EILEEN O'CONNOR CATHOLIC SCHOOL,
84 GAVENLOCK ROAD, MARDI

ARCHAEOLOGICAL REPORT

Report to Catholic Schools Broken Bay

LGA: Central Coast

March 2025

APEX ARCHAEOLOGY

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Apex Archaeology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and in whose land this assessment took place, and to the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

Document Control

The following register documents the development and issue of the document entitled 'Eileen O'Connor Catholic School at 84 Gavenlock Road, Mardi, NSW: Archaeological Report', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared by	Reviewed by	Comment	Issue Date
1 – Draft	Rebecca Bryant	Jenni Bate	Client Review	28 March 2024
2 – Draft	Rebecca Bryant	Stanton Dahl	Issue for RAPs	18 April 2024
3 – Final	Rebecca Bryant	RAPs	Issue of final	17 May 2024
4 – Final	Jenni Bate		Minor updates	14 March 2025

EXECUTIVE SUMMARY

Apex Archaeology have been engaged to assist Catholic Schools Broken Bay (CSBB) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a new school at 84 Gavenlock Road, Mardi. The project is located within the Central Coast Local Government Area (LGA) and the school will be known as the Eileen O'Connor Catholic School. The project will be assessed as a State Significant Development (SSD-67173718) under Division 4.7 of the *Environmental Planning & Assessment Act* (1979).

Following issue of the Secretary's Environmental Assessment Requirements (SEARs) for the project (SSD-67173718), assessment requirement No. 18 states that an Aboriginal Cultural Heritage Assessment Report be prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts on any Aboriginal cultural heritage values on the land.

This report details the results of the archaeological assessment of the site, prepared in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). This report forms an appendix to the ACHA report and has been prepared in accordance with requirement No.18 of the project SEARs.

The proposed development includes the demolition of the existing structures and the construction of the new Eileen O'Connor Catholic School in the northwest corner of Lot 9 Section 4 DP3368, within the grounds of the existing St Peter's Catholic College. The proposed works will include construction, subdivision and operation of a new Catholic school for 200 students with special needs, comprising 20 general learning areas, flexible specialist learning areas, administration and staff facilities, library, hall, amenities and associated site preparation works, landscaping, play space and on-site car parking and kiss and drop, together with road upgrades for Keefers Glen. These activities, along with the implementation of services such as water, electricity and telecommunications, are expected to result in subsurface excavations and modification to the natural landscape. There is also a probability that excavated soil will be removed from the study area or redeposited within it, and other fill may be introduced to the site.

The current investigation included a pedestrian survey that was undertaken by Apex Archaeology and Darkinjung Local Aboriginal Land Council (DLALC) in February 2024. The results of this survey, along with consideration of previous archaeological and heritage investigations within the surrounding area, and the past and current environment, found the entire site had been impacted by previous vegetation clearance and subsequent revegetation, the construction and subsequent infilling of dams, and then the construction of the St Peter's Catholic College across the majority of the study area. Given the significant historical land disturbance and the underlying landform within the study area boundaries, it was concluded that it is unlikely that any intact archaeological deposits would remain within the study area.

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the project:

Recommendation 1: No Further Archaeological Assessment Required

This report details the archaeological potential of the site, which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities.

Recommendation 2: Installation of Acknowledgement

It is recommended that consideration is given to the installation of an acknowledgement to the traditional Aboriginal owners of the land. This could be addressed in the future through the Connecting to Country component of the project.

Recommendation 3: Development Boundaries

The proposed development works must be contained within the assessed boundaries for this project. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this archaeological investigation, further investigation of those areas should be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.

Recommendation 4: Stop Work Provision

Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

Recommendation 5: Reporting

One digital copy of this report should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the 12 registered Aboriginal stakeholders listed in the ACHA for the project.

GLOSSARY OF TERMS

Aboriginal Object	An object relating to the Aboriginal habitation of NSW (as defined in the NPW Act), which may comprise a deposit, object or material evidence, including Aboriginal human remains.
ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRs	*Aboriginal cultural heritage consultation requirements for proponents 2010*
AHIMS	Aboriginal Heritage Information Management System maintained by Heritage NSW, detailing known and registered Aboriginal archaeological sites within NSW
AHIP	Aboriginal Heritage Impact Permit
AR	Archaeological report
ASIRF	Aboriginal Site Impact Recording Form
BP	Before Present, defined as before 1 January 1950.
Code of Practice	The DECCW September 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*
Consultation	Aboriginal community consultation in accordance with the DECCW April 2010 *Aboriginal cultural heritage consultation requirements for proponents 2010.*
CSBB	Catholic Schools Broken Bay
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECCW	The Department of Environment, Climate Change and Water (now Heritage NSW)
Disturbed Land	If land has been subject to previous human activity which has changed the land's surface and are clear and observable, then that land is considered to be disturbed
Due Diligence	Taking reasonable and practical steps to determine the potential for an activity to harm Aboriginal objects under the *National Parks and Wildlife Act 1974* and whether an application for an AHIP is required prior to commencement of any site works, and determining the steps to be taken to avoid harm
Due Diligence Code of Practice	The DECCW Sept 2010 *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*
GIS	Geographical Information Systems
GSV	Ground Surface Visibility
Harm	To destroy, deface or damage an Aboriginal object; to move an object from land on which it is situated, or to cause or permit an object to be harmed
Heritage NSW	Heritage NSW within the Department of Climate Change, Energy, the Environment and Water; responsible for overseeing heritage matters within NSW
ka	Kiloannus, a unit of time equating to 1,000 years
LALC	Local Aboriginal Land Council
LGA	Local Government Area
NPW Act	NSW *National Parks and Wildlife Act* 1974
NPWS	National Parks and Wildlife Service
OEH	The Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
RAPs	Registered Aboriginal Parties

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1.0 Introduction

Apex Archaeology have been engaged to assist Catholic Schools Broken Bay (CSBB) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for a new school at 84 Gavenlock Road, Mardi. The project is located within the Central Coast Local Government Area (LGA) and the school will be known as the Eileen O'Connor Catholic School. The project will be assessed as a State Significant Development (SSD-67173718) under Division 4.7 of the *Environmental Planning & Assessment Act* (1979).

Following issue of the Secretary's Environmental Assessment Requirements (SEARs) for the project (SSD-67173718), assessment requirement No. 18 states that an Aboriginal Cultural Heritage Assessment Report be prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts on any Aboriginal cultural heritage values on the land.

This report details the results of the archaeological assessment of the site, prepared in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010) (the Code of Practice). This report forms an appendix to the ACHA report prepared for the project.

The proponent for the project is The Trustees of the Roman Catholic Church for the Diocese of Broken Bay. The project manager for the proponent was Domenic Marra from Stanton Dahl Architects.

1.1 Objectives of the Archaeological Assessment

The archaeological investigation was undertaken to meet the requirements of the Code of Practice.

The purpose of the archaeological investigation is to understand and establish the potential harm the proposed development may have on Aboriginal cultural heritage within the study area, both tangible and intangible.

Any development works which disturb the ground surface have the potential to impact Aboriginal archaeological deposits and therefore an assessment of whether the study area contains such deposits is required prior to the commencement of construction works. An assessment of whether the proposed development would impact these deposits (if present) is also necessary, and identification of to what extent the deposits would be impacted is also required. The degree of impact which may be allowable is determined, in part, with consideration of the level of cultural significance attributed to the cultural values of the study area, both tangible and intangible.

As such, the objectives of the assessment are to determine whether Aboriginal cultural values exist within the study area, and whether the proposed project can avoid impact to these values, or if mitigation measures may be necessary.

1.2 Study Area and Project Brief

The study area is located at 84 Gavenlock Road, Mardi, which is situated approximately 4 km west of Tuggerah Lake that opens up to the Pacific Ocean (Figure 1 & Figure 2). The study area is approximately 20 km northeast of the Gosford CBD and about 100 km north of the Sydney CBD. It is legally referred to as Lot 9 Section 4 DP 3368 and is approximately 133,053 m^2 in size. The study area is bound by Gavenlock Road to the east, residential lots to the south, Keefers Glen to the west, and residential lots and a wetland area to the north.

The proposed development within the study area is for the construction of the new Eileen O'Connor Catholic School for school children with special needs in the far northwest section on land within the grounds of the existing St Peter's Catholic College (Figure 2). The proposed works will include construction, subdivision and operation of a new Catholic school for 200 students with special needs, comprising 20 general learning areas, flexible specialist learning areas, administration and staff facilities, library, hall, amenities and associated site preparation works, landscaping, play space and on-site car parking and kiss and drop, together with road upgrades for Keefers Glen (Figure 3). These activities, along with the implementation of services such as water, electricity and telecommunications are expected to result in subsurface excavations and modification to the natural landscape. There is also a probability that excavated soil will be removed from the study area or redeposited within it, and other fill may be introduced to the site.

The project is being assessed as part of a State Significant Development Application (SSD-67173718) and as part of this application, preparation of an ACHA is required.

As a result, Apex Archaeology has been engaged to undertake the ACHA in consultation with the local Aboriginal community. This will assist the consent authority in their assessment of the proposal.

1.3 Project Framework

The project is referred to as the 'Eileen O'Connor Catholic School' which aims to provide an inclusive model of education with purpose-built facilities which will focus on student strengths and high expectations for learning growth (Figure 3). The school will be for school–aged children (K-12) with a disability and will provide the necessary educational support they need. The new Eileen O'Connor Catholic School will also help meet the demand for disability support which is growing state-wide at four times the rate of school enrolments (Catholic Schools Broken Bay 2023).

The assessment will inform a State Significant Development Application (SSD-67173718) under Part 4 Division 4.7 of the *Environmental Planning and Assessment Act* 1979. This report has been prepared to inform the Environmental Impact Statement (EIS) required for the project, and to meet the Secretary's Environmental Assessment Requirements (SEARs) for the project. Item no. 18 of the SEARs for the

project requires an ACHA. This to be prepared in accordance with relevant guidelines, identifying, describing and assessing any impacts on any Aboriginal cultural heritage values on the land.

1.4 Investigators and Contributors

This archaeological assessment was originally commissioned by The Trustees of the Roman Catholic Church for the Diocese of Broken Bay, with a subsequent name change to Catholic Schools Broken Bay. Apex Archaeology thanks Domenic Marra from Stanton Dahl Architects, and Russell Koko and Salma Malik from RP Infrastructure for their assistance with the project. Thanks and appreciation are also extended to the registered Aboriginal groups for their participation and assistance with the project, with particular thanks to Jacob Cain from the Darkinjung Local Aboriginal Land Council (DLALC) who also participated in the pedestrian site survey.

This report has been prepared by Rebecca Bryant, Archaeologist with Apex Archaeology. The report was reviewed by Jenni Bate, Director and Archaeologist with Apex Archaeology. Rebecca has 12 years of experience in archaeological research projects (inc. 6 years in consultancy), and Jenni has over 18 years of archaeological consulting experience within NSW. Project team roles and qualifications are shown in Table 1.

Table 1: Project team roles and qualifications

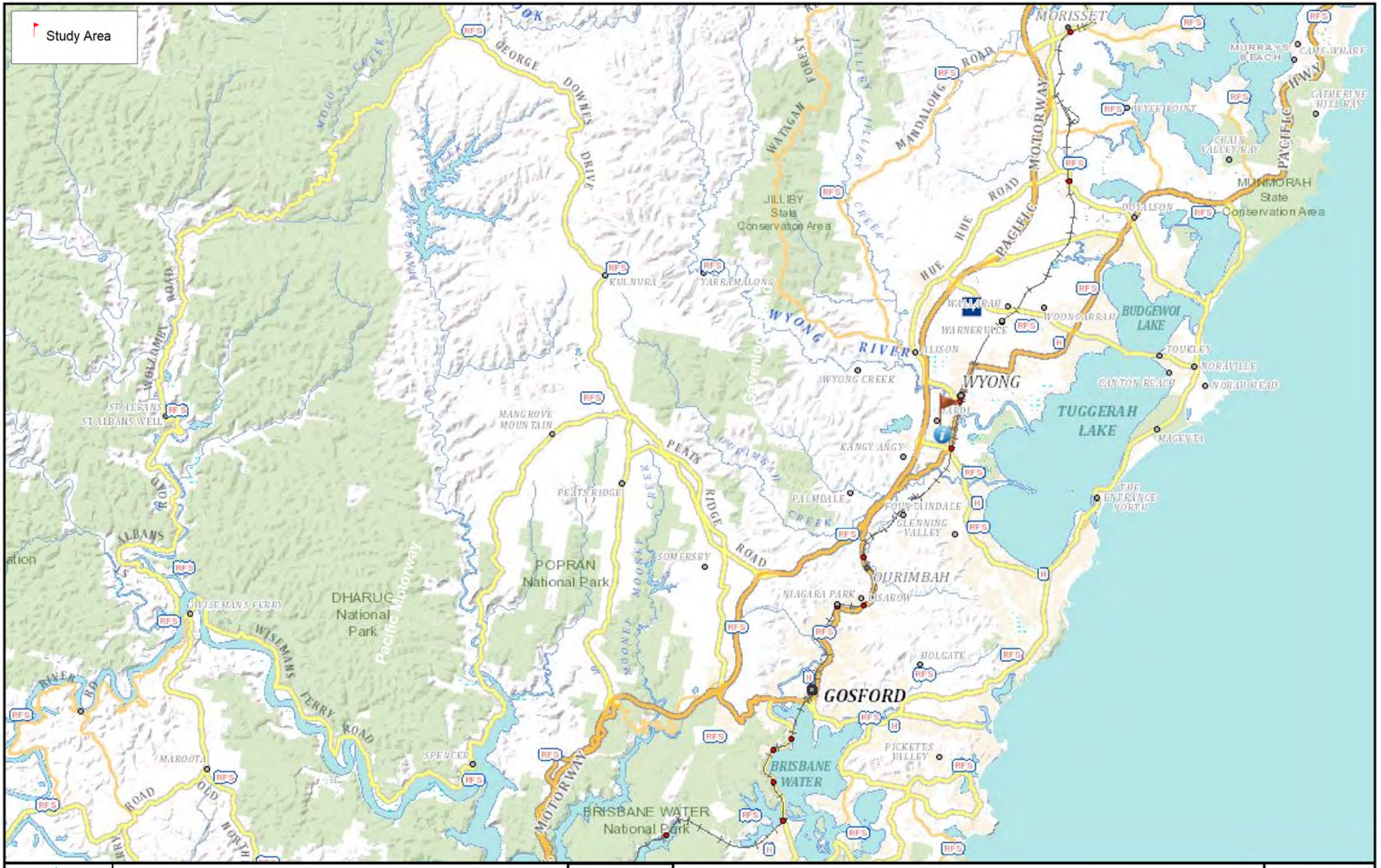
Name	Role	Qualifications
Rebecca Bryant	Project Manager, Report Author, Fieldwork	B.Science (Arch/Paleo); Mphil (lithics)
Jenni Bate	Review	B.Archaeology; Grad. Dip. CHM
Leigh Bate	GIS	B.Archaeology; Grad. Dip. Arch; Dip. GIS

1.5 Limitations

This report relies in part on previously recorded archaeological and environmental information for the wider region. This includes information from AHIMS, which is acknowledged to be occasionally inaccurate, due to inaccuracies in recording methods. No independent verification of the results of external reports has been made as part of this report.

