensitivity of five landforms (Sandstone Ranges of the Sydney Basin, Central Lowlands of the Hunter Valley, Cumberland Plain, the Coastal Margin and Plain, Western Rangelands) were assessed, and a predicted site location criteria was provided for each landform.

3.3 Local context

Dallas (1981) completed an archaeological survey of a proposed area to undergo development located approximately 3 kilometres of the southern side of the Pacific Highway at Kariong, for Douglas Sanger Pty Ltd, on behalf of the Land Commission of NSW. The dominant site types within the area were rock engravings or grinding grooves, although occupation site with deposits and rock paintings were also present. Middens have also been recorded along the shores of Brisbane Waters. The field survey focussed on areas of disturbance and exposure, and the rocky creek beds and open exposed areas of sandstone. Any sandstone overhangs along the drainage lines or Piles Creek that were over 1 metre high were inspected during the survey effort. A natural spring was also identified and it was predicted that its presence would suggest a high quantity of sites within the area. Three sites had been previously recorded in the area, but were not relocated during the survey effort. 14 unrecorded Aboriginal sites were identified within the survey area. This included three

potential occupation shelters which were excavated, however, the deposits were found to be sterile. From the results of the survey two distinct groups or 'clusters' of site complexes were deduced. Dallas concluded that these sites provide a "spatially dense and varied record of art and occupation activities that should remain undisturbed, and a buffer zone be developed" (Dallas 1981).

M. Koetigg and J. McDonald (1983) were commissioned by Lester Firth Associates Pty Ltd to complete a survey of archaeological sites in the Mount Penang Area, Somersby, where rural residential development was proposed. The area surveyed was approximately 175 hectares and targeted every rock surface in the area, which were inspected on foot. 8 sites were previously recorded within the area. Of these 8 sites, 3 were not relocated. A further six unrecorded sites were identified during the survey effort. Koetigg and McDonald summarised that the predominant sites types within the plateau/escarpment are of Gosford/Somersby region were rock engravings, shelter sites (PAD) and grinding grooves.

Du Cros & Rich (1986) undertook an archaeological survey of behalf of the Department of Lands of Crown Land that was proposed for future industrial development near Mount Penang, NSW. Two Aboriginal engravings site had been recorded within the vicinity of the area to be surveyed (45-3-29 and 45-3-30). Site 45-3-29 was located during the survey effort and it was recommended that the site location be properly recorded by a surveyor. Site 45-3-30 was not relocated and it was suggested by du Cros and Rich that the site may have been destroyed or was not correctly plotted and may be present outside of the area surveyed. It was recommended that site 45-3-29 be protected, and if future developments were to propose harm to the site further archaeological assessment would be required and consent to destroy would need to be obtained.

McDonald (1997) was commissioned by The Department of Public Works & Service to undertake to an assessment of the Mount Penang Juvenile Justice Centre. Redevelopment was proposed for a section of land that was at the time being used for farming and agricultural purposes. No Aboriginal sites had been previously recorded within the vicinity of the Juvenile Justice Centre, and no new Aboriginal sites were located during the survey. The unsuccessful attempt to identify the presence of Aboriginal sites within the area were attributed to the high level of existing disturbance within the area, as well as the absence of appropriate sandstone surfaces suitable for engravings.

J. C. Lough and Associates (1981) conducted an archaeological field survey for the NSW Department of Environment and Planning with the aim to identify, locate and assess the significance of the Somersby Industrial Estate. A number of Aboriginal sites had been previously recorded within the area that were consistent with site patterns of plateaus within the Gosford, Patonga and Wisemans Ferry regions. The archaeological survey targeted all rock surfaces and sections of sandstone with the potential to present rock engravings were also inspected at night using the night-Carbide technique. Rock shelters within the area were observed and inspected for artefactual deposits. The possibility of locating artefact scatters and isolated finds was limited by poor ground visibility. It was recommended that if the protection of sites within this area was to be threatened by further developments then the significance of the site must be assessed and an appropriate course of action be undertaken.

