New High School for Medowie

Archaeological Report

Final Report

Prepared for Department of Education

31 January 2025

Biosis offices

New South Wales

Albury
Phone: (02) 6069 9200
Email: albury@biosis.com.au

Gosford
Phone: (02) 9101 8700
Email: gosford@biosis.com.au

Newcastle
Phone: (02) 4911 4040
Email: newcastle@biosis.com.au

Sydney
Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Western Sydney
Phone: (02) 9101 8700
Email: sydney@biosis.com.au

Wollongong
Phone: (02) 4201 1090
Email: wollongong@biosis.com.au

Victoria

Ballarat
Phone: (03) 5304 4250
Email: ballarat@biosis.com.au

Melbourne
Phone: (03) 8686 4800
Email: melbourne@biosis.com.au

Wangaratta
Phone: (03) 5718 6900
Email: wangaratta@biosis.com.au

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- Colliers: Tia Cutrupi and Nathan Martin

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- Mathew Smith (assistance in the field)
- Azka Abid (mapping)

Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.

We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

Summary

Biosis Pty Ltd (Biosis) was commissioned by Department of Education (DoE) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed new High School for Medowie (the activity) at 6 Abundance Road, Medowie NSW (the study area). The project is to be assessed as a Review of Environmental Factors (REF) under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This Archaeological Report (AR) documents the findings of the archaeological investigations conducted as part of the ACHA. As required under Section 2.3 of *The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b) (the Code), the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

The study area is located within Lot 3 DP788451 and is approximately 22.5 kilometres southwest of the Newcastle central business district (CBD). A search of the Aboriginal Heritage Information Management Systems (AHIMS) database (Client Service ID: 905917) identified 106 Aboriginal archaeological sites within a 7.5 x 7.5 kilometre search area, centred on the study area. None of these sites were located within the study area, with the closest site located approximately 2 kilometres south of the study area.

An archaeological survey of the study area was conducted on the 31 May 2024, 22 July 2024 and 15 October 2024. The surveys did not identify any surface artefact sites or other Aboriginal site types. This was attributed to low levels of ground surface visibility (GSV) noted across the extent of the study area. Although the survey demonstrated that the study area has been subject to disturbance, one area of moderate archaeological potential was identified. This area of potential is located in the western portion of the study area and was identified as they have remained relatively undisturbed, and evidence of oyster shell was noted. As the proposed works will not be impacting the western portion of the study area, no further investigation is warranted.

The proposed works will result in direct impacts to the grounds surface and subsurface soils however at this stage the works are being undertaken are located in the areas identified as holding low archaeological potential.

Strategies have been developed based on the archaeological significance of cultural heritage relevant to the study area. The strategies also take into consideration:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practice, widely considered to include:
  - The ethos of the Australia — International Council on Monuments and Sites (ICOMOS) The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter) (Australia ICOMOS 2013)
  - the Code.

The recommendations that resulted from the consultation process are provided below.

Management recommendations

The mitigation measures have been outlined in Section 6.3 (Table 13). Prior to any activity impacts occurring within the study area, the following is recommended.

Recommendation 1: No further assessment or Aboriginal Heritage Impact Permit is required

The proposed activity avoids the area of moderate archaeological potential therefore no further archaeological investigation or works such as an Aboriginal Heritage Impact Permit (AHIP) are required to be undertaken for the study area. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to recommendation 3 and 4 below.

Recommendation 2: If the project design changes and works impact the area of moderate archaeological potential, further assessment is required

No further archaeological investigation or works are required to be undertaken for the study area. If the proposed works change to include the area of moderate potential, further assessment is warranted. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to Recommendation 3 and 4 below.

Recommendation 3: Stop works provision – Discovery of previously unidentified sites or objects

All Aboriginal places and objects are protected under the *NSW National Parks and Wildlife Act 1974* (NPW Act). This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during the proposed works. Work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under an AHIP. Heritage NSW, Department of Climate Change, Energy, the Environment and Water (Heritage NSW) and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Recommendation 4: Stop work provision for any potential discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains, or suspected human remains are discovered. Any such discovery at the study area must follow these steps:

1. **Discovery:** If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place and protected from harm or damage.
2. **Notification:** Once suspected human skeletal remains have been found, the NSW Police must be notified immediately, and they will subsequently inform the Coroner's Office. Following this, and if the human remains are likely to be Aboriginal in origin, the find will be reported to the Aboriginal parties and Heritage NSW. If the find is likely to be non-Aboriginal in origin and more than 100 years in age, the Heritage Council of NSW will be notified of the find under s.146 of the *Heritage Act 1977* (Heritage Act).

Recommendation 5: Heritage induction for all contractors

Heritage inductions for all site workers and contractors should be undertaken to prevent any unintentional harm to any unexpected Aboriginal objects. The heritage induction should include the following items:

- Relevant legislation.

- Location of identified Aboriginal heritage sites, and areas of archaeological sensitivity within proximity to the study area.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts, and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.