It should be noted that AHIMS results are a record only of the sites that have been previously registered with AHIMS and are not a definitive list of all Aboriginal sites within an area, as there is potential for sites to exist within areas that have not previously been subject to archaeological assessment.

Field investigations for this report included a pedestrian survey. The results are considered to be indicative of the nature and extent of Aboriginal archaeological remains within the study area, but it should be noted that further Aboriginal objects and sites which have not been identified as part of this assessment may be present within the wider area.



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NOWRA
NEW SOUTH WALES 2541

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kilometres

Projection:
MGA Zone 56 (GDA 94)
Base Map:
Six Maps Topo
Final - Version 1

Figure 1: Study area within its regional context.

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NOWRA
NEW SOUTH WALES 2541

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metres

Projection:
MGA Zone 56 (GDA 94)
Base Map:
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Figure 2: Study area and subject site for the proposed Eileen O'Connor Catholic School.

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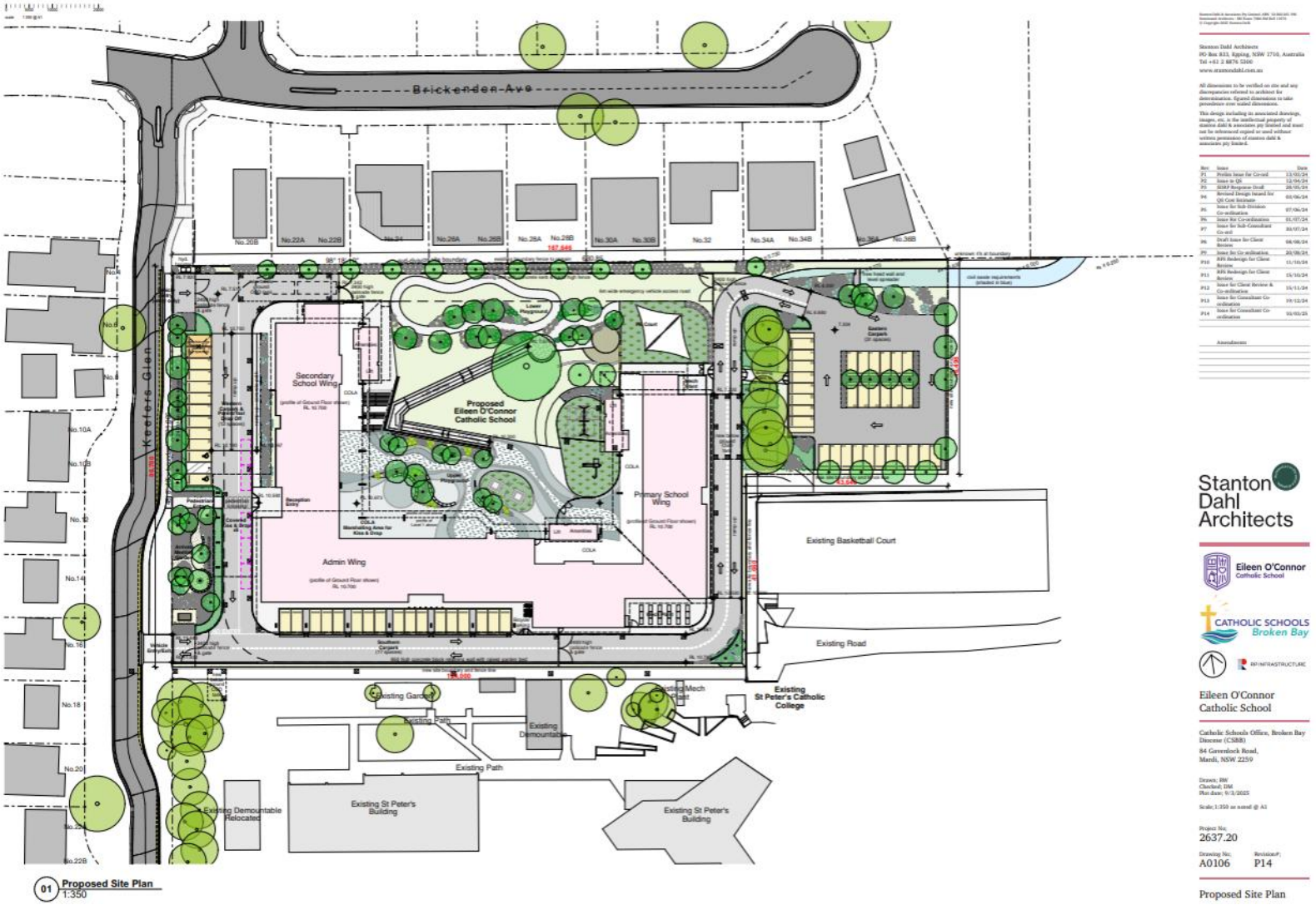

Figure 3: Proposed layout of the new Eileen O'Connor Catholic School (Source: Stanton Dahl Architects March 2024).

2.0 Statutory Context

Heritage in Australia, including both Aboriginal and non-Aboriginal heritage, is protected and managed under several different Acts. The following section presents a summary of the applicable Acts which provide protection to cultural heritage within NSW.

2.1 Commonwealth Legislation

2.1.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

This Act provides for the preservation and protection of injury and/or desecration of areas and objects in Australia and its waters that are of significance to Aboriginal people, in accordance with Aboriginal tradition.

Under this Act, the responsible Minister has provision to make both temporary and/or long-term declarations, in order to provide protection to areas and objects which are at threat of injury or desecration. In some instances, this Act can override State or Territory provisions, or be invoked if State or Territory provisions are not enforced. An Aboriginal or Torres Strait Islander individual or organisation must invoke the Act.

No items within the study area are listed or protected under this Act.

2.1.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides protection to environmental sites of national significance, including places with cultural heritage values that contribute to Australia's national identity. The Act aims to respect the role of Indigenous peoples in the conservation and ecologically sustainable use of Australia's biodiversity, and to enhance the protection and management of important natural and cultural places. Additionally, the Act is designed to promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

The National Heritage List provides a listing of natural, historic and Indigenous places of outstanding significance to the nation, while the Commonwealth Heritage List details the Indigenous, historic and natural places owned or controlled by the Australian Government.

Under the EPBC Act, approvals are required if any action is proposed that will have (or is likely to have) a significant impact on the National Heritage values of a National Heritage place. Therefore, actions must be referred to the Australian Government Minister for the Environment and Heritage. A decision will be made as to whether the proposed action will have a significant impact on any matters of national significance.

A search of both the NHL and the CHL on the 24th February 2024 did not identify any items within the study area.

2.1.3 Native Title Act 1993

The *Native Title Act 1993*, as amended, provides protection and recognition for Native title. Native title is recognised where the rights and interests of over land or waters where Aboriginal and Torres Strait Islander practiced traditional laws and customs prior to the arrival of European settlers, and where these traditional laws and customs have continued to be practiced.

The National Native Title Tribunal (NNTT) was established to mediate native title claims made under this Act. Three registers are maintained by the NNTT, as follows:

- National Native Title Register
- Register of Native Title Claims
- Register of Indigenous Land Use Agreements.

Searching the NNTT registers allows identification of potential Aboriginal stakeholders who may wish to participate in consultation.

A search of all three registers on the 20th February 2024 did not identify any registered or determined Native Title claims over the study area.

2.2 New South Wales Legislation

2.2.1 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* provides protection for all Aboriginal objects and places within NSW. Aboriginal objects are defined as the material evidence of the Aboriginal occupation of NSW, while Aboriginal Places are defined as areas of cultural significance to the Aboriginal community. All Aboriginal objects are protected equally under the Act, regardless of their level of significance. Aboriginal Places are gazetted if the Minister is satisfied that the location was and/or is of special significance to Aboriginal people.

Following amendments to the NPW Act in 2010, approval to impact Aboriginal cultural heritage sites is only granted under a Section 90 AHIP, which is granted by Heritage NSW in the Department of Climate Change, Energy, the Environment and Water. In this instance, the requirement to obtain an AHIP under Section 90 of the NPW Act is "switched off" by the requirements of the EPA Act.

2.2.2 NSW National Parks and Wildlife Regulation 2019

Part 5, Division 2 of the *NSW National Parks and Wildlife Regulation 2019* addresses Aboriginal objects and places in relation to the NPW Act 1974, and outlines how compliance with relevant codes of practice can be met.

Clause 58(1) outlines the defence of low impact acts or omissions to the offence of harming Aboriginal objects, which includes maintenance works on existing roads and fire trails, farming and land management work, grazing of animals, activities on land that has been disturbed that is exempt or complying development, mining exploration work, removal of vegetation (aside from Aboriginal culturally modified

trees), seismic surveying or groundwater monitoring bores on disturbed ground, or environmental rehabilitation work (aside from erosion control or soil conservation works such as contour banks).

Clause 58(4) outlines the definition of 'disturbed land', as land that "has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable".

Clause 59 relates to the notification of Aboriginal objects and sites and Clause 60 relates to the requirements for the consultation process to support an AHIP application. The regulation sets out the requirements broadly in line with those outlined in the ACHCRs.

2.2.3 Environmental Planning & Assessment Act 1979

Under the EP&A Act, it is necessary to consider environmental impacts, including impact to cultural heritage, as part of the land use process. Local Environmental Plans (LEPs) and Development Control Plans (DCPs) are also required to be prepared by Local Government Areas (LGAs) in order to provide guidance on the applicable level of environmental assessment. LGAs are required to maintain a list of locally significant heritage items as part of their LEP.

Under the EP&A Act, Part 3 describes the planning instruments at both local and regional levels; Part 4 relates to development assessment and consent processes, and Part 5 refers to infrastructure and environmental impact assessment.

Part 4, division 4.7 State Significant Development of the EP&A Act outlines the requirements for assessment of State Significant Development. Section 4.41 outlines approvals and legislation that does not apply to SSD projects. This clause states:

1. The following authorisations are not required for State significant development that is authorised by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply)-
   a) (repealed)
   b) A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*
   c) An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*
   d) An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1997*
   e) (repealed)
   f) A bush fire safety authority under section 100B of the *Rural Fires Act 1997*
   g) A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000.*
2. Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of State significant development that is

authorised by a development consent granted after the commencement of this Division.

3. A reference in this section to State significant development that is authorised by a development consent granted after the commencement of this Division includes a reference to any investigative or other activities that are required to be carried out for the purposed of complying with any environmental assessment requirements under this Part in connection with a development application for any such development.

The EPA Act is administered by the Department of Planning, Housing and Infrastructure and the Minister will determine this project. In accordance with this act, there is no requirement to obtain consent from Heritage NSW under the provisions of s.90 of the NPW Act.

2.2.4 Central Coast Local Environmental Plan 2022

The *Central Coast Local Environmental Plan (LEP) 2022* is the overarching planning instrument applicable to the Central Coast LGA.

Clause 5.10(2) (c) states that archaeological sites may not be disturbed or excavated without development consent. Clause 5.10(2) (e) identifies that no buildings may be erected on land within a heritage conservation area, or which contains an Aboriginal object, without first obtaining development consent. Exceptions to the requirement for development consent are detailed by -

Clause 5.10(3) (a) and include work that is minor in nature or is for the maintenance of a heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, and would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or (b) the development is in a cemetery or burial ground and the proposed development would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance.

Clause 5.10(8) (a & b) requires that the effect of any development on an Aboriginal place of heritage significance must be considered, and the Aboriginal community must be notified of any proposed developments and take into consideration any responses received with 28 days after the notice was sent. This document details the notification to the registered Aboriginal community regarding the intention to develop the study area and the consultation undertaken regarding the proposed development's potential impact on Aboriginal cultural heritage in the area.

Clause 5.10(10) (d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance.

There are no known items of Aboriginal heritage significance identified within the LEP that fall within the current study areas (Figure 4). The areas on the map shaded in brown are 'General' non-Aboriginal heritage items listed in the CCLEP 2022.

Although there are no Aboriginal heritage items listed this does not mean that the land has low Aboriginal cultural heritage significance.