Biosis Pty Ltd (2008) completed an archaeological assessment for Arup Sustainability on behalf of the NSW Roads and Traffic Authority that assessed the potential impacts to heritage items and places where the proposed road connection works between Kangoo Road and Langford Drive at Kariong were proposed. A survey of the proposed road alignment was undertaken and focused on the relocation of AHIMS sites that had been previously located within vicinity of the alignment. During the survey effort previously recorded sites within the area were revisited and reassessed. None of these sites were however located within the alignment. No new Aboriginal Archaeological sites were identified during the survey.

3.3.1 Identified Aboriginal archaeological sites

An extensive search of the AHIMS database was conducted on 17/01/2018 (Client service ID: 313504). The search identified one Aboriginal archaeological sites within a 200 metres of the study area, and a further 35 Aboriginal archaeological sites within 5 x 5 kilometre search area, centred on the proposed study area (Table 2 and Table 3). None of these registered sites are located *within* the study area (Figure 7). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied on where notable discrepancies occurred.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area.

Table 2 AHIMS search results

AHIMS Site No	Site Name	Site Type
45-3-0612	Old Gosford Road;	Rock Engraving
45-3-0619	Old Gosford Road	Rock Engraving, Stone Arrangement
45-3-0620	Old Gosford Road	Rock Engraving
45-3-1313	Mt Penang	Axe Grinding Groove, Rock Engraving
45-3-1319	Mt Penang	Rock Engraving
45-3-0456	Old Gosford Road	Rock Engraving
45-3-1495	Narara Creek Site 243	Rock Engraving
45-3-1441	Piles Creek Ca-K-31	Axe Grinding Groove
45-3-1403	Mazoe Belltrees	Rock Engraving
45-6-1598	Un-named	Rock Engraving
45-3-0468	Old Gosford Road	Rock Engraving
45-3-0016	Floods Falls	Axe Grinding Groove
45-3-0028	Piles Creek	Axe Grinding Groove
45-3-0029	Piles Creek Mt. Penang	Rock Engraving
45-3-0030	Piles Creek.	Rock Engraving
45-3-0031	Piles Creek (Gosford)	Shell Midden, Rock Engraving
45-3-0035	Piles Creek	Rock Engraving
45-3-0037	Old Gosford Road Piles Crk/Ca-K-11	Rock Engraving
45-3-0039	Old Gosford Road Piles Creek	Rock Engraving
45-3-0043	Old Gosford Road Piles Creek	Rock Engraving
45-3-0044	Old Gosford Road Piles Creek	Axe Grinding Groove
45-3-3219	PN-EN-1	Rock Art (Pigment or Engraving)
45-3-3354	SIE 16	Artefact
45-3-3355	SIE 19	Artefact
45-3-3356	SIE 20	Artefact
45-3-1289	Kariong (Head-dress Figure)	Axe Grinding Groove, Rock Engraving
45-3-3625	SIE MCH1	Rock Art (Pigment or Engraving), Water Hole
45-3-3626	SIE MCH2	Water Hole
45-3-3657	ES8	Rock Art (Pigment or Engraving)
45-3-3658	ES7	Rock Art (Pigment or Engraving)
45-3-3659	ES9	Rock Art (Pigment or Engraving)

45-3-3660	ES10	Axe Grinding Groove
45-3-3661	Sims 2/46	Rock Art (Pigment or Engraving), Water Hole
45-3-3663	ES11	Modified Tree (Carved or Scarred)
45-3-3655	ES6	Rock Art (Pigment or Engraving)

Table 3 AHIMS sites within the study area

Site type	Occurrences	Frequency (%)
Artefact	3	8.6
Axe Grinding Groove	5	14.3
Axe Grinding Groove, Rock engraving	2	5.7
Modified tree	1	2.8
Rock Engraving	14	40.0
Rock Engraving, Stone Arrangement	1	2.8
Rock Art (Pigment or Engraving)	5	14.3
Rock Art (Pigment or Engraving), Water Hole	2	5.7
Shell Midden, Rock Engraving	1	2.8
Water Hole	1	2.8

A simple analysis of the Aboriginal cultural heritage sites registered within 1km of the study area indicates that the dominant site type is rock engravings representing 40% (n=14), with rock art (pigment or engravings) and axe grinding grooves each representing 14.3% (n=5 each) of the site types within the vicinity of the study area.