Contents

Tables

Figures

Photographs

Glossary

ACHA	Aboriginal Cultural Heritage Assessment
ADDA	Aboriginal Due Diligence Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AR	Archaeological Report
Biosis	Biosis Pty Ltd
Consultation requirements	*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*
Cth DCCEEW	*Australian Commonwealth Department of Climate Change, Energy, the Environment and Water*
DoE	Department of Education
DA	Development Application
DP	Deposited Plan
EP&A Act	*Environmental Planning and Assessment Act 1979*
ESD	Ecologically Sustainable Development
GDA	Geocentric Datum of Australia
GPS	Global Positioning System
GSV	Ground Surface Visibility
Heritage NSW	Heritage NSW, NSW Department of Climate Change, Energy, the Environment and Water
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NTSCORP	Native Title Services Corporation
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
REP	Regional Environmental Plan
SEPP	State Environmental Planning Policy
Study area	Defined as 6 Abundance Road, Medowie NSW (Lot 3 DP 788451)
the Code	*Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*

1 Introduction

This Aboriginal Cultural Heritage Assessment (ACHA) has been prepared to support a Review of Environmental Factors (REF) for the proposed New High School for Medowie (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as 'development permitted without consent' on land carried out by or on behalf of a public authority under Part 5 of the EP&A Act. The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37A of the T&I SEPP.

1.1 Proponent

The Department of Education (DoE) is the landowner, proponent and determining authority pursuant to Section 5.1 of the Environmental Planning and Assessment Act 1979 (the Act).

1.2 Project background

Biosis was commissioned by SINSW to undertake an ACHA of the proposed activity of the new Medowie High School at 6 Abundance Road (Lot 3 DP 788451), Medowie NSW (study area) (Figure 1 and Figure 2). This AR documents the findings of the archaeological investigations conducted as part of the ACHA. The AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

The activity of the site will involve ground disturbing works that will have the potential to impact known and unknown Aboriginal heritage constraints that may be present within the study area. The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

This investigation has been carried out under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act) and in accordance with the Code. The Code has been developed to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the NPW Act.

It is stated in Section 1.2 of the Code that where the ACHA report concludes that the proposed activity will result in harm to Aboriginal objects or declared Aboriginal Places, an application for an AHIP will be required. This application must be supported by an ACHA report.

The *Environmental Planning and Assessment Act 1979* (EP&A Act) includes provisions for local government authorities to consider environmental impacts in land-use planning and decision making. Each Local Government Area (LGA) is required to create and maintain a Local Environmental Plan (LEP) that includes Aboriginal and historical heritage items. Local Councils identify items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the EP&A Act and Heritage Act.

1.3 Study area

The site has a street address of 6 Abundance Road, Medowie. It is 6.51 hectares in area, and comprises one allotment, legally described as Lot 3 DP788451 (Figure 1).

A large portion of the site is currently unused and vacant. A small shed structure and caravan are located adjacent to the northern boundary. A cluster of buildings including a single storey dwelling, an outhouse/shed structure and temporary greenhouse are located in the south-east corner.

The site contains a largely vegetated area to the south-west corner. The site is relatively flat with a gradual fall from west to east towards Abundance Road. The site has a primary frontage to Abundance Road to the east and Ferodale Road to the north. Abundance and Ferodale Road are both classified as Local Roads. Medowie Road, approximately 1 kilometre east of the site is a classified Regional Road.

The area surrounding the site mostly consists of industrial, rural residential, educational and agricultural lands. Adjacent to the north-western boundary is a Shell petrol station and mechanic garage. Adjacent to the north-eastern boundary is a medical health clinic. Across Abundance Road along the eastern boundary are a number of warehouse and light industrial developments. Directly north of the site across Ferodale Road are large lots used for agricultural purposes. Medowie Public School is located on Ferodale Road, to the north-west of the site, opposite the Shell petrol station (Figure 2).

1.4 Planning approvals

The proposed activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021*. Other relevant legislation and planning instruments that will inform the assessment include:

- *National Parks and Wildlife Act 1974.*
- *National Parks and Wildlife Amendment Act 2010* (NSW).
- *State Environmental Planning Policy (Transport and Infrastructure) 2021*.
- *State Environmental Planning Policy (Industry and Employment) 2021*.
- *Environmental Planning and Assessment Regulation 2021*.
- *Port Stephens Local Environmental Plan 2013*.
- *Port Stephens Development Control Plan 2014*.

1.5 Objectives of the investigation

The objectives of the investigation can be summarised as follows:

- To identify and consult with any registered Aboriginal stakeholders and the Karuah Local Aboriginal Land Council.
- To conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- To search statutory and non-statutory registers and planning instruments to identify listed Aboriginal cultural heritage sites within the study area.
- To highlight environmental information considered relevant to past Aboriginal occupation of the locality and associated land use and the identification and integrity/preservation of Aboriginal sites.
- To summarise past Aboriginal occupation in the locality of the study area using ethnohistory and the archaeological record.

- To formulate a model to broadly predict the type and character of Aboriginal sites likely to exist throughout the study area, their location, frequency and integrity.
- To conduct a field survey of the study area to locate unrecorded or previously recorded Aboriginal sites and to further assess the archaeological potential of the study area.
- To assess the significance of any known Aboriginal sites in consultation with the Aboriginal community.
- To identify the impacts of the proposed development on any known or potential Aboriginal sites within the study area.
- To recommend strategies for the management of Aboriginal cultural heritage within the context of the proposed development.