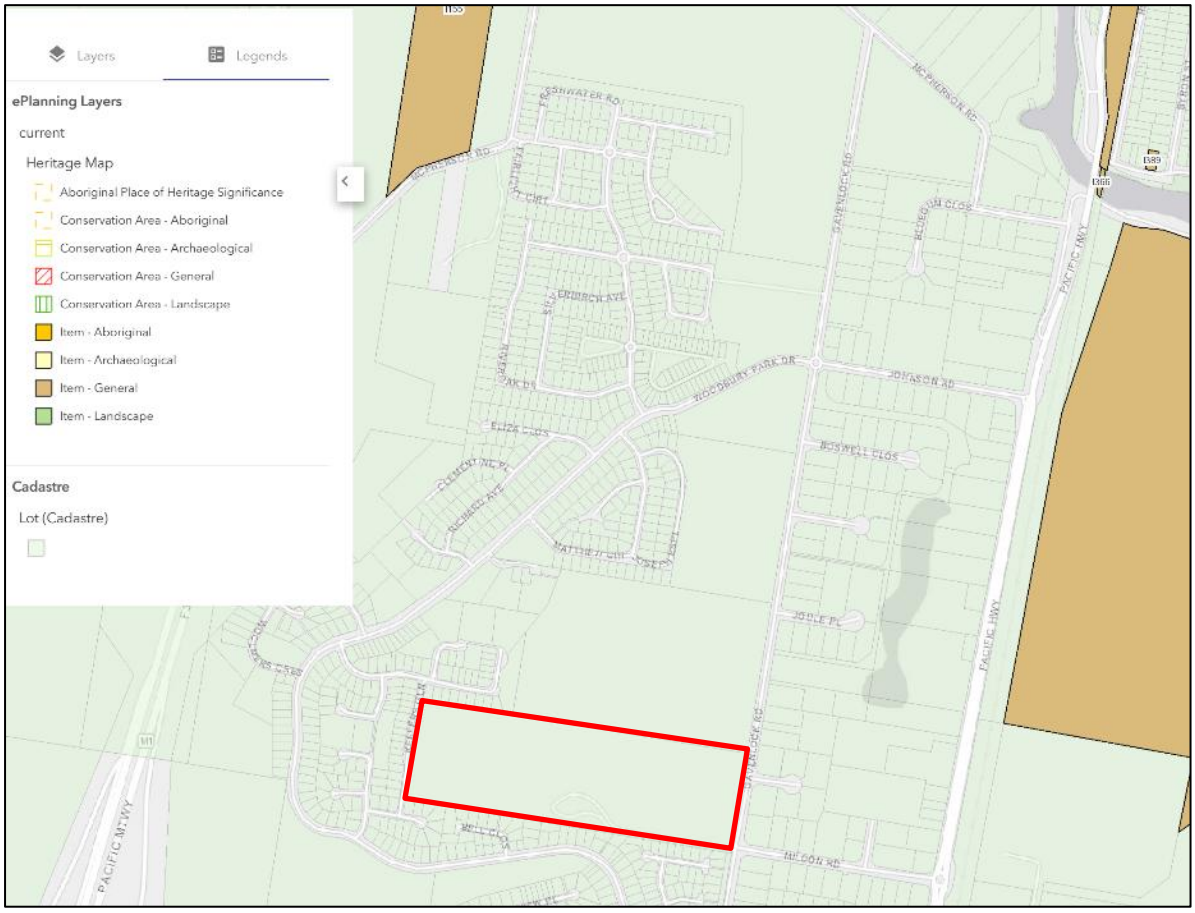

Figure 4: Detail of the CC Heritage Map, study area outlined in red (Source: NSW Planning Portal Digital EPI Viewer 2024)

2.2.5 Central Coast Development Control Plan 2022

The Central Coast Development Control Plan (DCP) 2022 applies to land identified under the *Central Coast Local Environmental Plan (LEP) 2022* and applies to all categories of development. The purpose of the plan is to provide Council's requirements for sustainable quality development and environmental outcomes within the Central Coastal Local Government Area. Chapter 3 of the Central Coast DCP 2022 states that the purpose of the DCP is to conserve and enhance the unique heritage by providing general heritage principals, objectives and controls relating to development of, or in the vicinity of heritage items and Heritage Conservation Areas. The consideration of Aboriginal heritage is included in the following three section summarised below.

Section 3.6.1.1 notes that 'heritage significance is based on the understanding that a particular item or area has historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value for past, present or future generations'. The items and places of heritage significance within the local government area include 'Aboriginal cultural heritage - Aboriginal reserves/missions, sites of conflict, axe

grinding grooves, ceremonial sites, burial sites, scar trees, occupation sites, landscapes, lake and river foreshores'. Furthermore, any known Aboriginal sites, places and relics are protected under the *National Parks and Wildlife Act 1974*

Section 3.6.2.2 states that proponents are to consult with Council before applying to carry out any works to buildings or sites which are listed as heritage items, are in the vicinity of a heritage item, or which are within a Heritage Conservation Area. With regards to Aboriginal heritage, it details that a development application for works on or in the vicinity of a heritage item may need to be accompanied by a 'Due Diligence Assessment for Aboriginal Objects'. This section provides further detail on the documents that are to be referenced in relation to Aboriginal Cultural Heritage Assessment.

Section 3.6.2.4 regarding assessment requirements states that 'in determining how heritage items and Heritage Conservation Areas should be conserved, every proposal must be considered on its own merits. With regards to Aboriginal heritage, it is noted that 'prior to granting consent, Council will consider the applicants Due Diligence Assessment of the likely impact on any Aboriginal objects or place'.

3.0 Aboriginal Cultural Heritage

This section presents information about both the physical and cultural landscape in which the study area is located, as well as previous archaeological and ethnohistorical studies, to provide context and background to the existing knowledge of Aboriginal culture in the area.

3.1 Existing Environment

The study area is located within the geological structure known as the Sydney Basin, which is roughly bounded by the Great Dividing Range to the west, the coast to the east, Newcastle to the north, and Durras near Batemans Bay, to the south. The western portion of the current study area is within the coastal sandstone foothills that slope down eastwards onto the low-lying wetlands that are within the eastern and northern portions of the study area. This landscape then extends eastward towards Tuggerah Lake that borders the coast and is linked to the ocean through a tidal channel called 'The Entrance', at the southern end of the lake. The Wyong River to the north of the study area and Ourimbah Creek to the south are fed by numerous creeks and tributaries. These two water courses are the largest water catchments that contribute to the Tuggerah Lakes system (Lawson and Treloar 1994).

3.1.1 Geology, Topography and Soils

The underlying geology of the western and southern portion of the study area is mapped as being within the Narrabeen Group that comprises quartz-lithic to quartzose sandstone conglomerate, mudstone, siltstone, and rare coal. The eastern portion of the study area is within a Holocene floodplain: silt, fluvial sand, and clay. It is important to note that the residential areas to the north and south of the study area are outlined on the geological mapped as being built on introduced fill (Troedson 2016). This is most likely due to the area between at the foothills and the area being boggy and highly susceptible to flooding.

The majority of the study area is mapped as being within the Woodburys Bridge soil landscape which comprises gently undulating rises to rolling hills that maybe capped by sandstone on the crests of steeper hills. The soils within this landscape can be more than >150 cm in depth. The A1 horizon is a dull yellowish brown to brownish black fine sandy loam. This overlies a shallow A2 horizon subsoil which can be a dull yellowish-brown light sandy clay loam. A small section along the southern boundary within the steeper portion of the study area is mapped as being within the Erina soil landscape which also contains moderately-deep to deep sandy soils (100 to > 200 cm) that vary in colour and can be brown, yellowish brown, or pale grey within the foot slopes (NSW Government SEED 2022).

The eastern portion of the study area where the wetlands and school oval are situated is mapped as being within the Wyong soil landscape. This topography is characterised by broad poorly drained deltaic floodplains and alluvial flats. The soils can be over 200 cm in depth and comprise greyish yellow brown to brownish black loam to silty clay (NSW Government SEED 2022).

3.1.2 Flora and Fauna

The original vegetation within the study area before the European colonisation would have consisted of tall open-forest. Common species of the open-forest include blackbutt (*Eucalyptus pilularis)*, grey ironbark (*E. Paniculata)* and forest oak (*Allocasuarina torulosa),* Turpentine gum (*Syncarpia glomulifera)* and Sydney blue gum (*E. saligna)*. The low-lying floodplain area would have comprised swamp mahogany (*E. robusta*) and swamp oak (*Casuarina glauca*), along with Prickly-leaved paper bark (*Melaleuca styphelioides*). Grasses such as the Kangaro grass (*Themeda australis*) would have also been present (NSW Government SEED 2022).

Animals within the study area and surrounds would have included possums, snakes, lizards and birds. Fish, shellfish, crustaceans, molluscs and octopus would be available from further away on the coastal shoreline.

Many of these plants, trees and animals have been documented as resources used by Aboriginal people to fulfill dietary needs, supply raw material for tools and implements, and used for medicinal and ceremonial purposes. For example, the various Eucalypts provided wood for shields, canoes and coolamons, while the soft stringy park from the Melaleuca trees was used for bedding, and to wrap the deceased in burial practices. The fur from possums was sewn together using a needle made from animal bones and thread made from the sinew of animal's muscles. (Attenbrow 2010; Clarke 2012).

3.1.3 Hydrology

There are no creek or drainage lines mapped as being within, or close to, the current study area. However, there is a former dam in the northwest of the study area that may have been excavated around a drainage line.

The closest substantial freshwater course would most probably have been the Wyong River. It is approximately 1.5 km to the north of the study area and would be classified as a fourth order watercourse that is fed by a number of smaller tributaries. However, as the Wyong River drains into the saline Tuggerah Lake a further 3 km to the east, it is not known if the water would have been drinkable.

Watercourse classification ranges from first order through to fourth order (and above), with first order being the lowest, i.e. a minor creek or ephemeral watercourses, and fourth or above being a large watercourse such as a river (Figure 5), as defined by the Department of Planning and Environment (DPE). This classification is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW and has been used extensively across the Cumberland Plain. However, it is not necessarily applicable to the coastal and sandstone areas. Although the Wyong River would be classified as a fourth order watercourse, the sections closest to the study area were probably quite saline due to the proximity to Tuggerah Lake.

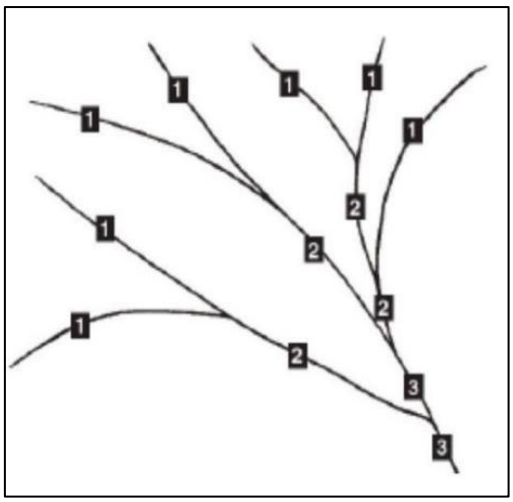

Figure 5: The Strahler system (Source: Department of Planning and Environment 2016).

3.1.4 Raw Materials

A wide range of raw materials were selected by Aboriginal people for flaking to create stone implements. Material types ranged from high quality to poor quality for flaking purposes, depending on the geology of the area and readily available material types. The following is a description of a range of raw material types known to have been utilised by Aboriginal people for the creation of stone artefacts. Not all occur naturally within all environments, although different resources can be identified within different regions due to trade or resource carrying (ie 'manuport' stone).

Breccia

Breccias are coarse, angular volcanic fragments cemented together by a finer grained tuffaceous matrix.

Chalcedony

Chalcedony is a microcrystalline, siliceous rock which is very smooth and can be glossy. Introduction of impurities can produce different coloured versions of chalcedony, including yellow/brown (referred to as carnelian), brown (sard), jasper (red/burgundy) and multicoloured agate. It flakes with a sharp edge and was a prized material type for the creation of stone artefacts in parts of Australia (Kuskie & Kamminga 2000: 186).

Chert

Chert is a highly siliceous sedimentary rock, formed in marine sediments and also found within nodules of limestone. Accumulation of substances such as iron oxide during the formation process often results in banded materials with strong colours. Chert is found in the Illawarra Coal Measures and also as pebbles and colluvial gravels. It flakes with durable, sharp edges and can range in colour from cream to red to brown and grey.

Petrified Wood

Petrified wood is formed following burial of dead wood by sediment and the original wood being replaced by silica. Petrified wood is a type of chert and is a brown and grey banded rock and fractures irregularly along the original grain.

Quartz

Pure quartz is formed of silicon dioxide, and has a glossy texture and is translucent. Introduction of traces of minerals can lead to colouration of the quartz, such as pink, grey or yellow. The crystalline nature of quartz allows for minute vacuoles to fill with gas or liquid, giving the material a milky appearance.

Often quartz exhibits internal flaws which can affect the flaking quality of the material, meaning that in general it is a low-quality flaking material (Kuskie & Kamminga 2000: 186). However, quartz is an abundant and widely available material type and therefore is one of the most common raw materials used for artefact manufacture in Australia. Flaking of quartz can produce small, very sharp flakes which can be used for activities such as cutting plant materials, butchering and skinning.

Quartzite

Formed from sandstone, quartzite is a metamorphic stone high in silica that has been heated or had silica infiltrate the voids found between the sand grains. Quartzite ranges in colour from grey to yellow and brown.

Silcrete

Silcrete is a siliceous material formed by the cementing of quartz clasts with a matrix. These clasts may be very fine grained to quite large. It ranges in colour from grey to white, brown, red or yellow. Silcrete flakes with sharp edges and is quite durable, making silcrete suitable for use in heavy duty woodworking activities and also for spear barbs (Kuskie & Kamminga 2000:184).