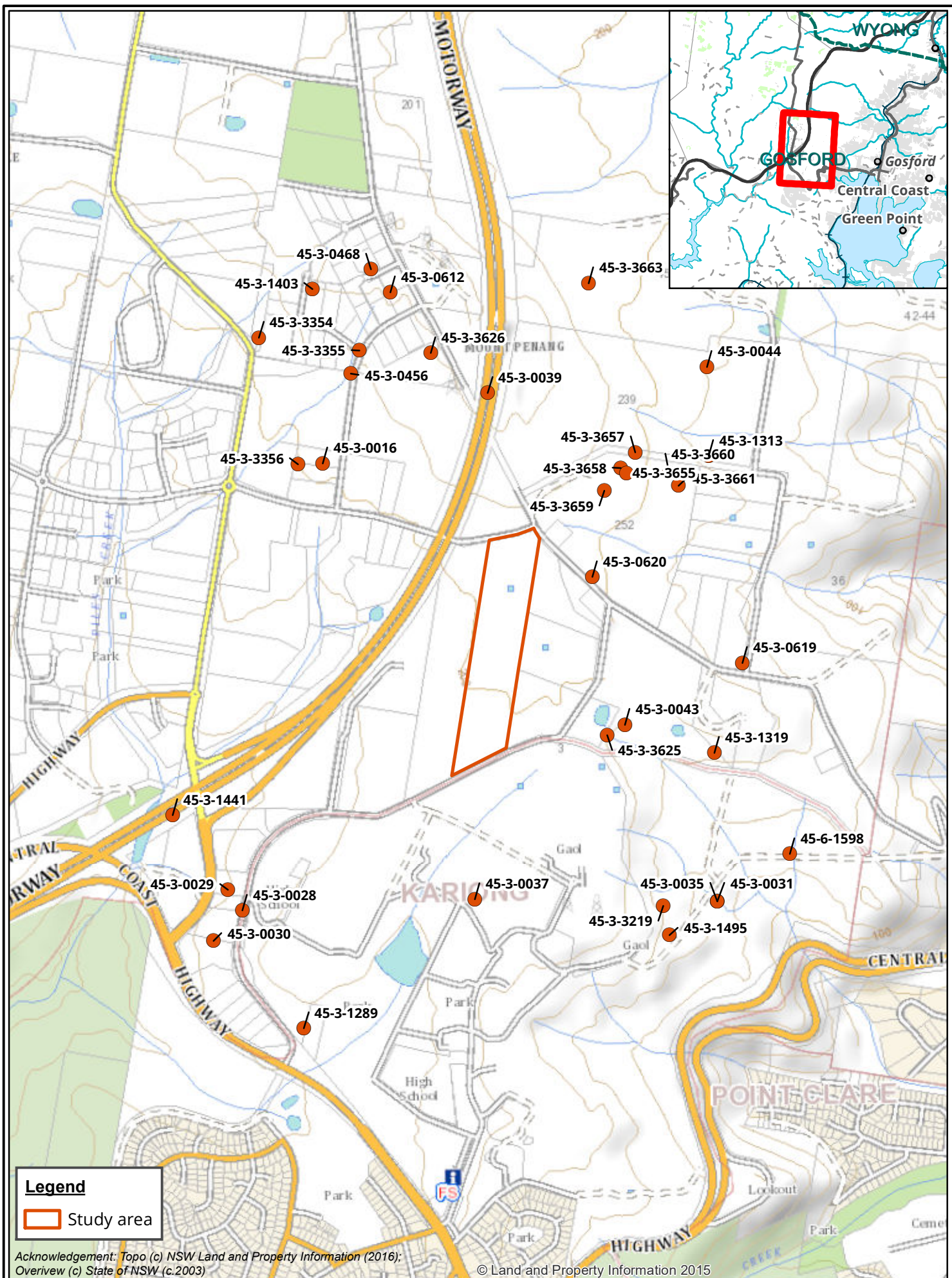


Figure 7: AHIMS records near Study Area

3.3.2 Predictive statements

A series of statements been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the study area and where they are more likely to be located.