1.6 Investigators and contributors

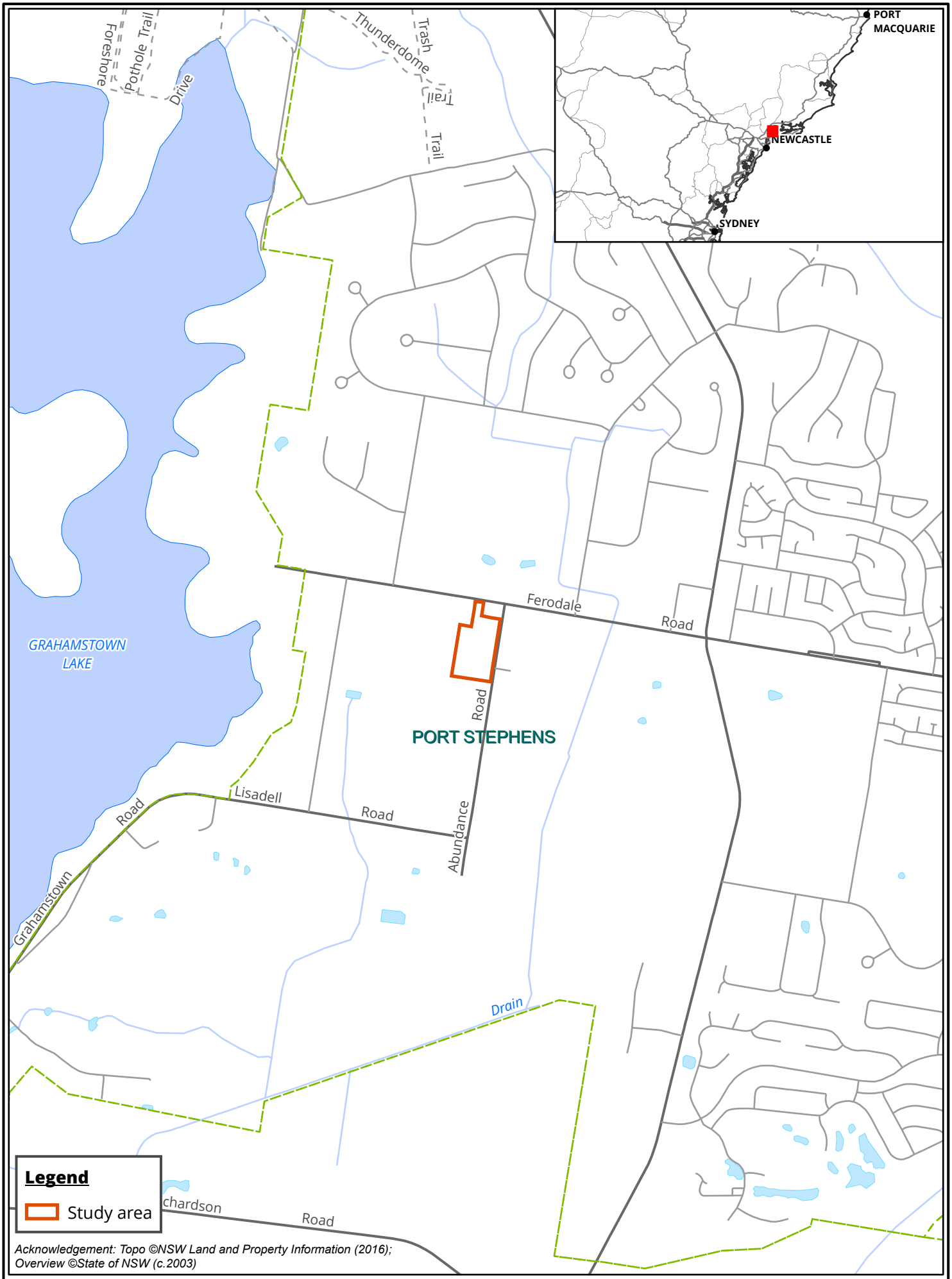
The roles, previous experience and qualifications of the Biosis project team involved in the preparation of this archaeological report are described below in Table 1.

Table 1 Investigators and contributors

Name and qualifications	Experience summary	Project role
Samantha Keats Bachelor of Arts (Honours)	Samantha is the NSW Heritage Manager with Biosis Wollongong office and has over seven years of experience as an archaeologist. Samantha has had experience working as an archaeologist and project manager on a number of Aboriginal and European heritage projects across New South Wales, including water infrastructure and linear projects, residential development projects, renewable energy projects, and telecommunications projects. As part of these project Samantha has interacted with a diverse client base including Local Government, National Parks and Wildlife Service, Department of Primary Industry and Water, resource companies, architectural firms, engineering firms, and private developers.	• Project Director
Charlotte Allen BA (Hons) Arch	Charlotte is a Senior Heritage Consultant with over six years' experience in heritage consulting, having joined Biosis in 2017. Charlotte has strong technical skills in background research, field surveys and excavation, artefact analysis, assessment of heritage values and impacts, and heritage interpretation, covering both Aboriginal and non-Aboriginal heritage. Charlotte is also a strong project manager and field team leader. Charlotte is responsible for multiple heritage projects, including State Significant Developments, ranging from Aboriginal Due Diligence assessments and Historical Heritage Assessments to larger and more complex Aboriginal Cultural Heritage Assessments and Statements of Heritage Impact. Charlotte has also had numerous successful permit applications for both Aboriginal and non-Aboriginal heritage under the Heritage Act and NPW Act, with minimal comments from government regulators.	• Quality assurance