Tuff/Indurated Mudstone

There is some disagreement relating to the identification of lithic materials as tuff or indurated mudstone. The material is a finely textured, very hard yellow/orange/reddish-brown or grey rock. Kuskie and Kamminga (2000: 6, 180) describe that identification of lithic materials followed the classification developed by Hughes (1984), with indurated mudstone described as a common stone material in the area. However, Kuskie and Kamminga's analysis, which included x-ray diffraction, identified that lithics identified as 'indurated mudstone' was actually rhyolitic tuff, with significant differences in mineral composition and fracture mechanics between the stone types. They define mudstone as rocks formed from more than 50% clay and silt with very fine grain sizes and then hardened.

The lithification of these mudstones results in shale (Kuskie & Kamminga 2000: 181) and thus 'indurated mudstone', in the opinion of Kuskie and Kamminga, do not produce stones with the properties required for lithic manufacture.

In 2011, Hughes, Hiscock and Watchman undertook an assessment of the different types of stones to determine whether tuff or indurated mudstone is the most appropriate terminology for describing this lithic material. The authors undertook thin section studies of a number of rocks and determined that the term 'indurated mudstone' is appropriate, with an acknowledgment that some of this material may have been volcanic in origin. They also acknowledge that precise interpretation of the differences between material types is difficult without detailed petrological examination, and suggest that artefacts produced on this material are labelled as 'IMT' or 'indurated mudstone/tuff'.

VOLCANIC

Both volcanic and acid volcanic stones are raw material type within the South Coast. Without detailed petrological analysis it can be sometimes difficult to identify the specific raw material. However, probably one of the most common and recognisable types of volcanic stone is basalt, which is commonly referred to as 'blue metal'. It is solidified lava that was produced by now extinct volcanoes and diatremes that are spread-out within the Sydney Basin. If the lava cools quickly it results in fine-grained basalt that is easily flaked or ground to make tools, implements or weapons. Tuff forms from the tiny ash particles that are also released during volcanic explosions. When it cools it hardens into a fine-grained rock called 'tuff', as discussed above.

Basalt would have been either collected from the primary deposits formed during the eruption, which would require pieces to be broken off (quarried) or it was collected in cobble-form from a creek bed or shoreline. Cobbles are referred to as secondary sources as they are formed from pieces of rock that have been dislodged from their primary source and end up in creeks and/or river systems (Petrequin 2016; Attenbrow *et al*. 2017). The flow of water moves them around and smooths them into water-rolled cobbles that can be transported considerable distance from the original source. Basalt was often used to make axes which were either flaked into the desired shape from quarried stone, or from cobbles which quite often only required only one end to be ground into a sharp working edge.

Basalt cobbles can be found along the banks of rivers, and in bedrock quarries within the South Coast region. A known basalt source was in the Popran Creek area close to Mangrove Mountain, approximately 43 km southwest of the study area. Recent research undertaken by the Australian Museum and University of New England using portable XRF technology demonstrated that a number of ground-edged stone artefacts (inc. stone hatchets) that have been found within the Central Coast Region and are held at the Australian Museum have been traced to these sources (Attenbrow *et al*. 2017).

3.1.5 PROCUREMENT

Assemblage characteristics are related to and dependent on the distance of the knapping site from raw materials for artefact manufacture, and different material types were better suited for certain tasks than other material types. Considerations

such as social or territorial limitations or restrictions on access to raw material sources, movement of groups across the landscape and knowledge of source locations can influence the procurement behaviour of Aboriginal people. Raw materials may also have been used for trade or special exchange between different tribes.

3.1.6 MANUFACTURE

A range of methodologies were used in the manufacture of stone artefacts and tools, through the reduction of a stone source. Stone may have been sourced from river gravels, rock outcrops, or opportunistic cobble selection. Hiscock (1988:36-40) suggests artefact manufacture comprises six stages, as follows:

1. The initial reduction of a selected stone material may have occurred at the initial source location, or once the stone had been transported to the site.
2. The initial reduction phase produced large flakes which were relatively thick and contained high percentages of cortex. Generally the blows were struck by direct percussion and would often take advantage of prominent natural ridges in the source material.
3. Some of these initial flakes would be selected for further reduction. Generally only larger flakes with a weight greater than 13-15 grams would be selected for further flaking activities.
4. Beginning of 'tranchet reduction', whereby the ventral surface of a larger flake was struck to remove smaller flakes from the dorsal surface, with this retouch applied to the lateral margins to create potential platforms, and to the distal and proximal ends to create ridges and remove any unwanted mass. These steps were alternated during further reduction of the flake.
5. Flakes were selected for further working in the form of backing.
6. Suitable flakes such as microblades were retouched along a thick margin opposite the chord to create a backed blade.

Hiscock (1986) proposed that working of stone materials followed a production line style of working, with initial reduction of cores to produce large flakes, followed by heat treatment of suitable flakes before the commencement of tranchet reduction. These steps did not necessarily have to occur at the same physical location, but instead may have been undertaken as the opportunity presented.

Although probably less common than the process of flaking stone to modify it, the grinding technique was used within the Sydney Basin. This has been documented by early settlers particularly in the manufacture of axe heads where the end of a cobble was ground to achieve a working edge (Corkill 2005).

3.2 LAND USE HISTORY

INDIGENOUS OCCUPATION

When Aboriginal occupation of Australia is likely to have first commenced, around 60,000 years ago (Mulvaney and Kamminga 1999; Bowdler *et al* 2003; Attenbrow

2010), sea levels were around 30-35m lower than present levels, and this further decreased to up to 130 m lower than present sea levels (Attenbrow 2010). Sea levels stabilised around 7-6,500 years ago, and as a result many older coastal sites would have been inundated with increasing sea levels. It is possible that areas that are now considered "coastal" would once have limited resources available to Aboriginal people, and as such would have been less likely to have been occupied or used for repeated habitation sites.

Archaeological work at the Madjedbebe site in Arnhem Land in the Northern Territory revealed evidence confidently dated to the period before 45-46 ka and possibly up to 50-55 ka (Clarkson *et al* 2015). In NSW, there is strong evidence available to support Aboriginal occupation of the Cumberland Plain region in the Pleistocene period (approximately 40 ka) and possibly earlier. Work in Cranebrook Terrace was dated to 41,700 years BCE by Stockton and Holland (1974), and Kohen's 1984 assessment of Shaws Creek in the Blue Mountain foothills yielded ages of 13 ka. Deeply stratified occupation deposits at Pitt Town were dated to 39 ka by Apex Archaeology (2018) which were obtained from both radiocarbon and optically stimulated luminescence (OSL) dating. In Parramatta, a site at the corner of Charles and George Streets contained cultural material within deep sandy deposits that was dated to 25-30 ka (JMcDCHM 2005). Another site on George Street, Parramatta, was recently found to contain culturally utilised ochre within the sand body that dated to between approximately 35-30ka (Owen et al 2024).

Some experts have cast doubt onto the assessment of the items from Cranebrook Terrace as artefactual (Mulvaney & Kamminga 1999; McDonald 2008), although they do not doubt the results of the radiocarbon dates – it is the association of the artefacts with the dated deposits that is problematic, and Mulvaney and Kamminga (1999) consider that there are better examples of sites with more robust identification of age available. There has certainly been a great deal of research undertaken within the Sydney region in the intervening years.

Aboriginal people have occupied the NSW Central Coast for at least 11,000 years. This date was obtained from Loggers Shelter at Mangrove Creek by Val Attenbrow who undertook her PhD research in the late 1970s and early 1980s on Aboriginal sites within the Upper Mangrove Creek catchment, approximately 30 km northwest of the current study area. Attenbrow's comprehensive and detailed analysis of the archaeological material that remained in rock shelters and surrounds provided information on the lives of past Aboriginal populations within the Central Coast region. This included what type of natural resources they used, the variety of stone tool technology that was produced, and trading patterns.

Attenbrow (2003) proposed that the Mangrove Mountain catchment's inhabitants were mainly mobile hunter-gatherers who moved between many short-term base camps within their country, with group size varying according to weather, season and locality. For example, while in the catchment the family groups may have stayed

at base camps for several nights undertaking a range of domestic tasks, with some members going out daily to obtain food and raw materials. Activities undertaken at locations away from base camps may have included: (a) hunting, butchering, fishing and shellfishing, plant and honey collecting; (b) raw material procurement – such as stone, wood, plant fibre and resin; and, (c) religious or ritual responsibilities. During these daily forays, to places either inside or outside the catchment, damaged tools and implements would have been mended and food prepared and/or eaten at locations away from the base camp. People also may have sought protection in rockshelters during the day from the extreme heat of summer, the frosts and cold winds of winter, and the rain at any time of the year. Individuals or small groups would have made occasional longer trips for subsistence, trade or social purposes to places which necessitated the use of overnight/transit camps away from their base camps. Large gatherings for ceremonial purposes probably occurred at locations outside the catchment.

Post Contact Occupation

Following the establishment of the first European settlement at Sydney Cove, the need for additional agricultural land was identified, as Sydney Cove was considered unsuitable for farming. By November 1788, food supplies were running low for the settlement, and an expedition led by Governor Philip set off up the Parramatta River in search of arable land. An area known as Rose Hill (now Parramatta) was settled by a small group of 11 soldiers and 10 convicts. The grain crops at Sydney Cove failed, and the settlement at Rose Hill was ordered to be used for agriculture. These crops were luckily successful, and a further settlement comprising a convict farm was established at Toongabbie.

Governor Arthur Phillip led the exploration of Broken Bay and a tributary called the 'north-east arm' in 1788, five weeks after establishing the settlement at Sydney Cove. Phillip made a further exploration in 1789 and this tributary subsequently came to be called 'Brisbane Water'. The first known white settlers to the Wyong/Tuggerah Lakes area began in the 1820s. The subsequent construction of the Main Northern railway line from Sydney to Newcastle in the late 1800s provided a more direct link and paved the way for more development in the area. By the 1870s, farms had been developed throughout the Tuggerah Lakes district. These farms included the grazing of sheep and cattle, dairying, pigs, poultry, and crops such as wheat, corn and potatoes. The Central Coast area was also visited by holiday makers and Tuggerah Lakes was particularly appealing because of its protected lagoon. The subdivision of land near Tuggerah lakes began around the 1920s (Scott 1999).

According to St Peter's Catholic School's summary of their history, the current study area was within a lot that was included in the 1831 Healy grant of 2260 acres. This was later passed on to the Alison Family in 1875 who retained it until 1897. It was later known as 'Karinya' and used principally as a hobby farm until it was purchased by the Dioceses of Broken Bay in 1982. The land then went through three building stages, with the final stage completed in 2000 (St Peter's Catholic College 2024).

To further assess the disturbance that has been documented since historical occupation, a series of historical aerial photographs dating back to the mid-twentieth century were reviewed. An image from 1966 (Plate 1) shows that much of the middle section and southern portion of the study area had been cleared of original vegetation and a pathway had been formed, extending from the middle of the southern boundary to near the centre of the study area. By 1976 (Plate 2) buildings had been constructed at the end of the pathway and two dams had been excavated into the property. One of the dams is visible in the northwest corner of the study area where the proposed Eileen O'Connor Catholic School will be constructed, and one is within the eastern section. By 1991 (Plate 3) the majority of the present-day St Peter's Catholic College had been completed. Only small sections of tree vegetation remained within the northern and western portions of the study area. An image from 2001 (Plate 4) taken one year after the school's final construction stage shows the remaining tree coverage, in the western section, except for a few, had been cleared. Both dams had also been infilled and revegetated.

In summary, the entire site, except for a small stand of trees in the northern portion of the study area, has been impacted by the initial clearance of original vegetation. This was followed by the majority of the study area being used as a hobby farm and the construction of dams that were later filled in. The subsequent years of school construction from the early 1980s until the year 2000 would have required substantial sub surface excavations to level the ground for footings and to accommodate below ground services such as water. Fill would have most likely have been introduced within the low-lying northern section that is damp and prone to flooding. It is therefore highly unlikely that any of the original A1 soil horizon that would most likely contain archaeological material would have survived the numerous and extensive impacts that have occurred within the study area over many years. However, there may still be some remnant trees from the original vegetation within the wider lot that may have potential for cultural modification.

Plate 1: 1966 aerial. Study area outlined in red, approx. area for proposed works in blue (Source: NSW Spatial Services HV 2024)

Plate 2: 1976 aerial. Study area in red, approx. area for proposed works in blue (Source: NSW Spatial Services HV 2024)

Plate 3: 1991 aerial. Study area outlined in red, approx. area for proposed works in blue (Source: NSW Spatial Services HV 2024)

Plate 4: 2001 aerial. Study area outlined in red, approx. area for proposed works in blue (Source NSW Spatial Services HV 2024)

4.0 Literature Review

A review of previous archaeological work was undertaken for the areas surrounding the study area, and within the wider Central Coast Region. A number of reports were identified from background research and the AHIMS database and are summarised below, with detailed summaries presented in Section 4.1.