This model is based on:

- Local and regional site distribution in relation to landform features identified within the study area.
- Consideration of site type, raw material types and site densities likely to be present within the study area.
- Findings of the ethnohistorical research on the potential for material traces to present within the study area;
- Potential Aboriginal use of natural resources present or once present within the study area; and
- Consideration of the temporal and spatial relationships of sites within the study area and surrounding region.

Based on this information, a predictive model has been developed, indicating the site types most likely to be encountered during the survey and subsequent sub-surface investigations across the present study area (Table 4). The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 4 Aboriginal site prediction statements

Site Type	Site Description	Potential
Flaked Stone Artefact Scatters and Isolated Artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	Low-Moderate: Stone artefact sites are commonly recorded on level, well-drained topographies in close proximity to reliable sources of fresh water. Due to the level of disturbance within the study area and the low occurrence of the site type occurring within the region, the potential for artefacts to be present within the study area is assessed as low- moderate.
Art Sites/ Engravings	Art sites consisting of pigment or engravings. These occur on suitable rock outcrops.	Low-moderate: Rock engravings represent 40% of all sites recorded in the area. Suitable horizontal sandstone rock outcrops could occur along drainage lines which are associated with the Sydney Town Soil landscape in which the study area is located.
Shell Middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Low: Shell midden sites have been infrequently recorded within the vicinity of the study area. There is a low potential for shell middens to be located in the study area as the first order drainage line is not a permanent water source. Shell middens within the region may be more closely associated to the shore lines of Brisbane Waters.

Site Type	Site Description	Potential
Quarries	Raw stone material procurement sites.	Nil-Low: There is no record of any quarries being within or surrounding the study area.
Potential Archaeological Deposits (PADs)	Potential sub surface deposits of cultural material.	Low-Moderate: PADs have not been previously recorded within the vicinity of the study area. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms, or present as occupational deposits within rock shelters.
Modified Trees	Trees with cultural modifications	Nil-Low: Scarred trees have not been previously recorded within the vicinity of the study area. Due to extensive vegetation clearance only a small number of mature native trees have survived within the study area.
Grinding Grooves	Grooves created in stone platforms through ground stone tool manufacture.	Low-Moderate: Suitable horizontal sandstone rock outcrops could occur along drainage lines which are associated with the Sydney Town Soil landscape in which the study area is located.
Burials	Aboriginal burial sites.	Nil-Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The soil profiles associated with the study area are not commonly associated with burials.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Nil: This site type will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist.
Aboriginal Ceremony and Dreaming Sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the study area.

Site Type	Site Description	Potential
Post-Contact Sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use.	Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one.
Aboriginal Places	Aboriginal places may not contain any “archaeological” indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings.	Low: There are currently no recorded Aboriginal historical associations for the study area.

4 Archaeological survey

An archaeological survey of the study area was undertaken by Mat Smith (Biosis archaeologist) on the 2 February 2018, with two representatives of the Darkinjung Local Aboriginal Land Council, Anthony Freeman and Timothy Oliver. The survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey aims

The principle aims of the survey were to:

- To undertake a systematic survey of the study area targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of Aboriginal archaeological and cultural sensitivity.