Name and qualifications	Experience summary	Project role
Anthea Vella **BA Archaeology** MA Archaeology and Heritage Management	Anthea is a Heritage Team Leader with over six years' experience. Anthea has experience in conducting Aboriginal and historical heritage assessments, surveys, archaeological test excavations and salvage excavations for a variety of projects including Aboriginal Due Diligence Assessments, Aboriginal Cultural Heritage Assessments, Historical Heritage Assessments, Statements of Heritage Impact, Constraints Assessments, Aboriginal and Non-Aboriginal Heritage Management Plans, and Heritage Impact Assessments and permits for Aboriginal archaeology throughout NSW. Anthea possesses specialist skills in analysing Ground Penetrating Radar data. Anthea also possesses skills in desktop research, artefact analysis, project management, and reporting.	• Quality assurance
Mathew Smith **Bachelor of Arts** Bachelor of Science (Honours)	Mathew is a Senior Heritage Consultant with over seven years' experience in the consulting industry. Mathew has extensive experience consulting with Aboriginal communities across NSW as well as completing Aborignal due diligence assessments, Aboriginal cultural heritage assessments, heritage management plans and Aboriginal heritage Impact Permits, including both archaeological survey, excavation and monitoring field works. Mathew is a full member of the Australian Association of Consulting Archaeologists Inc. and is also recognised as a specialist in the recording and analysis of Aboriginal artefacts.	• Field investigation • Technical advice • Quality assurance
Ashley Bridge **Bachelor of Arts** Masters of Archaeological Science (Advanced) (Honours)	Ashley is a Senior Heritage Consultant with over six years' experience in Aboriginal and historical archaeology and cultural heritage management. Ashley has undertaken fieldwork for Biosis throughout Sydney, Wollongong and Western New South Wales, with a focus in both Aboriginal and historical archaeology. She is skilled in project management and reporting, in addition to both Aboriginal and historical excavations. She also has experience with desktop research and Aboriginal consultation practices in an Australian context.	• Quality assurance
Molly Crissell Bachelor of Archaeology	Molly has been a member of the New South Wales Heritage team since September 2021, joining as a Heritage Consultant. She completed a Bachelor of Archaeology with a major in Geography in 2019. Molly has experience in Aboriginal community consultation, artefact analysis, background research, field surveys, project management, technical report writing and test and salvage excavations throughout Sydney, Central Coast, Hunter, Illawarra regions and regional NSW. During her time with Biosis, Molly has project managed Aboriginal Due Diligence Assessments, Aboriginal Cultural Heritage Assessments, Heritage Inductions and assisted with Statement of Heritage Impact reports.	• Project management • Reporting • Community consultation
Bronte Baonza Bachelor of Arts	Bronte joined Biosis in 2023 as a Graduate Heritage Consultant with the Sydney Heritage team. Completing a Bachelor of Arts with majors in Archaeology and Ancient History as well as International Relations.	• Project management • Community consultation

Name and qualifications	Experience summary	Project role
	Since joining Biosis, Bronte has gained experience in Aboriginal community consultation, background research, report writing, artefact analysis, field surveys, and test and salvage excavations throughout the Sydney, Newcastle, Albury and Illawarra regions.	



Acknowledgement: Topo ©NSW Land and Property Information (2016); Overview ©State of NSW (c.2003)

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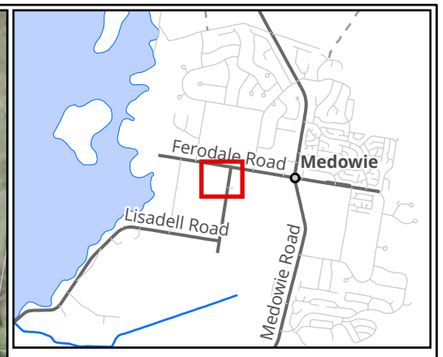
Figure 1 Location of the study area

Matter: 40105, Date: 21 December 2023,
Prepared for: DB, Prepared by: JB, Last edited by: jbeckius
Location: P:\40100s\40105\Mapping\
40105_PIHAI_Medowie
Layout: 40105_Medowie_F1_Locality_PIHAI

0 200 400 600 800 1,000
Metres

N

Scale 1:25,000@ A4, GDA 1994 MGA Zone 56



Legend

- Study area
- Lot

Figure 2 Study area detail

0 20 40 60 80

Metres

Scale: 1:2,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

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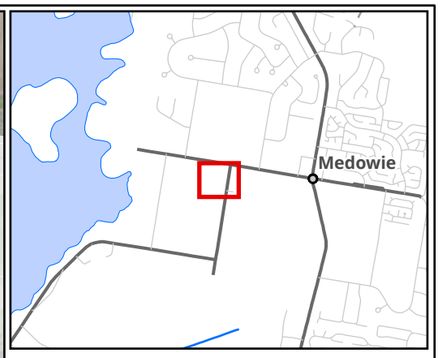
Matter: 40105, Date: 21 December 2023,
Prepared for: DB, Prepared by: JB, Last edited by: jbeckius
Location: P:\40100s\40105\Mapping\
40105_PIHAI_Medowie,
Layout: 40105_Medowie_F2_StudyArea_PIHAI

2 Proposed activity

The proposed works involved the construction of school facilities on the site for the purpose of the New High School for Medowie. The site contains a densely vegetated area to the southwest corner which is identified as a land with high biodiversity values corresponding to the areas of remnant native vegetation (PCT 3995 – Hunter Coast Paperbark – Swamp Mahogany Forest). The existing dwelling house and other structures on the site will be demolished as part of the works. No other works are proposed within this area.