Table 2: Previous heritage assessments and studies undertaken by archaeological consultants and researchers in the region

Consultant/Researcher	Date	Sites Identified/Type of Assessment or Study	Region
Len Dyall	1980	13 sites	Tuggerah, Mardi and Wyong Creeks
Patricia Vinnicombe	1980	Predictive model	Gosford And Wyong
Pam Dean Jones	1986	Two (stone quarry and isolated stone artefacts)	Mount Tangy area
Therin Archaeological Consulting	2000	Four sites (isolated stone artefact/stone artefact scatters)	Wyong River
Jo McDonald Cultural Heritage Management	2001	None	Woy Woy
Wildthing	2002	None	Tuggerah Beach
Val Attenbrow	2003	Discussion of previous sites	Mangrove Mountain
Heritage Concepts	2006	None	Wyong
Kuskie	2009	Five Sites (rockshelter with art and PAD, isolated stone artefact and stone artefact scatters)	Mardi to Mangrove
Insite Heritage	2011	None	Koolewong
AHMS	2011	Two PADs	Terrigal
Advitech	2013	None (registered site excavated and no archaeological material retrieved)	Mardi Dam
Attenbrow	2017	Analysis of ground-edged artefacts to establish trade/exchange routes	Central Coast Region
Attenbrow and Konenenko	2017	Usewear and residue analysis undertaken on ground-edged artefacts	Central Coast region
Heritage Now	2020	One site identified	Kariong
Kleinfelder	2022	None	Empire Bay

4.1 Previous Archaeological Work

An analysis of prior archaeological work in proximity to the study area and wider region assists in the preparation of predictive models for the area, through understanding what has previously been found. By compiling, analysing and synthesising the previous archaeological work, an indication of the nature and range of the material traces of Aboriginal land use is developed. An understanding of the context in which the archaeological assessment has been undertaken is important,

as it does not occur within a vacuum but within a wider cultural landscape, and this must be considered in order to develop appropriate mitigation and management recommendations.

4.1.1 Previous Regional Heritage Assessments

A number of previous archaeological assessments have been undertaken in the surrounding areas. Some of these assessments are summarised below, including one that was undertaken within the current study area.

Patricia Vinnicombe 1980

Vinnicombe's (cited in Heritage 1980 and Kuskie 2009) work covered the Gosford and Wyong Shires and was divided into three sample areas based on major ecosystems: open coastline and coastal estuary, riverine estuary, and inland sclerophyll forest. The aim of the project was to obtain reliable data on numbers and types of sites, and their distribution within the two shires, leading ultimately to the formulation of a predictive model for site location.

Vinnicombe conducted intensive 10km^2 surveys within the three ecological zones and found that site densities decreased in distance from marine resources and provided case studies. She found that there was an average of 11 sites per km^2 in coastal estuary areas, eight sites per km^2 in riverine estuary areas, and six sites per km^2 in inland sclerophyll.

Vinnicombe proposed a land use model that involved seasonal exploitation of the varying micro-environments. She predicted that during the winter months there would have been less emphasis on marine resource and increased population movement inland. These movements inland would also have been due to complex social and ceremonial interactions between clans of different tribes and may have been of short-term duration.

Jo McDonald Cultural Heritage Management (JMcDCHM) 2001

JMcDCHM was engaged to undertake an archaeological report to identify any Aboriginal heritage items that may be on site for the Bays Park Resource Recovery Facility (Bull's Hill Quarry), Woy Woy Road, Woy Woy, approximately 30 km south from the current study area. The investigation included background research and a field survey conducted with the DLALC.

The study area was on the surrounding slopes of a sandstone quarry site. No new sites or previously identified sites were found during the investigation. However, it was noted that there were 115 sites within a 3 km radius which were predominately related to sandstone outcrops. These included engravings, grinding grooves and rock shelters. It was concluded that there was a low potential for Aboriginal sites given that the site had been used as a sandstone quarry. Additionally, as no works were proposed in the vegetation buffer around the quarry that may contain sites that are not currently visible, it was recommended that works could proceed.

VAL ATTENBROW 2003

Attenbrow undertook site surveys and excavations in the Upper Mangrove Creek catchment for her PhD research between 1979 and 1982. Her research overlapped with an archaeological salvage program of Aboriginal sites to be impacted by the Mangrove Creek Dam. The dam catchment was approximately 101km^2 and located approximately 35 km northwest of the current study area.

The Upper Mangrove Creek catchment is part of the heavily dissected Hornsby Plateau; the ridgetops and upper ridge sides are of Hawkesbury sandstone which is underlain by Narrabeen Group sandstones into which the creek and its tributaries have cut into in the lower elevations. Apart from several cleared areas along the main section of Mangrove Creek and on the periphery ridgetops, the catchment is forested.

The survey for the research project included archaeological sites from the main valley bottom, main valley ridge sides, subsidiary valley bottoms, subsidiary valley ridge sides, periphery ridgetops, and peninsula ridgetops. Fifty-nine Aboriginal sites were recorded in the random sampling units. These sites had a total of 80 archaeological traits in rockshelters and open locations: 35 archaeological deposits (rockshelters - 30; open locations - 5), 22 images rockshelters - 20; open rock platforms – 20; 22 grinding areas (rockshelters – 2; open rock platforms - 20), and one burial (rockshelter). Thirty of the archaeological deposits found in rock shelters were excavated and included in the analyses. Radiocarbon ages were obtained for 15 archaeological deposits with ages ranging from ca 350 years to ca 11,000 years BP.

Attenbrow's research showed that the number of habitations established and used over time increased dramatically between 4,000 to 3,000 years ago. Analysis of the habitation and artefact data according to topographic zones also indicated that habitations were established first in the main valley bottom, then on the periphery ridgetop and then in areas between. This patterning suggests that over time, and particularly in the last 2,000 years, as well as the increase in numbers of habitations in the catchment, the number of topographic zones in which new habitations were established increased. Additionally, there was a greater dispersal of activities within the catchment over time.

Attenbrow proposed that the catchment's inhabitants were relatively mobile hunter-gatherers who moved between many short-term base camps within their country, with group size varying according to weather, season and locality. While in the catchment, family groups stayed at base camps for several nights undertaking a range of domestic tasks, some members going out daily to obtain food and raw materials. Activities undertaken at locations away from base camps may have included: (a) hunting, butchering, fishing [including eels] and shell fishing [freshwater mussel], plant and honey collecting; (b) raw material procurement – such as stone, wood, plant fibre and resin; and, (c) religious or ritual responsibilities.

During these daily forays, to places either inside or outside the catchment, damaged tools and implements would have been mended and food prepared and/or eaten at locations away from the base camp. People also may have sought protection in rockshelters during the day from the extreme heat of summer, the frosts and cold winds of winter, and the rain at any time of the year. Individuals or small groups would have made occasional longer trips for subsistence, trade or social purposes to places which necessitated the use of overnight/transit camps away from their base camps. Large gatherings for ceremonial purposes probably occurred at locations outside the catchment.

Within the catchment, the numerous archaeological deposits (habitations); sites with images (mostly pigment drawings in shelters); grinding grooves; and a scarred tree, demonstrate that many of the activities such as hunting, tool making, gathering of raw materials, and religious or ritual responsibilities were carried out. For example, the grinding grooves indicate the shaping and sharpening of ground-edged implements occurred, and the pigment and engraved images were likely created in association with both religious and secular activities. Although there is no suitable outcropping bedrock in the catchment area from which stone artefacts can be made, pebbles and cobbles eroded from conglomerate beds in the Narrabeen sandstones would have been available. Additionally, basalt to make ground-edged hatchets was available from around the Popran Creek/Peats Ridge area, less than 10km to the east.

Attenbrow also proposed that some catchment habitations may have been used as overnight transit camps by people travelling from one locality to another on ceremonial business, or to procure raw materials by direct access or trade. For example, there was an historically documented route between the Hunter Valley and Brisbane Waters via the Wollombi Valley and the ridge forming the catchment's eastern boundary, which also linked with other routes extending west as far as Mudgee–Rylstone.

INSITE HERITAGE 2011

Insite Heritage was engaged to undertake an ACHA for a proposed 50 berth marina, and associated amendments to a carpark, on Murphy's Bay, Koolewong, approximately 30 km to the south west of the current study area. The investigation included a review of registered sites within a 16 km radius and previous archaeological investigation. A pedestrian survey was also conducted with representatives from the DLALC and the Guringai Tribal Link Aboriginal Corporation. The site was found to be on reclaimed land and there was no evidence of archaeological material or potential. It was recommended that no further archaeological investigations were warranted.

ARCHAEOLOGICAL AND HERITAGE MANAGEMENT SOLUTIONS (AHMS) 2011

AHMS was engaged to undertake an Aboriginal impact assessment of the 5 Lands Coastal Walkway stretching from McMasters Beach to Terrigal, approximately 31 km

southeast of the current study area. In addition, a series of alternate routes for the Walkway were also explored. The assessment included an archaeological predictive model using detailed background information of previous archaeological investigations in the region and information from the AHIMS database. A site survey was also undertaken in conjunction with the Aboriginal communities.

Two areas were identified as containing potential cultural material, including shell midden beneath the fore dunes along the eastern section of Copacabana Beach and between the foreshore and the beach at Winney Bay.

It was recommended that no new impacts be permitted within the fore-dunes area (between the back of the beach and residential suburbs behind) without further investigation including sub-surface testing. Within the area of proposed works it was recommended that the site be monitored and inspected during site preparation and construction, including vegetation clearing and earth works.

ATTENBROW ET AL 2017

Attenbrow et al 2017 undertook pXRF analysis on 121 ground edged artefacts from the NSW Central Coast, that included hatchets, Bulga knives, and hammer/pounders, in an attempt to match them to a geological source. The geological reference collection comprised 368 specimens from 169 locations within an area stretching from Bunya Mountains in southeastern Queensland to the Shoalhaven River in southern New South Wales and as far west as Orange on the western side of the Blue Mountains.

In addition to the 121 ground-edged artefacts, 15 pre-forms (tool blanks) were also incorporated into the analysis. A total of 69 of these were matched to 23 geological sources. Of the matched sources, five were located within the NSW Central Coast, including Peats Ridge to Popran Creek, Kulnurra, and Dillons Farm. Eight of the non-local sources included the Hunter Valley, Nepean River, Blue Mountains, and the South Coast region. There were 35 ground-edged artefacts that matched the Peats Ridge to Popran Creek Source.

The results highlighted the importance of Peats Ridge to Popran Creek basalt as a major stone resource for making ground-edged artefacts that were used locally and also traded or exchanged throughout the Sydney Basin. Attenbrow also notes that ethnographic evidence supports the proposition that the Darkinjung people who inhabited the Central Coast traded with other language groups, such as the Awabakal and Worimi in the lower Hunter, the Kamilaroi of western NSW, and tribes within western Sydney, e.g. the Darug.

ATTENBROW AND KONONENKO 2017

Attenbrow and Kononenko undertook use wear and residue analysis on a number of ground-edged artefacts (GEAs) that are held at the Australian Museum and were collected throughout the Central Coast region since the 1800s. Although a few of the artefacts were retrieved from excavated deposits, the majority were surface finds.

A number of the GEAs were found along the coastal areas of Woy Woy, Mooney Mooney Bridge and Gosford. Although most would be classified as ground-edged hatchets, there were also Bulga knives that are tools that have been ground along one lateral margin.

The study used low and high-powered microscopy to identify evidence of use wear in the form of pitting, polish, striations etc, and material residue from shell, bone, blood etc. A total of 18 wear types were identified that showed the implements were for a variety of functions including to work wood, skin and ochre. They were also used to abrade and polish stone and some hatchets were repurposed to use as hammer/pounders to process non-woody plant material.

HERITAGE NOW 2020

Heritage Now undertook an Aboriginal Due Diligence Assessment for a proposed subdivision at The Avenue and Festival Drive, Kariong along with land to the north-west along Kangoo Road, on the eastern side of the Central Coast Highway, approximately 23 km southwest of the current study area. The assessment included a review of previous archaeological investigations and a pedestrian survey. One previously identified site, comprising a rock engraving (AHIMS #45-3-1289), was found to have been incorrectly mapped as being within the study area and was not relocated during the survey. One isolated stone artefact flake made of tuff was identified during the survey undertaken with a representative of the DLALC. Outcropping sandstone was also noted during the survey and was considered to potentially have engravings and/or grinding grooves that may have been obscured by vegetation.

It was recommended that an Aboriginal Heritage Impact Permit (AHIP) be sought for the collection of the artefact and the potential discovery of more artefacts after the vegetation is removed. It was also recommended that a high-visibility barrier fencing is to be erected around the identified artefacts and the sandstone sheeting and remain in place until the cessation of construction.

ARCHAEOLOGICAL MANAGEMENT & CONSULTING GROUP 2020

Archaeological Management and Consulting Group undertook an ACHAR for a proposed mixed-use development at 26-32 Mann Street, Gosford, approximately 20 km to the southwest of the current study area. The investigation included a review of previous archaeological investigations, consideration of the underlying geology and soil profile, and a search of AHIMS. One site (AHIMS #45-3-3699), comprising a stone artefact, had been previously identified in the northern section of the study area. An archaeological test excavation was undertaken in the eastern slope because it was considered to be outside the reclamation zone of disturbance area. The testing consisted of nine 50 cm x 50 cm test trenches, of which three were abandoned due to high levels of disturbance and modern fill. Although previous results from two bore holes showed there was up to 1 m of natural brown silty clay topsoil with traces of organics overlaying up to 1.45 m of grey-brown sandy clay

alluvium soil in a small portion within the eastern section, no Aboriginal archaeological and cultural material/deposits were located as a result of the test excavation.

Overall, the site was found to have nil-low archaeological significance and it was recommended that no further investigation was warranted, and works may proceed with caution.

KLEINFELDER 2022

Kleinfelder undertook an ACHA at 437 Ward Hill Road, Empire Bay, approximately 30 km south from the current study area. The assessment included consideration of the underlying geology and soil landscape, a review of previous archaeological investigations, and a pedestrian survey.

No sites or areas were considered to have potential archaeological deposits (PADs). The landscape within the study area was considered to have been disturbed through landscaping, construction of buildings, roads and infrastructure.

It was recommended that the individuals or persons responsible for the management of onsite works ensure that all site personnel were made aware of the statutory legislation protecting sites and places of significance.