4.2 Survey methods

The survey was conducted on foot. Recording during the survey followed the archaeological survey requirements of the Code and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the study area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform elements, distinguishable areas of land approximately 40m across or with a 20m radius (CSIRO 2009).
- Photographs of the site indicating landform.
- Ground surface visibility (GSV) and areas of exposure.
- Observable past or present disturbances to the landscape from human or animal activities; and,
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, the identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, ground surface visibility and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

4.3 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to the effectiveness of the survey within the study area were the high levels of disturbance and heavy vegetation coverage in the southern section of the study area. The northern section of the study area displayed heavy disturbances including landscaping, excavations and use as stockpiling areas, which limited the ability to identify the natural ground surface. The heavy vegetation coverage in the southern section of the study area, hampered the survey significantly as the field team was unable to access areas of the study area and instead were confined to the less dense outer boundaries of the vegetated area (Plate 1 and Plate 2). Additionally, visibility in these areas was so low, that it was impossible to observe the ground surface or landforms present in the vegetated area.



Plate 1 **Photo looking towards inaccessible area of dense vegetation**



Plate 2 **Photo looking towards inaccessible area of heavy vegetation**

4.4 Visibility

In most archaeological reports and guidelines visibility refers to ground surface visibility, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010b). Visibility varied across the study area, the northern section of the study area had moderate levels (70%) of visibility as disturbances had removed grass coverage (Plate 3). The southern section of the study area had no visibility (0%) as heavy vegetation coverage made it impossible to see the ground surface (Plate 4).



Plate 3 East facing photo showing areas of high visibility around disturbances



Plate 4 West facing photo showing area of zero visibility due to heavy vegetation coverage

4.5 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke and Smith 2004: 79, DECCW 2010b). The study area

displayed areas of moderate exposure around the disturbances associated with the previous land use in the northern section (40%), although imported gravel often obscured the ground surface (Plate 5), with the heavy vegetation cover in the southern section reducing exposures levels to 0%.



Plate 5 **Photo of exposure in northern section of study area**

4.6 Disturbances

Disturbance in an area can be associated with natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as wombats, foxes, rabbits and wallabies, and sometimes exposure from slumping or scouring. Disturbances associated with recent human action cover large sections of a land surface. The agents include residential development such as landscaping and construction of residential buildings; farming practices, such as initial vegetation clearance for creation of paddocks, fencing and stock grazing; agricultural practices such as fruit orchards; light industrial practices such as nurseries and creation of artificial dams.

The primary disturbances associated with the study area are from human agents. The northern section of the study area was used as a soil and sand recycling business and has undergone extensive modification and disturbance. At the time of survey large stockpiles of sand, gravel and concrete were observed in the study area (Plate 6 and Plate 7) evidence of significant soil disturbances from landscaping and the use of heavy equipment were observed throughout the northern section, with mounds of soil pushed up into piles by machinery (Plate 8).



Plate 6 **Stockpiles of
sand and
gravel in
study area**



Plate 7 **Concrete
stockpiles in
study area**



Plate 8 **Heavy machinery and area of significant landscaping**

4.7 Survey results and discussion

The archaeological survey consisted of a total of one meandering transect that traversed accessible areas of the study area, targeting areas of ground surface exposure and landforms. The results of the field survey have been summarised in Table 5 and Table 6 below.

The northern section of the study area was identified during the survey as having heavy disturbances from the previous use of the study area. The disturbance levels in the heavily vegetated southern section of the study area could not be confirmed as much of this area was inaccessible due to the vegetation.

The majority of AHIMS sites in the vicinity of the study area consist of rock engravings and grinding grooves, as is to be expected in areas of sandstone geology, which the study area overlies. The survey did not identify any sandstone exposures within the study area which could contain rock engravings or grinding grooves.

No previously unrecorded Aboriginal sites or objects were located during the field survey. The northern section of the study area was determined to be significantly disturbed by the previous use of the study area as a sand and soil recycling centre. This would have significantly impacted soil deposits and resulted in the disturbance and destruction of potential sites. The southern section of the study area was heavily vegetated and could not be accessed during the survey due to this vegetation. Observations of the vegetation in this area consisted of shrubs and small trees, with occasional mature scribbly gums showing evidence of burning present.