The proposed new school will accommodate 640 students in 29 permanent teaching spaces including three support teaching spaces across three-storeys of buildings on the site. The proposed activity will be delivered across one stage, and will consist of the following (Figure 3):

- 29 permanent teaching space including three support teaching spaces to accommodate 640 students and a school hall to accommodate 1000 students. Approximately 10,500 square metres of gross floor area is proposed.
- Main vehicular ingress and egress to Ferodale Road to the north, with a new pedestrian and vehicle crossing proposed.
- Main pedestrian access to Abundance Road.
- Kiss and ride, and bus drop and pick up areas to Abundance Road (six parallel spaces).
- New pedestrian wombat crossing to Abundance Road.
- Parking spaces and three accessible car parking spaces.
- Bicycle parking spaces.
- Block A (Admin) consisting of administration and learning spaces.
- Block B (Foodtech/Workshop) consisting of food technology rooms and workshops.
- Block C (Hall) consisting of school hall to accommodate 1000 students.
- Central quad, one playing field and one sports courtyard.
- The proposed school development will include the following spaces: general learning spaces, general support learning spaces, administrative services, staff areas, gym and canteen, library areas for science, wood and metal, food and textiles, health PE, performing arts, additional learning spaces, student amenities, storage, movement (stairs and covered walkways).



Legend

Study area

Figure 3 Proposed works

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEMGroup

Matter: 40105, Date: 29 January 2025,
Prepared for: MC, Prepared by: AA., Last edited by: aabid
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Layout: 40105_AR_F3_ProposedWorks

3 Desktop assessment

The desktop assessment involves researching and reviewing existing archaeological studies and reports relevant to the study area and surrounding region. This information is combined to develop an Aboriginal site prediction model for the study area, and to identify known Aboriginal sites and/or places recorded in the study area. This desktop assessment has been prepared in accordance with Requirements 1 to 4 of the Code.

3.1 Landscape context

It is important to consider the local environment of the study area any heritage assessment. The local environmental characteristics can influence human occupation and associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological processes can affect the preservation of cultural heritage materials to varying degrees or even destroy them completely. Lastly, landscape features can contribute to the cultural significance that places can have for people.

3.1.1 Topography and hydrology

The study area is located on an area of higher ground that sits above a large transgressive dune field of Pleistocene age to the south-east (Umwelt 2011, p. 2.1). Generally, the transgressive dune barrier forms part of inner barrier of the Stockton Bight formation; a large dual barrier formation that encompasses much of the Port Stephens LGA. The inner barrier formed as a result of raised sea levels associated within the last interglacial phase (120,000 years ago). During the last glacial period (116,000-10,000 years ago), sea levels dropped resulting in the recession of the coastline by approximately 30 kilometres from the current sea level (Umwelt 2011, p. 2.1). During this period the former beach sands present within the inner barrier were subject to aeolian processes which resulted in windblown sand dunes forming throughout the inner barrier (Umwelt 2011, p. 2.1). The period between 10,000 and 6500 years ago saw in increase in temperature and precipitation resulting in an increase in sea levels to approximately 1.5 metres above the current sea levels. The sea level remained at 1.5 metres above the current sea level until approximately 2000 years ago, when sea levels started to recede toward current levels (Umwelt 2011, p. 2.1). Due to the changes in sea level, this likely resulted in phases of low and high density occupation due to resources.

The study area consists of a flat plain landform which has a gentle slope towards the western portion of the study area. One geological unit is present within the study area. The Tomago Coal Measures (*Pto*) consisting of siltstone, sandstone, coal, tuff, claystone, conglomerate and minor clay (Fairbridge 1953)(Figure 3). Of those elements tuffs have been known to have been utilised by Aboriginal people for the manufacture of tools.

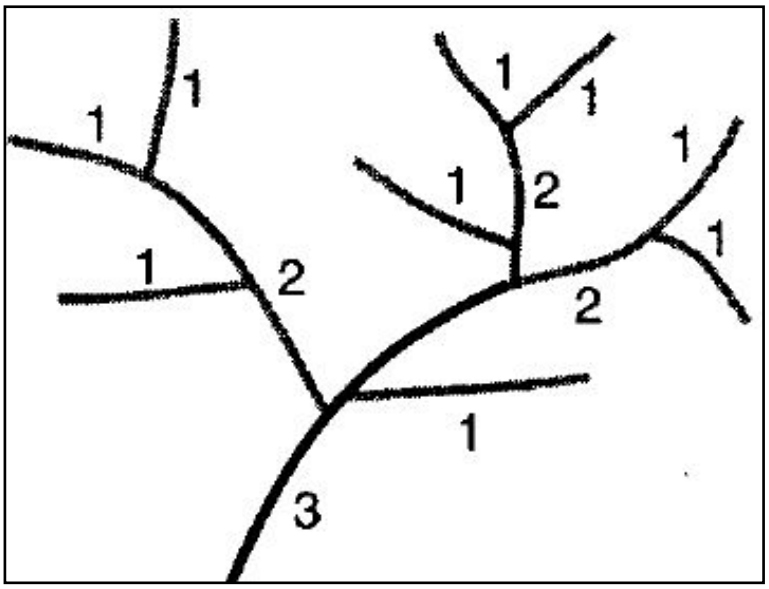


Photo 1 Diagram showing Strahler stream order (Ritter, Kochel, & Miller 1995, p. 151)

The study area consists of a semi-vegetated residential lot which is situated 2 kilometres to the north of Campvale Swamp and approximately 2 kilometres to the west of Moffats Swamp. A low swampy area now occupied by the artificial Grahamstown Dam is 800 metres to the west. There are no watercourses located within the study area (Figure 4). The closest water sources are two small unnamed first order tributaries of an unnamed second order drainage line which rises to the east of the study area. The water sources are located approximately 533 metres and 2.2 kilometres east of the study area which feeds into Moffatts Swamp 2 kilometres to the west. A large complex of swamps occurs to the south of Medowie with the nearest named watercourse the third order Pipeclay Creek approximately 4.5 kilometres north of the study area which feeds into 12 Mile Creek approximately 7 kilometres to the north-east of the study area. The sub-surface aquifer associated with the Tomago sandsheet would have provided an abundant supply of water, food and material resources which would have been exploited by Aboriginal people in the surrounding area. Due to the study areas distance from water sources and the complex of swamps, this suggest the study area would have been unlikely to have been used for intensive occupation and was likely a transitionary route to these sources.