4.1.2 PREVIOUS HERITAGE ASSESSMENTS WITHIN THE TUGGERAH/MARDI AREA

LEN DYALL 1980

Len Dyall undertook a large pedestrian and vehicle survey to identify Aboriginal objects within the Tuggerah, Mardi and Wyong Creek areas. The proposed project was for the construction of a power station, coal mines, coal storage, switchyard, and associated works. A corridor for pipelines, a transmission lines, and an ash dam were also proposed for the Deep Creek Section. Portions of the survey come within 130 m of the current study area. Dyall also interviewed residents and reviewed existing literature and newspapers articles for information on past Aboriginal occupation. .

A total of 13 sites were identified during the survey across various landscapes including, wetlands, sand dunes and sandstone country. Eight of the sites were either isolated stone artefacts, or stone artefact scatters, and comprised flakes, and cores, and a ground-edged axe. One of the sites (AHIMS # 45-3-1108) comprised one grey rhyolite core and four waste flakes (chert, pink rhyolite and quartz). It is mapped as being approximately 500 m to the west of the current study area. However this is incorrect as per Dyall's map, and the site should be a further 500 m to the west and closer to Mardi Dam. The main raw material for all the sites was chert, but included quartzite and volcanic material including silica-rich rhyolite and basalt was also used.

Two rock shelters near Deep Creek were identified, (one with pigment artwork of two wombats) and the other is a large overhang (10 m x 3 m) that contained sandstone

grinding stone, sandstone slope with grinding marks from possible bone points and wallaby bones. A single axe-sharpening groove was found along a pothole in exposed sandstone on a tributary on the south side of the headwaters of Deep Creek, and a set of 40 grinding grooves were found on the corner of Rock Know, west of Mardi dam. Two minor shell middens were also found near Tuggerah Lake, alongside the south edge of Chittaway South Road.

Dyall proposed that it was unlikely that past Aboriginal populations would have camped in the wetlands, preferring the sand dunes of the ocean front, or the rock shelters of the sandstone scarp where the mosquitos would have been more bearable. From these type of camps, the resources of the wetlands could have been used and the two major creeks and Tuggerah Lake would have easily been accessible by canoe.

It was recommended that the Rock Knob grinding grooves be left intact and protected from possible damage. However, if construction was to be proposed along the flat sandstone outcrops on the ridges south and west of Deep Creek, a qualified archaeologist should clear the surfaces beforehand and inspect the area for Aboriginal rock engravings.

PAM DEAN JONES 1986

Archaeologist Pam Dean Jones undertook an archaeological survey and management plan in consultation with the Darkinjung Aboriginal Council for Wyong Shire Council. The aim of the project was to identify areas of archaeological significance and advise on the protection and management of any sites located. The area covered approximately 170 ha of urban and rural bushland between the old Pacific Highway and the new Pacific Highway at Tuggerah.

The report considered the underlying sandstone and alluvial deposits geology, and noted the types of landforms that would have been preferred for past Aboriginal occupation. These included northeast-facing rockshelters, footslopes/valley junctions where terrain is dry, flat, but close to water. The survey concentrated on areas of archaeological potential such as within the rockshelter, outcropping sandstone along drainage lines that may have grinding grooves. However, no artefacts were found in this type of geology.

In the far southwest corner of her study area, an outcrop of metamorphosed fine-grained quartz sandstone was found. Dean-Jones noted that appeared to have been utilised as a raw material source (quarry) for stone artefacts. The quarry was distributed over an area of approximately 50 m wide by 15 m deep on the upper slopes of the hill. Some of these blocks were noted to have been used as cores. One block was found on a structural bench next to an intermittent stream some 250 m away from the outcrop. The block had flakes removed from it that were noted to be quite large. Two other isolated stone artefacts were identified during the survey, one (yellow chert flake) at an abattoir site and one (utilised vein quartz scrapper) on top of Tangy Hill.

The quarry site was considered to be particularly significant, because the raw material is very limited in the Wyong Shire. Additionally, the quarry is on the highest hill in the immediate Tuggerah/Wyong area and its crest commands an excellent view of the whole Tuggerah Lakes system and the ocean. However, the distribution of material derived from the site was unknown. It was recommended that further archaeological work on this site, and at open campsites elsewhere in the Tuggerah Lakes area, may provide more information about the significance of the quarry as a source. Although no open campsites were identified in the central valley during the survey, it is possible that their presence was obscured by dense ground cover.

The report also noted that other raw material sources within the Tuggerah area include cherts in pebble form within local conglomerates.

THERIN ARCHAEOLOGICAL CONSULTING 2000

Therin Archaeological Consulting undertook an archaeological survey to identify any potential Aboriginal sites in relation to the proposed Woodbury Park Estate Stage 4 project at Mardi, approximately 1 km to the north of the current study area. The investigation area comprised 32 ha and included two main landforms; low sandstone hills in the southwest, and the Wyong River floodplain. Two billabongs (wetlands) were also noted to be within the floodplain area, although one was noted not to have been present in 1940s aerial photographs. The billabong that was absent in earlier image is within the southwestern corner and noted as a conservation wetland area.

Therin also mentioned predictive models for the area by archaeologists Dallas and Vinecombe, who proposed that Aboriginal sites are more likely to be found in foothills and plateaus where they are less likely to have been disturbed by past and present land uses. Furthermore, they suggested that large habitation sites would be unlikely to be found around billabongs or creeks on the low-lying flood plains area due to dampness of the land and mosquitos.

Therin identified one of the Aboriginal sites on a hillslope (WP1). It was a stone artefact scatter consisting of nine stone artefacts: eight flakes (six mudstone, one quartz, and one fine-grained siliceous), and one core (mudstone). The artefacts were found in amongst gravel and it was unclear where the gravel came from. The other three sites were on the flood plain. One was an isolated silcrete stone artefact and the other an artefact scatter consisting of one mudstone flake and one quartz stone flake. Although Therin mentions that previous land clearing and constant flooding would have impacted the original insitu profile, it is unclear to what extent. Therefore, an area of PAD was identified that could provide further information through subsurface testing.

It was concluded that the low number of artefacts was consistent with the predictive model that floodplains would have been visited for resources but unlikely to have been areas favoured for camping. Areas on higher ground with evidence of large knapping events would likely to be more indicative of longer-stay occupation events.

It was recommended that an impact permit be sought to collect the artefacts. With regards to the PAD, Therin noted that the excavation of the PAD is likely to yield only low-density artefact scatter. However, he also suggested that if a medium to large assemblage is recovered, it could provide important information on stone tool technology and manufacture that is lacking for the Wyong Area.

WILDTHING 2002

Wildthing Environmental Consultants undertook an Aboriginal Heritage Study along a pipeline route covering approximately 10 km of road on the Tuggerah Beach (eastern) side of Wilfred Barrett Drive at the Tuggerah Lake Entrance. The project was for a proposed pipeline and was approximately 9 km to the east of the current study area. The investigation aimed to identify possible archaeology during a pedestrian survey and provide a predictive model based on the results and background information.

The report comments extensively on the wide-range of plants that would have been available to local Aboriginal populations. It also includes examples of their uses, as well of those favoured by animals. It was predicted that possible day camps may have been established on the slopes in the Coastal Sand Wallum Woodland, on the edges of the Bangalay Open Forest area, and along Tuggerah Beach.

No Aboriginal heritage sites were identified in their survey area. However, it was recommended that any encroachment of the old-growth littoral rainforest, or within Bangalay Open Forest, be kept to a minimum so that the environmental and cultural significant integrity of the areas may be retained.

HERITAGE CONCEPTS 2006

Heritage Concepts undertook an archaeological assessment for a proposed gas pipeline project in the Wyong area, approximately 12 km to the northeast of the current study area. The assessment included a review of previous archaeological reports, heritage studies, site history, and local history documents.

The slopes through the study area were found to have been impacted by the ongoing erosion of soil material that would have travelled down the slopes and compromised the potential to retain underlying archaeology. Conversely, it was suggested that areas further down the slope would be aggrading, so material would accumulate, and these areas had the potential to contain archaeological material. The ridgeline and spurs were also proposed to have formed a high point through a low-lying swampy landscape on which Aboriginal groups would have travelled for hunting-and-gathering forays.

The area was found to have been heavily disturbed through vegetation clearance and major earth works, and no Aboriginal objects were found. However, a few areas of potential subsurface archaeology were identified around the elevated swamp margins. It was proposed that although the swamp area would have provided an

abundance of natural flora and fauna resources, the higher ground would have been more suitable for camping.

It was recommended that the areas identified as having moderate potential be subject to subsurface archaeological excavation.

KUSKIE 2009

Peter Kuskie (South East Archaeology) undertook an Aboriginal heritage impact assessment for a proposed water supply infrastructure project from the lower Wyong River to the Mangrove Creek Dam, referred to as the 'Mardi – Mangrove link' project. Specifically, the assessment was for a water pipeline along a 19 km route from Mardi Dam to the existing Bunning Creek Tunnel. The aim of the project was to identify and record any Aboriginal heritage evidence within the study area; and assess the significance and determine the potential impacts of the project.

A field survey was undertaken in conjunction with the DLALC and the Guringai Tribal Link Aboriginal Corporation, and three new Aboriginal heritage sites were found. Two previously recorded sites were also identified during background research. The three new sites comprised a rock shelter with art with potential archaeological deposit, one isolated stone artefact, and a stone artefact scatter. The stone artefact scatter is AHIMS #45-3-3576 (Mardi to Mangrove 3) and is approximately 1.5 km northwest of the current study area. It was not proposed to be impacted by the route.

A number of potential archaeological deposits that would be traversed by the proposed pipeline were also identified within the elevated land in Yarramalong Valley, approximately 20 km to the northwest of the current study area. It was suggested that these sandy deposits may contain Aboriginal burials. Additionally, buried shell midden deposits may be present in the lower reaches of the Wyong River which flows from west to east, and drains into the saline Tuggerah Lake, approximately 3 km to the northeast of the current study area. The rest of the study area within the narrow impact zone for the proposed works was not considered to have sufficient integrity and research potential.

Kuskie proposed that there is a potential for stone artefacts to occur in a widespread distribution of variable densities across virtually all landform units, apart from on low-elevation flood-prone flats and in areas which have been substantially impacted by recent land-use. A higher density of evidence and potential deposits of research significance may occur where more focused and/or repeated Aboriginal occupation has occurred. For example, on elevated, well-drained flats/terraces and low gradient simple slopes adjacent to watercourses. Kuskie also discussed a salvage excavation undertaken by Therin around 2009[1] that was undertaken adjacent to a billabong and at the base of a hill on the margin of the floodplain in close proximity

[1] Therin's report was not available on AHIMS or online at the time of writing this current report. Contact details for Therin to obtain the report could also not be found.

to Wyong River. It resulted in the recovery of approximately 3,000 stone artefacts found up to 0.8 m below the present ground surface. Therin concluded that the depositional context of the locality, particularly the floodplain of the Wyong River, renders it unlikely that archaeological assessments involving surface inspections alone can accurately identify the presence of Aboriginal artefact concentrations.

It was concluded that the isolated stone artefact and artefact scatter were considered to be of low scientific significance within a local context but there was a high potential for sub-surface archaeological deposits of artefacts to occur, including in situ deposits within the PAD areas. It was therefore recommended that a permit be obtained to undertake an archaeological salvage to collect the isolated stone artefact, and excavate the PADs that were also within the impact zone along Yarramalong Valley. Furthermore, the aims, methodology and scope of the salvage must be formulated in consultation with the registered Aboriginal stakeholders.

ADVITECH 2013

Advitech environmental undertook an Aboriginal Cultural Assessment for proposed works to Mardi Dam. The assessment was required to support an application to impact a registered archaeological site, AHIMS site #45-3-3393 (Mardi to Mangrove 3), approximately 1.5 km to the northwest of the current study area. The site was initially described in 2009 by South East Archaeology, as an artefact scatter comprising two stone artefacts located within one square of exposure on a level bench created by earthworks adjacent to the Mardi Dam Wall. The investigation included an archaeological test excavation and salvage in conjunction with the DLALC and the Guringai Tribal Link Aboriginal Corporation.

A total of three 1 m x 3 m test pits were excavated to over 18 cm in Stage 1 of the excavation program. They were found to be highly disturbed. There were numerous pieces of introduced material including concrete and fragments of glass. No artefactual material was found. Stage 2, which was the salvage, involved an excavator removing the imported fill. No other details are mentioned with regards to the excavation methodology, only that material was removed and sieved and a high number of foreign material including glass was recovered. No artefacts were recovered. The site was assessed as being highly disturbed and no further archaeological investigations were considered warranted.

SUMMARY

Previous research projects undertaken within the Central Coast area have demonstrated that the region has been used by Aboriginal people for at least the last 11,000 years. The combination of geology and climate within the region created varied landscapes with numerous rivers and creeks that contained a plethora of natural resources that were used in their daily lives, and would also have played a significant part in economic exchange systems and ceremonial lives of Aboriginal people. Remnants of these past lives is still seen in the archaeological evidence left

behind, such as rock engravings, grinding grooves, shell middens and stone artefacts.

Research undertaken by Attenbrow et al (2017), and Attenbrow and Kononenko (2017) show that ground-edged artefacts such as hatchets, Bulga knives and hammer/ponders also had a variety of uses. The rock material from which they were made was sourced from local basalt from the Peats Ridge to Popran Creek area within the Central Coast region, as well as from the Nepean River, Hunter Valley, South Coast region and west of the Blue Mountains.