Due to the high levels of disturbance identified in the northern section and the lack of sandstone exposures and overhangs suitable for rock, engravings, shelters and grinding grooves, there is a low potential for Aboriginal sites to be present within the study area.

Table 5 Survey coverage

Survey Unit	Landform	Survey unit area (m ²)	Visibility (%)	Exposure (%)	Effective coverage area (m ²)	Effective coverage (%)
1	Slope	544300	0	0	0	0
1	Slope (modified)	515800	70	40	144424	28%

Table 6 Landform summary

Landform	Landform area (m ²)	Area effectively surveyed (m ²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Slope	544300	0	0	0	0
Slope (modified)	515800	144424	28%	0	0

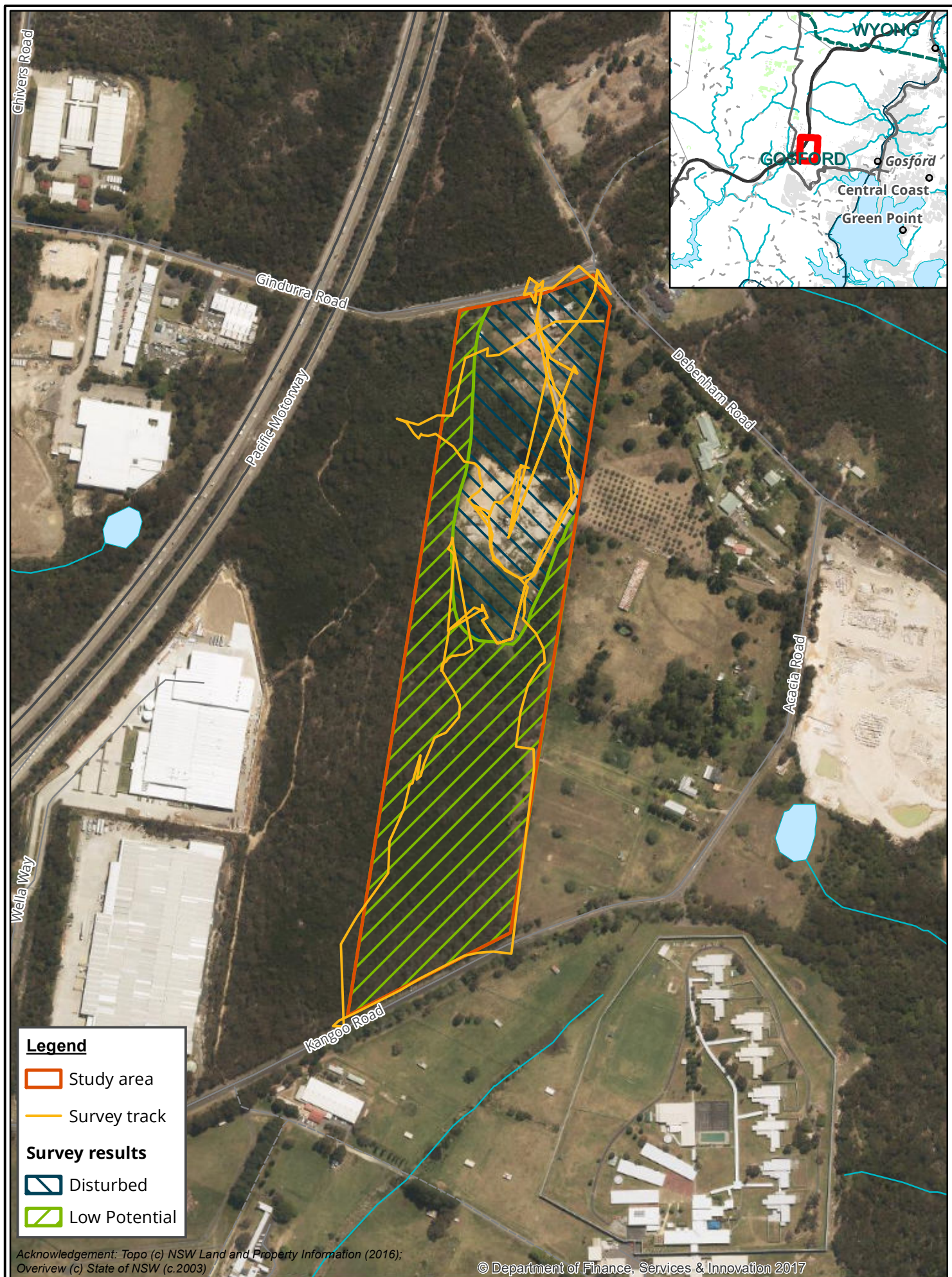


Figure 8: Survey results

5 Conclusions and recommendations

5.1 Conclusions

Background research has identified that the study area had been subjected to past vegetation clearance for agricultural use including orcharding and heavy disturbances from its use as a sand and soil recycling centre. In addition, the sloped nature of the landform pattern, the lack of proximity to any perennial source of water and the lack of suitable sandstone outcrops or overhangs for shelter, which are common elsewhere in the region, indicate the study area was not likely utilised by Aboriginal people for occupation, and is thus of low archaeological potential. A survey undertaken in the study area also did not identify any new sites within the study area, although there were some access constraints due to dense vegetation cover. Based on the background research and survey results there is low likelihood for potential archaeological deposits to be present within the study area. No further archaeological assessment is recommended.

5.2 Recommendations

The following management recommendations have been developed relevant to the study area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
 - Ethos of the Australia ICOMOS Burra Charter (2013)
 - The code

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required in areas of disturbance or low potential.

No further archaeological work is required in the study area due to the high degree of disturbance and assessed low archaeological potential. This recommendation is conditional upon recommendations 2 and 3.

Recommendation 2: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the *National Parks and Wildlife Act 1974*. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 3: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