3.1.2 Soil landscapes

Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. They are defined by a combination of soils, topography, vegetation, and weathering conditions. Soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure. One soil landscape, the Medowie Soil Landscape, is present within the study area (Figure 5).

The Medowie soil landscape is characterised by gentle, undulating low hills on relict sediments, and broad, flat crests with low incline slopes. The slope gradient ranges from 2-15%, with landscape elevation varying from 30-70 metres. Local relief is up to 30 metres. Soils within this landscape consist of deep (less than 150 centimetres), well-drained red and yellow structured loams, upon deeply weathered clay deposits and moderately deep to deep (60-200 centimetres), well drained podzolic soils, with shallow well-drained lithosols on sandy/pebbly deposits with clay lenses. Soil changes across the landscape are considered a direct result of the extensive clearing of native vegetation (Matthei 1995, p. 41). The soil landscape is described in Figure 5. Soils within the study area consist of brown structured fine sandy loam (me1) underlain by gravelly mottled clay loam (me7). Previous geotechnical investigations occurred in the local area have shown that clay is evident from 40 centimetres onwards. Geotechnical investigations undertaken in November 2024 for the

study area concludes that topsoil occurs up to 20 centimetres, with silty clay evident from 20 centimetres onwards (ADE Consulting Group Pty Ltd 2025). It is likely that due to clearing of initial vegetation and the use of the study area for market gardening that these soils have likely been disturbed.

Table 2 Soil landscapes of the study area (Matthei 1995)

Soil material	Description
Medowie 1 (me1)— Brown structured fine sandy clay loam (topsoil— A horizon on deeply weathered clay deposits)	Dark brown (10YR 3/4, 10YR 3/3) to brown (10YR 4/4, 10YR 4/6) commonly fine sandy clay loam or occasionally clay loam with a weak to moderate 10–20 mm sub-angular blocky or polyhedral peds which part to 5–10 mm polyhedral, then 2–5 mm crumb peds. Commonly slightly acid (pH 6.0) but may range from moderately to slightly acid (pH 5.0–6.5). Occasionally common rounded gravel-sized ironstones (pisolites) occur, and a few charcoal fragments may also occur. Common to many, fine roots (<2 mm) with moderate to high permeability. Friable when moist and hard setting when dry, with a weak crumbly consistence.
Medowie 2 (me2)— Hard setting earthy yellowish brown sandy clay loam (topsoil—A horizon on sandy/pebbly deposits with clay interbeds)	Dull yellowish brown (10YR 4/3) to brown (10YR 4/4) or greyish yellow brown (10YR 4/2) when moist, rarely bleached. Dull yellow orange (10YR 7/2) when dry with very few orange mottles occurring. Commonly light sandy clay loam to fine sandy clay loam but may range to loamy sand. The structure is massive, occasionally weak 20–100 mm with sub-angular blocky peds occurring. It is moderately to slightly acid (pH 5.0–6.5) with few to many sub-rounded gravel-sized ironstones occurring. Few sub-rounded and sub-angular pebbles may also occur with very few charcoal fragments may occur with roots absent to common and moderate permeability. Hard setting with weak to strong, brittle dry consistence.
Medowie 3 (me3) – Reddish brown structured loam (subsoil— B horizon on deeply weathered clay deposits)	Reddish brown (2.5YR 4/8) fine sandy clay loam to clay loam, moderate, 50–100 mm sub- and slightly acid (pH 6.0–6.5). Few, fine roots (<1 mm) and charcoal may occur. Moderate permeability with massive appearance and very firm crumbly, dry consistence.
Medowie 4 (me4) – – Reddish brown pedal clay (subsoil—B horizon on sandy/pebbly deposits with clay interbeds)	Reddish brown (2.5YR 4/8) sandy clay to medium heavy clay with strong, 50–100 mm prismatic peds which part to 20–50 mm angular blocky peds and thence to 10–20 mm angular blocky peds. Moderately acid (pH 5.0–5.5) with few roots and moderate permeability. Frets to fine (<2 mm) aggregates, moderate rill erosion occurs, weak plastic moist consistence, firm dry consistence.
Medowie 5 (me5) – Yellowish brown structured loam (subsoil— B horizon on deeply weathered clay deposits)	Yellowish brown (10YR 5/8) to bright yellowish brown (10YR 6/6) to bright brown (7.5YR 5/8) to brown (10YR 4/6,7.5YR 4/6). Occasionally very few to common orange mottles. Fine sandy clay loam to light clay subplastic. Structure is moderate, 20–50 mm sub-angular blocky peds which may part from 50–100 mm sub-angular blocky peds. It is strongly to slightly acid (pH 4.5–6.5) with few to many rounded gravel-sized ironstones commonly occurring and few charcoal fragments may also occur with few to many roots in-ped and moderate permeability. Frets to form easily transportable 2–5 mm fragments, consistence is weak and crumbly, cracks 5–10 mm in width may form down ped faces.
Medowie 6 (me6) – Yellowish brown pedal clay (subsoil—B horizon	Yellowish brown (10YR 5/6) (common) to bright brown (7.5YR 5/8, 7.5YR 5/6) with few to common small red/grey mottles with texture silty to medium heavy clay and moderate to strong structure, 10–20 mm angular blocky or polyhedral peds which part from 50–100