Previous predictive models in relation to the Tuggerah area proposed that evidence of past Aboriginal occupation would be found in rock shelters, at the base of foothills, in flat elevated areas bordering well-resourced swampy areas, and in the sand dunes in proximity to Tuggerah Lakes. However, the archaeological salvage excavation undertaken by Therin, that Kuskie (2009) referred to, resulted in a large number of artefacts being recovered in an area bordering a wetland and in close proximity to the Wyong River. Therin's results demonstrated that caution must be applied when assessing a flood plain's potential to contain archaeological material based on surface inspections, as the depositional context of the sediment bordering the river is not well known.

4.2 AHIMS Results

An extensive 4 km search centred on the study area was conducted of the AHIMS Register on 22 January 2024. A total of 11 sites were located within the search area, with nine sites registered as 'valid', one site listed as 'not a site', and one site listed as 'destroyed' (Figure 6). Sites can be recorded as a particular site type: closed or open. For the nine valid sites in the search area, all are registered as open sites, meaning they are not within rockshelters. Sites are also recorded with one or more of a set of twenty-two site features specified by AHIMS. There are a total of eight sites with the feature 'artefact' that could either be isolated stone artefacts, or stone artefact scatters. There is one 'stone quarry', and one 'restricted site'. The 'restricted site' was confirmed by Heritage NSW in March 2024 as not being within the lot boundary of the study area, or within 50 m of it. There is also one 'potential archaeological deposit' (PAD). However, this has been listed as 'not a site' (Table 3).

No previous AHIPs that include the current study were identified.

Summary

In summary, the sites that have been identified within 4 km of the study area have primarily been isolated stone artefacts, or stone artefact scatters that have been found in an open context. A stone quarry site is mapped as being located approximately 1.5 km to the south of the study area on Mt Tangy. Stone quarry sites are not a site type frequently found during surveys. Furthermore, the material that was noted as being quarried at this site was metamorphosed sandstone which is also an unusual a rock type that is not generally seen in stone artefact assemblages.

Figure 6: AHIMS sites within a 5km radius of the study area.

Figure redacted from public document

Table 3: Summary of registered Aboriginal heritage sites on AHIMS within 5 km of the study area

Site ID	Site Name	Context/ Site features	Status
45-3-3393	Mardi to Mangrove 3	Open/Artefact	Destroyed
45-3-3628	Restriction applied. Please contact ahims@environment.nsw.gov.au.	Unknown	Valid
45-3-3194	WP-4	Open/Artefact : -	Valid
45-3-3183	WP3	Open/Artefact : -	Valid
45-3-1144	Tuggerah;	Open/Artefact : -	Valid
45-3-0816	Tangy Dangy	Open/ Stone Quarry: -	Valid
45-3-3184	WP2	Open/Artefact : 1	Valid
45-3-3576	MARDI TO MANGROVE	Open/Artefact : -	Valid
45-3-3181	WP1	Open/Artefact	Valid
45-3-3384	Tuggerah PAD 1	Open/ (PAD) : -	Not a Site
45-3-1108	Tuggerah;	Open/Artefact : -	Valid

4.3 Predictive Model

Based on the results of previous archaeological investigations within the wider region, a number of predictions regarding Aboriginal use of the area can be made. These predictions focus on the nature, extent and integrity of the remaining evidence.

The landscape characteristics of the area influence the prediction of the nature of potential sites within the landscape itself. Disturbance is the predominant factor determining whether or not artefacts are likely to be identified within a landscape.

Surface sites are likely to have been impacted by pedestrian activity, vegetation clearance, the construction of water drainage and structures within the area over the historic period. Natural actions such as erosion and bioturbation are likely to have also impacted not only the surface, but also at least the upper levels of subsurface archaeological deposits. Whilst these actions may impact the integrity of stratigraphy within the deposit, this does not necessarily mean associated archaeological objects will also be disturbed.

In general, Aboriginal use of an area is based on a number of factors, such as:

- Proximity to permanent water sources – generally permanent or areas of repeat habitation are located within approximately 200m of permanent water;
- Proximity to ephemeral water sources – generally sites near ephemeral water sources were utilised for one-off occupation;
- Ease of travel – ridgelines were often utilised for travel during subsistence activities; and
- The local relief – flatter, more level areas were more likely to be utilised for long term or repeat habitation sites than areas of greater relief, especially if the slopes are at a distance from water.

Stone Artefacts

Stone artefacts can be identified on the ground surface or within subsurface deposits. Generally, artefact concentrations are representative of debris from knapping activities, which includes flakes, flake fragments, cores, and pieces likely to have been knapped but with no or inconclusive diagnostic features, referred to as flaked pieces. Modified artefacts can also be identified, including backed artefacts, scrapers, or edge ground axes, although these are generally a smaller proportion of the artefact assemblage. During excavation, very small debris (~3-5mm) can be identified within sieved material, and is referred to as debitage. This is indicative of *in situ* knapping activities.

As the detection of stone artefacts relies on surface visibility, factors such as vegetation cover can prevent their identification. Conversely, areas of exposure can assist in their identification. The study area has been subject to ongoing land disturbance through construction of buildings and land clearing. Although stone artefacts have not previously been identified within the current study area, there is a possibility that this type of artefact may be present.

Quarry and Procurement

Exposures of stone which can be exploited for the production of lithics are referred to as quarries or procurement sites. Quarries generally have evidence of extraction visible, while procurement sites can be inferred through the presence of artefactual material made from raw material sources present within the area.

There are no known quarrying sites within the study area. However, there is a quarrying site registered as being approximately 1.3 km to the south of the study area. The material quarried was noted to be metamorphosed fine-grained sandstone. Additionally, the western section of the study is mapped as being on Narrabeen sandstone which has conglomerates including quartz that is known to have been favoured as a rock material to make tool/implements.

Middens

Middens are concentrations of shell, and may also contain stone artefacts, bone and sometimes human burials. These sites are generally recorded along coastal areas. Middens are formed through the exploitation of locally available species by humans for resources, and accumulation of the shell material within a specific location. Middens can range in size from small, discrete deposits, to deposits covering a large area.

Generally, middens reflect the species available in the local area. In estuarine regions, estuarine species will dominate the composition of the midden, while around headlands, rock platform species tend to dominate. There are no midden sites recoded within a 4 km radius of the study area. This type of site would be found further to the east, near and along the coast.

Burials

Aboriginal people across Australia utilised a range of burial forms, which depended on the customs of the individual tribes. Common burial practices included inhumation, cremation, desiccation and exposure. Burials are known to occur within sandy contexts in the wider region. These are generally found within coastal Holocene sand bodies, and generally are not identified during field survey as there is usually minimal surface expression of this type of site. No burials have been recorded on AHIMS as being within the study area. Given the deep excavations and disturbance that have occurred within the study area into sandstone in relation to the construction of buildings, and the remaining area is largely damp and prone to flooding, it is unlikely that burials may be present.

Rock Shelters

Rock shelters are formed by rock overhangs which would have provided shelter to Aboriginal people in the past. Often, evidence of this occupation can be found in the form of art and/or artefacts. Shell, midden material, grinding grooves, pictographs (rock engravings), artworks including stencils and paintings, and potential archaeological deposits (PAD) are common features of rock shelter sites.

Th Narrabeen Group sandstone is mapped as being within the western and central portions of the study area. This type of sandstone generally has a high conglomerate content which weathers differently from the finer grained Hawkesbury sandstone. The Hawkesbury sandstone can weather to form cavernous rock shelters that are more conducive to occupation. Therefore, it is considered unlikely that rockshelters will be within the study area.

Grinding Grooves

Grinding grooves are formed on sandstone exposures through the creation and maintenance of ground edge tools, such as axes and spears. Usually, stone was ground to form a sharp edge, although bone and shell were also ground to create sharp points.

Generally, fine grained sandstone, such as the Hawkesbury sandstone was favoured for these maintenance activities, and the presence of a water source nearby or overflowing the sandstone was also favoured. Grinding grooves range from individual examples through to hundreds of grooves within an area, sometimes arranged in a specific pattern. Horizontal sandstone was generally preferred, although there are examples of vertical grooves.

As mentioned above, Narrabeen Formation sandstone is mapped as being within the western and central portions of the study area. This type of sandstone is not noted to have been commonly used as a grindstone for tools/implements. It is therefore unlikely these types of features will be located within the study area.

Scarred and Carved Trees

Scarred and carved trees are created during the removal of back from a tree for a range of reasons, both domestic and ceremonial. This type of site can be identified

within areas containing trees of the correct species and appropriate age. Deliberately scarred trees can be difficult to differentiate from naturally occurring damage to trees, and specific criteria must be considered when assessing a scar for a cultural origin.

Given the level of historical land clearing within the study area and surrounds, the likelihood of culturally scarred trees remaining within the study area is low. However, there are some trees remaining that may have been part of the original landscape and therefore have the potential to have been culturally modified.

Ceremonial Sites

Specific places were used for ritual and ceremonial purposes, including initiation and burial practices. Secret rituals were also undertaken at specific places by specific individuals, such as at water holes and by clever men.

The landscape itself was also considered to hold significance to Aboriginal people, and the understanding of this is referred to as a sacred geography. This includes natural features which were associated with spirits or creation beings. The meaning attributed to the landscape provided Aboriginal people with legitimacy regarding their role as guardians of the places which had been created by the spiritual ancestors (Boot 2002).

Many areas within the Central Coast of NSW are considered to be sacred to the original inhabitants. There are no known recorded areas within the study area, although this does not preclude these values from existing within this location. Additionally, there is a restricted site registered that is noted as being within the AHIMS 4 km x 4 km search area. However, AHIMS staff advised on 18 March 2024 this is not within the current study area or in close proximity.

Contact Sites

Contact sites contain evidence of Aboriginal occupation concurrent with initial colonisers in an area. This could include evidence such as flaked artefacts formed on glass, or burials containing non-Aboriginal grave goods. Often Aboriginal camps would form around newly built towns, allowing for employment (or exploitation) of the Aboriginal people by the colonists, and also for trade to exist between the two communities. Contact sites can also occur around Aboriginal mission sites, where Aboriginal children were taken from their families to raise in the European manner. Families often camped around the mission boundaries to try to catch a glimpse of their children.

There is no known evidence of initial contact between Aboriginal people and colonists within the study area. It is considered unlikely that the site would contain evidence of initial contact.

5.0 Field Work

5.1 Sampling Strategy

A sampling strategy was developed and provided to the Registered Aboriginal Parties (RAPs) as part of the consultation process completed for the ACHA. The strategy included assessment of all landforms within the study area that have the potential to be impacted by the proposed development. Areas considered likely to have archaeological potential were closely scrutinised, although the entire study area was considered.

The sampling strategy included consideration of the entirety of the study area due to the nature of the development proposal, in order to provide an accurate assessment of the study area in relation to the proposed impacts.

5.2 Site Inspection

A pedestrian survey for the entire study area was undertaken in fine weather on Wednesday 21 February 2024 by Archaeologist, Rebecca Bryant from Apex Archaeology, and Jacob Cain, Culture, Heritage and Education Officer at DLALC.

5.3 Survey Coverage

The survey was conducted on foot for the purposes of discovering Aboriginal objects within the study area, including areas considered to have potential for subsurface objects to be present. The survey was undertaken in accordance with the sampling strategy prepared for the project and included the entirety of the study area. The study area contained two landforms (Table 5). However, as the majority of the study area has been built upon and is within one lot, it was surveyed by two participants using one transect (Figure 7).

Table 4: Survey transect

Unit name	Landform Elements	Number of participants	Total Length (m)
SU01	Gentle Simple Slope	2	1,326
SU02	Flat	2	1,395

During the survey completed by Apex Archaeology the study area was inspected for Aboriginal archaeological evidence. An assessment of landform element and slope was made for the study area, with the results presented in Table 5.

Table 5: Survey unit results

Survey Area #	Landform Element	Slope	Vegetation	Detection Limiting Factors	Ground Disturbance
SU01	Gentle Simple Slope	Gentle (>1.45°-5.45°)	Cleared, except for a few trees	Building, concrete roads, carparks. Introduced plant and trees	High
SU02	Flat	Level-very gentle (<1.45°)	Cleared original vegetation. Introduced turf and wetland	Turf, gravel, buildings, concrete, trees and plants	High

The total survey coverage (meaning the areas physically inspected for archaeological evidence) was approximately 10,884m^2. The whole area had been impacted through the construction of buildings, roads, carparks and revegetation which reduced visibility. A range of factors were considered and recorded during the survey, including the surface visibility (percentage of bare ground within a survey unit); archaeological visibility (amount of bare ground within an area in which artefacts could be expected to be identified if present); exposure type (A or B soil horizon) if present, and calculations of how effective the survey coverage was. The results of the survey coverage are presented in Table 6. As can be seen in Table 7, the total effective survey coverage for the entire study area was less than 1%.

Table 6: Summary table of effective archaeological survey coverage

Survey Area #	Total Area Surveyed (m²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	Effective Coverage (m²)	% Total Effective Survey Coverage of Context
SU01	5,304	65	<1	Disturbed Terrain	34.47	0.64
SU02	5,580	80	<1	A and B	44.64	0.8

Surface visibility across the study area was limited due to vegetation cover. Total effective survey coverage of the survey transect was <1%. Total effective survey coverage for the entire study area was 0.06% (Table 7).

Table 7: Total effective survey coverage results

Survey Area #	Total Area of Study Area (m²)	Total Area Effectively Surveyed (m²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	% Effective Survey Coverage of Context (Total Area)
SU01 & SU02	126,500	79.11	70	<1	Disturbed and A and B	0.06

PO Box 236
NOWRA
NEW SOUTH WALES 2541

0 160 320

metres

Projection:
MGA Zone 56 (GDA 94)
Base Map:
NearMaps 2023
Image Date: 29/10/2023
Final - Version 1

Figure 7: Survey transect and survey units within the study area.