4. Immediately cease all work at that location and not further move or disturb the remains

5. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
6. Not recommence work at that location unless authorised in writing by OEH.

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Appendices

Appendix 1 AHIMS search results

This Appendix is not to be made public.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 26452

Client Service ID : 313504

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-0612	Old Gosford Road;	AGD	56	341390	6301990	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	J.C Lough					<u>Permits</u>		
45-3-0619	Old Gosford Road;	AGD	56	342474	6300848	Open site	Valid	Art (Pigment or Engraved) : -, Stone Arrangement : -	Rock Engraving,Stone Arrangement	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-0620	Old Gosford Road;	AGD	56	342012	6301113	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-1313	Mt Penang;	AGD	56	342370	6301486	Open site	Valid	Grinding Groove : -, Art (Pigment or Engraved) : -	Axe Grinding Groove,Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-1319	Mt Penang;	AGD	56	342388	6300572	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	Unknown Author					<u>Permits</u>		
45-3-0456	Old Gosford Road;	AGD	56	341268	6301739	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	McKenzie					<u>Permits</u>		
45-3-1495	Narara Creek;site 243;	AGD	56	342250	6300010	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	J.C Lough					<u>Permits</u>		
45-3-1441	Piles Creek;Ca-K-31;	AGD	56	340720	6300380	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-1403	Mazoe;Belltrees;	AGD	56	341150	6302000	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-6-1598	Un-named;	AGD	56	342620	6300260	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	Jenny Hanrahan					<u>Permits</u>		
45-3-0468	Old Gosford Road;	AGD	56	341330	6302060	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	McKenzie					<u>Permits</u>		
45-3-0016	Floods Falls.	AGD	56	341182	6301463	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	1424
	<u>Contact</u>	<u>Recorders</u>	I.M Sim					<u>Permits</u>		
45-3-0028	Piles Creek	AGD	56	340934	6300086	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	100932,100999

Report generated by AHIMS Web Service on 17/01/2018 for Samantha Keats for the following area at Lot : 4, DP:DP227279 with a Buffer of 1000 meters. Additional Info : Reporting. Number of Aboriginal sites and Aboriginal objects found is 35