Soil material	Description
on sandy/pebbly deposits with clay interbeds)	mm angular blocky or prismatic peds. It is strongly to moderately acid (pH 4.0–5.5). Occasionally few sub-angular gravels occur with few, fine roots and moderate to slow permeability. When dry, fine (<2 mm) surface fragments form and occasional cracks 5–10 mm in width. Slightly sticky and plastic when moist, very firm when dry, occasionally crumbly
Medowie 7 (me7) – Gravelly, mottled silty clay loam (subsoil— B3/C horizon on sandy/pebbly deposits with clay interbeds)	Bright yellowish brown (10YR 6/6) with abundant red mottles with texture a silty clay loam to silty clay. Structure is moderate, 20–50 mm sub-angular blocky peds with strongly to slightly acid (pH 4.5–5.5). Many rounded gravel-sized ironstones, occasionally concentrated at the top with few roots and moderate permeability**.** Gravelly, fine 2–5 mm surface fragments form when dry.
Medowie 8 (me8) – Red and grey mottled structured clay (subsoil— B3/C horizon on deeply weathered clay deposits)	Light grey (10YR 7/1) to bright brown (7.5YR 5/8) or bright reddish brown (5YR5/8) with common red and grey mottles. Texture light-medium to medium-heavy clay with moderate structure, 10–50 mm angular blocky peds when dry, weakly structured to massive when wet. Strongly to moderately acid (pH 4.5–5.5) and common, rounded gravels may occur. Roots absent to few and slow permeability. Fine (<2 mm) fragments form on surface, cracks 10–20 mm in width occasionally occur. Firm dry consistence, weak, slightly sticky, plastic wet consistence. Moderate rill erosion on batters

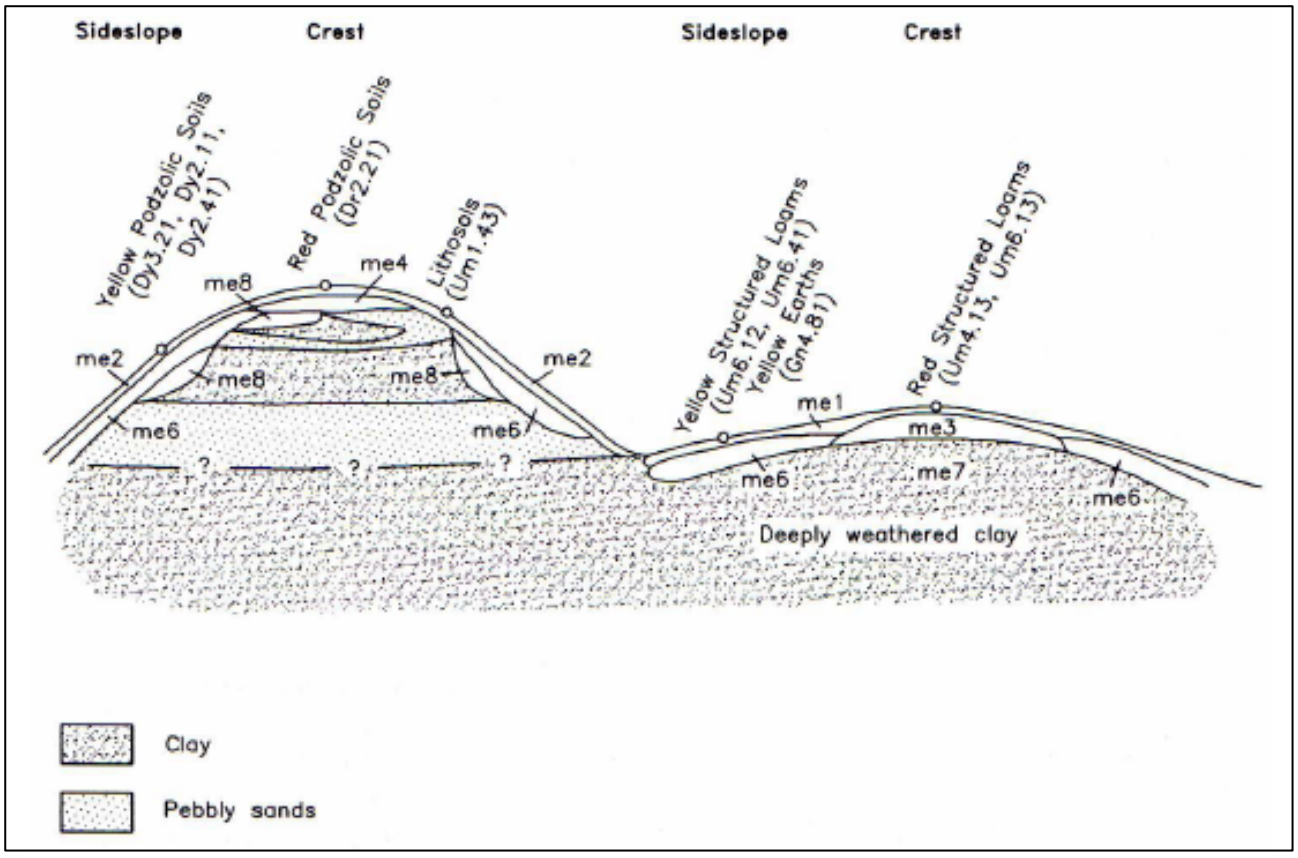


Photo 2 Schematic cross-section of the Medowie soil landscape (Matthei 1995, pp. 133–4)