N

5.4 Survey Results

The majority of the original surface was not visible due to the construction of St Peter's Catholic College, the infill of two dams, and creation of a wetland area in the eastern portion. The remainder of the study area, with the exception of a few exposures, was grassed with introduced turf, or had been revegetated with endemic plants and trees. However, the observations made together with the background information discussed in previous sections of this report were enough to determine the likelihood of Aboriginal archaeological material to be present within the property.

The study area is situated approximately 1.3 km to the south of Wyong River, and approximately 2.7 km to the west of Tuggerah Lake foreshore. The underlying landform slopes down moderately-to-gently steeply from west to east onto a low-lying, flood-prone area within the northern and eastern portion of the study area. The St Peter's Catholic College and associated paved carparks and roads have been built into the sloping sandstone geology to create level areas for the construction of classrooms and open areas (Plate 5, Plate 6 & Plate 7). The northwestern section of the study area where the proposed new Eileen O'Connor Catholic School will be located has been turfed with introduced grass and the previous dam that is seen in past historical images has been filled in and revegetated with mostly native vegetation. This area also contains structures that have been on what appears to have been purposely constructed elevated mounds (Plate 8 & Plate 9). There is a basketball court just south of the area for the new Eileen O'Connor Catholic School and a drainage depression has been constructed behind it (Plate 11). The northeast portion of the area that contains St Peter's Catholic College had an exposed mound of fill that included pieces of natural and introduced material (Plate 12) that have been used within the study area.

The cleared eastern portion of the study area contains a wetland that was not part of the original landscape seen in an historical image from 2001. A boardwalk has been constructed through the wetland to provide access from the western section of St Peter's Catholic College to the eastern portion of the college, where the College sports oval is located (Plate 13). The sports oval is bordered by the wetland to the west, and Gavenlock Road to the east side (Plate 14, Plate 15 & Plate 16). As was noted in the geology section of this report, the industrial area directly east of the study area is mapped as being on introduced fill. This was most probably because the area is within a flood-prone landform that is also damp and boggy.

There were very few exposed areas within the study area. However, there was one near the infilled dam in the northwestern section of the study are where the new Eileen O'Connor Catholic School is proposed to be constructed. The exposures show a mixture of deposited clay/sandy and sandy soil with natural ironstone, and introduced gravels (Plate 17).

Plate 5: View facing west towards entrance to St Peter's Catholic College in centre of study area.

Plate 6: View facing west through centre part of the St Peter's Catholic College within centre portion of the study area.

Plate 7: View facing northeast from centre of St Peter's Catholic College School.

Plate 8: View facing north over area for proposed new Eileen O'Connor Catholic School within the north east portion of the study area.

Plate 9: View facing west in northeast portion of study area towards area for proposed new Eileen O'Connor Catholic School. Infilled and revegetated dam in top right of frame.

Plate 10: View facing east of one of the shed structures on elevated section along the eastern boundary for the proposed new Eileen O'Connor Catholic School.

Plate 11:View facing north over basketball courts within St Peter's Catholic College and directly east of the proposed new Eileen O'Connor Catholic School. Drainage depression visible behind the court.

Plate 12: View south from north boundary at eastern section of the existing St Peter's Catholic College showing pile of mixed fill of natural stone and house brick. School structures in the background.

Plate 13: View facing east of the western section of the boardwalk that leads through the revegetated wetlands to the St Peter's Catholic College sports oval on the eastern section of study area.

Plate 14: View facing south over St Peter's Catholic College oval in eastern-most portion of study area. Wire fence along eastern side of revegetated wetland visible on the right of frame.

Plate 15: View from western side of St Peter's Catholic College sports oval showing revegetated wetlands behind wire fences that borders the western side of the oval.

Plate 16: View east across St Peter's Catholic College sports oval in eastern most portion of the study area.

Plate 17: View west towards infilled dam in northwestern portion of the study area where the proposed new Eileen O'Conner Catholic School will be constructed.

5.5 Survey Summary

The results of the survey conducted for this current assessment confirmed that the entire study area has been impacted by the initial clearance of original vegetation, and construction of dams when the property was used for agricultural purposes. This was followed by the construction of St Peter's Catholic College, and revegetation of the study area including the establishment of a wetland in the eastern section of the study area. The construction of the school complex would have required substantial subsurface excavations. Additionally, the removal of original vegetation and the introduction of fill within the lowland areas further altered and impacted the original natural landform to the degree that it is unlikely that any of the artefactual material would remain in a natural stratified context. No artefacts or culturally modified trees were found during the inspection.

5.6 Discussion

The study area is within the city of Tuggerah that has been heavily impacted by the land clearing of the vast majority of original vegetation followed by use of land for agricultural purposes. This was followed by residential and business development, and the construction of facilities to cater for the growing population. As is seen in the current geological maps, lots of land to the north and east of the study area have been modified in these damp and flood-prone areas by the introduction of fill material to create dry level areas. With regards to the portions of the current study area that have been built into the underlying sandstone geology, the excavation into the Narrabeen sandstone would have demolished any archaeological evidence, such

as pigment art, engravings, grinding grooves, or rockshelters that may have been present. Although, as mentioned previously, these types of archaeological features are more commonly found within landforms that contains the fine-grained Hawkesbury sandstone. The low-lying boggy areas within the northern and eastern portions of the study area were found to have sections that have been built up or filled in. This would have been completed through redistribution of the underlying soil and geology, or with introduced fill, like the type within an exposed mound that was present during the pedestrian survey. The wetland that is now present within the eastern section was not part of the original vegetation and was established in the last 20 years.

No areas of potential archaeological deposits were identified during the assessment, and no Aboriginal cultural material was identified during the survey. Although past Aboriginal people may have travelled through the study area it is unlikely that the landforms within the study area would have provided suitable campsite locations. There are no creeks within the current study or within 500 m that would have provided a reliable water source. There would not have been suitable rockshelters for habitation, and the low-lying areas were likely to have been constantly damp and prone to mosquitos. It is more reasonable to propose that evidence for past Aboriginal occupation would be found further west within Hawkesbury sandstone rockshelters, or along major rivers and creeks that offered an abundance of natural resources including access to fresh water, animals and plants, and suitable flat elevated camping sites. Archaeological evidence has been found in these types of landforms to the north on elevated terraces bordering Wyong River, further south on flat and elevated terraces bordering the large Ourimbah Creek, and further east near Tuggerah Lakes.

Overall, the study area was considered unlikely to contain evidence of Aboriginal objects or places.

6.0 Scientific Values and Significance Assessment

6.1 Introduction

The *Aboriginal cultural heritage consultation requirements for proponents 2010* acknowledge that:

- Aboriginal people have the right to maintain their culture, language, knowledge and identity
- Aboriginal people have the right to directly participate in matters that may affect their heritage
- Aboriginal people are the primary determinants of the cultural significance of their heritage

Undertaking consultation with Aboriginal people ensures that potential harm to Aboriginal objects and places from proposed developments is identified and mitigation measures developed early in the planning process.

6.2 Archaeological Significance

Archaeological or scientific significance relates to the value of archaeological objects or sites as they are able to inform research questions considered important to the archaeological community, which includes Aboriginal people, heritage consultants and academic researchers. The value of this type of significance is determined on how the objects and sites can provide information regarding how people in the past lived their lives. The criteria for archaeological significance assessment generally reflect the criteria of the ICOMOS Burra Charter.

6.3 Criteria

Archaeological significance is assessed based on the archaeological or scientific values of an area. These values can be defined as the importance of the area relating to several criteria. Criteria used for determining the archaeological significance of an area are as follows:

- **Research potential:** Can the site contribute to an understanding of the area/region and/or the state's natural and cultural history? Is the site able to provide information that no other site or resource is able to do?
- **Representativeness:** is the site representative of this type of site? Is there variability both inside and outside the study area? Are similar site types conserved?
- **Rarity:** is the subject area a rare site type? Does it contain rare archaeological material or demonstrate cultural activities that no other site can demonstrate? Is this type of site in danger of being lost?
- **Integrity/Intactness:** Has the site been subject to significant disturbance? Is the site likely to contain deposits which may possess intact stratigraphy?

Further, an assessment of the grade of significance is made, based on how well the item fulfils the assessment criteria. The Heritage Branch of the Department of Planning (now Heritage NSW) 2009 guideline *Assessing Significance for Historical Archaeological Sites and 'Relics'* defines the grading of significance as follows:

Table 8: Grading of significance, from Heritage Branch 2009

Grading	Justification
Exceptional	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.
Moderate	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.
Little	Alterations detract from significance. Difficult to interpret.
Intrusive	Damaging to the item's heritage significance.

Whilst this was developed for the assessment of significance of historical items, the criteria are applicable to archaeological significance assessments as well. It is important to note that the below assessment is specific to Aboriginal cultural heritage and does not consider the non-Aboriginal significance of the site.

6.4 Significance Assessment

Research Potential

The study area is not considered to possess research potential, based on the results of the background research and site survey confirming high levels of disturbance. Therefore, the study area does not meet this criterion.

Representativeness

No archaeological material was identified within the study area and it has been heavily disturbed by previous land use activities. As such, is not considered representative of the Tuggerah area as it was prior to European settlement.

Rarity

No Aboriginal archaeological evidence, or areas of potential archaeological deposits were found to be present within the study area. Therefore, the study area does not meet this criterion.

Integrity/Intactness

The site has been subject to intense disturbance and is not considered to be intact, nor to have integrity.

6.5 Statement of Archaeological Significance

The study area for 84 Gavenlock Road, Mardi, NSW is not considered to have archaeological significance based on its lack of research potential, representativeness, rarity and integrity. No stone artefacts or culturally modified

trees were observed during the survey. The potential for the site to contribute a greater understanding of the archaeological record is therefore limited.

7.0 Impact Assessment

7.1 Proposed Development

Catholic Schools Broken Bay (CSBB) is proposing construction of a new school for students with a disability at the purpose-built K-12 Eileen O'Connor Catholic School using land located in the north-western corner of St Peter's Catholic School at 84 Gavenlock Road, Mardi. The school will have capacity for 200 students and will provide education and allied health facilities.

The proposed development involves:

- Tree removal and infill of existing dam
- Site establishment and benching
- Construction of a part-two, part-three storey school campus comprising 20 General Learning Areas (GLA), flexible specialist learning areas, library, multipurpose hall, administration, staff facilities, storage, landscaping and playspaces
- Construction of two (2) new vehicle accessways from Keefers Glen and at-grade carpark (including bus parking) and covered drop off/pick up area
- Subdivision of land to create a new allotment for the school
- Widening of a portion of Keefers Glen

The proposed works are shown in Figure 3. These activities, along with the implementation of services such as water, electricity and telecommunications are expected to result in subsurface excavations and modification to the natural landscape. There is also a probability that excavated soil will be removed from the study area or redeposited within it, and other fill may be introduced to the site.

7.2 Potential Impact

No surface artefacts, culturally modified trees or other Aboriginal archaeological sites were identified within the study area during the site inspection, and therefore the proposed development is considered unlikely to impact any identified Aboriginal objects. The site is not considered to have potential for subsurface archaeological deposits due to the historical and contemporary disturbance across the site, and therefore it is not considered likely that the proposed works would impact any Aboriginal heritage values within the site.

8.0 Management, Mitigation and Recommendations

8.1 Guiding Principles

Wherever possible and practicable, it is preferred to avoid impact to Aboriginal archaeological sites. In situations where conservation is not possible or practicable, mitigation measures must be implemented.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013 (The Burra Charter) provides guidance for the management of culturally sensitive places. The Burra Charter is predominantly focussed on places of built heritage significance, but the principles are applicable to other places of significance as well.

The first guiding principle for management of culturally significant sites states that "places of cultural significance should be conserved" (Article 2.1). A cautious approach should be adopted, whereby only "as much as necessary but as little as possible" (Article 3.1) should be changed or impacted.

Mitigation measures depend on the significance assessment for the site. Cultural significance of sites should also be considered in consultation with the Aboriginal community during community consultation.

8.2 Harm Avoidance or Mitigation

The study area does not contain any previously registered Aboriginal sites and none were found during the investigation. As such, no harm avoidance and mitigation measures for this site are necessary.

9.0 RECOMMENDATIONS

The following recommendations are made on the basis of:

- The statutory requirements of the NP&W Act 1974;
- The requirements of Heritage NSW;
- The results of the cultural and archaeological assessment;
- An assessment of the likely impacts of the proposed development; and
- The interests of the registered Aboriginal stakeholders and the cultural heritage record.

It was found that:

- There were no previously registered sites within the study area.
- No surface artefacts were identified during the survey.
- No areas considered to have potential for subsurface archaeological deposits were identified within the study area.
- The area was considered to be disturbed throughout due to historical clearance, land use practices and development.
- The site is not considered to contain potential for Aboriginal cultural material to be present.

As such, the following recommendations have been made:

RECOMMENDATION 1: NO FURTHER ARCHAEOLOGICAL ASSESSMENT REQUIRED

This report details the archaeological potential of the site, which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities.

RECOMMENDATION 2: INSTALLATION OF ACKNOWLEDGEMENT

It is recommended that consideration is given to the installation of an acknowledgement to the traditional Aboriginal owners of the land. This could be addressed in the future through the Connecting to Country component of the project.

RECOMMENDATION 3: DEVELOPMENT BOUNDARIES

The proposed development works must be contained within the assessed boundaries for this project. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this archaeological investigation, further investigation of those areas should be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.

RECOMMENDATION 4: STOP WORK PROVISION

Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken.

Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

RECOMMENDATION 5: REPORTING

One digital copy of this report should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the 12 registered Aboriginal stakeholders listed in the ACHA for the project.

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APPENDIX A: AHIMS SEARCHES

(not included in public document)