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.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 26452

Client Service ID : 313504

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-0029	Piles Creek Mt. Penang	AGD	56	340890	6300150	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	1014
	<u>Contact</u>	<u>Recorders</u>	Elizabeth Rich,Hillary Du Cros					<u>Permits</u>		
45-3-0030	Piles Creek.	AGD	56	340845	6299993	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	492
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-0031	Piles Creek (Gosford)	AGD	56	342397	6300115	Open site	Valid	Art (Pigment or Engraved) : -, Shell : -, Artefact : -	Midden,Rock Engraving	492
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-0035	Piles Creek	AGD	56	342397	6300115	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	492
	<u>Contact</u>	<u>Recorders</u>	I.M Sim					<u>Permits</u>		
45-3-0037	Old Gosford Road;Piles Crk/Ca-K-11;	AGD	56	341650	6300121	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	Fred McCarthy					<u>Permits</u>		
45-3-0039	Old Gosford Road;Piles Creek;	AGD	56	341690	6301680	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		
45-3-0043	Old Gosford Road;Piles Creek;	AGD	56	342112	6300658	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	<u>Contact</u>	<u>Recorders</u>	I.M Sim					<u>Permits</u>		
45-3-0044	Old Gosford Road;Piles Creek;	AGD	56	342365	6301760	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	<u>Contact</u>	<u>Recorders</u>	I.M Sim					<u>Permits</u>		
45-3-3219	PN-EN-1	AGD	56	342230	6300100	Closed site	Valid	Art (Pigment or Engraved) : -		
	<u>Contact</u>	<u>Recorders</u>	Rebecca Simon					<u>Permits</u>		
45-3-3354	SIE 16	GDA	56	341090	6302040	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Gavin Martin					<u>Permits</u>		
45-3-3355	SIE 19	GDA	56	341400	6302000	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Gavin Martin					<u>Permits</u>		
45-3-3356	SIE 20	GDA	56	341210	6301650	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Gavin Martin					<u>Permits</u>		
45-3-1289	Kariong (Head-dress Figure)	AGD	56	341124	6299724	Open site	Valid	Grinding Groove : -, Art (Pigment or Engraved) : -	Axe Grinding Groove,Rock Engraving	1100
	<u>Contact</u>	<u>Recorders</u>	ASRSYS					<u>Permits</u>		

Report generated by AHIMS Web Service on 17/01/2018 for Samantha Keats for the following area at Lot : 4, DP:DP227279 with a Buffer of 1000 meters. Additional Info : Reporting. Number of Aboriginal sites and Aboriginal objects found is 35

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 26452

Client Service ID : 313504

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-3-3625	SIE MCH1	GDA	56	342163	6300816	Open site	Valid	Art (Pigment or Engraved) : 1, Water Hole : 1		
	Contact									Permits
45-3-3626	SIE MCH2	GDA	56	341619	6301992	Open site	Valid	Water Hole : 1		
	Contact									Permits
45-3-3657	ES8	GDA	56	342249	6301687	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact									Permits
45-3-3658	ES7	GDA	56	342204	6301638	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact									Permits
45-3-3659	ES9	GDA	56	342153	6301568	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact									Permits
45-3-3660	ES10	GDA	56	342353	6301623	Open site	Valid	Grinding Groove : -		
	Contact									Permits
45-3-3661	Sims 2/46	GDA	56	342382	6301584	Open site	Valid	Art (Pigment or Engraved) : -, Water Hole : -		
	Contact									Permits
45-3-3663	ES11	GDA	56	342105	6302207	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact									Permits
45-3-3655	ES6	GDA	56	342222	6301623	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact									Permits

Report generated by AHIMS Web Service on 17/01/2018 for Samantha Keats for the following area at Lot : 4, DP:DP227279 with a Buffer of 1000 meters. Additional Info : Reporting. Number of Aboriginal sites and Aboriginal objects found is 35

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