3.1.3 Landscape resources

The study area and wider region contains geology, flora and fauna that would have provided useful resources to the Worimi people who inhabited the area. Sokoloffnov (1977, p. 230) notes that the exploitation of land resources by the Worimi people would have been directly relatable to the seasonal availability and relative abundance of certain food sources. Terrestrial resources would have been utilised in the winter months by Worimi tribes, whilst coastal resources would have been more readily available in the warmer seasons.

A range of flora species have been recorded in the Medowie soil landscape. Species known to occur include the smooth-barked apple *Angophora costata*, red bloodwood *Eucalyptus gummifera*, grey box *E.* Sydney peppermint *moluccana*, *E. piperita*, white stringybark E. *globoidea* and black she-oak *Allocasuarina littoralis*. Understorey species include the grass trees *Xanthorrhoea spp*., mountain devil *Lambertia formosa*, bracken *Pteridium esculentum* and blady grass *Imperata cylindrica.* Occasional blackbutt *E. pilularis* and scribbly gum *E. signata* (Matthei 1995, p. 41).

Poorly drained swales and deflation basins contain wet heath or wet heath forest community. Common species of the wet heath include fern-leaved banksia *Banksia oblongifolia*, prickly-leaved paperbark *Melaleuca nodosa*, flax-leaved paperbark *M. linariifolia* ssp. *Linariifolia*, prickly-leaved tea-tree *M. styphelioides*, grass tree *Xanthorrhoea fulva*, red bottlebrush *Callistemon citrinus*, dagger hakea *Hakea teretifolia*, yellow tea-tree *Leptospermum polygalifolium*, dog rose *Bauera rubioides*, woolsia *Woolsia pungens*, geebung *Persoonia spp.,* prickly conesticks *Petrophile sessilis*, broad-leaf drumsticks *Isopogon anemonfolius*, thyme Honey-myrtle *Melaleuca thymifolia*, swamp boronia *Boronia parviflora* and heath *Epacris spp*. (Matthei 1995, p. 212).

Plant resources were used in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002, pp. 113–4).

Robert Dawson, an agent of the Australian Agricultural company in 1825, notes the Grass Tree was used for a variety of purposes. The stalks of the grass tree were used in the manufacturing of spears, and a wax-like gum could be extracted from the grass tree and used as a glue for various implements. When flowering the grass tree also acted as a sweet food source (Dawson, cited by Haslam 1984, p. 18). The grass tree was also used in the making of fire sticks. Fire sticks were an important tool that would be carried from place to place and used in daily life and sacred ceremonies (Scott, cited by Haslam 1984, p. 19). Sokoloffnov (1977, p. 31) notes that the "firing" of vegetation at periodic intervals, also allowed the Worimi to influence the environment and available resources.

Various types of eucalypts were used by Aboriginal people and were a valuable resource. Stringybark was used in the construction of canoes by the Worimi. A single sheet of its bark would form the hull of a single canoe according to (Haslam 1984, p. 30). The bark from eucalypts could also be used in the construction of shelters (gunya/*gunyers*), and in the fashioning other objects used in everyday life. The fragrant oil-bearing leaves were further used for medicinal purposes, whilst the seeds, barks, nectar, galls, sap, water and manna of certain species could be eaten (1997, p. 22).

Native fauna that may have inhabited the area or its surrounds include mammals such as eastern grey kangaroo *Macropus giganteus,* short-beaked echidna *Tachyglossus aculeatus*, common brushtail possum *Trichosurus vulpecula*, fat-tailed dunnart *Sminthopsis crassicaudata* and swamp wallaby *Wallabia bicolor*. Avian species may have included galah *Eolophus roseicapilla*, Australian magpie *Gymnorhina tibicen*, crested pigeon *Ocyphaps lophotes*, red-rumped parrot *Psephotus haematonotus* and magpie-lark *Grallina cyanoleuca*. spiny-tailed gecko *Strophurus intermedius eastern*, inland snake-eyed skink *Cryptoblepharus australis* and south-

eastern morethia skink *Morethia boulengeriare* are among the reptile species that may have inhabited the area (Atlas of Living Australia 2021).

Kangaroo, wallaby, possum, flying fox, koala, kangaroo-rat and the echidna were also abundant traditional terrestrial food sources for the Worimi and would have been valuable sources of fat and protein during the colder seasons. As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record (Attenbrow 2002, p. 117).

3.1.4 Land use history

The non-Aboriginal cultural heritage of this area is defined mostly by the Hunter region's economic development in terms of pastoral, agriculture and mining industries. In 1804 a penal settlement had been established in Newcastle, and its primary source of industry was coal production (Australian Museum Business Service 2005).

Historical aerial imagery allows for modern developments and land use to be identified within the study area. A historic Parish map dating to 1922 shows the area incorporating the study area as a Trust Area gazetted on 15 July 1908 and proclaimed by 28 January 1909. Areas to the immediate north and east of the study area were low lying areas that were left largely vacant and marked as Grahamstown and Campvale Swamp Drainage in 1922 but had been formalised as the Campvale-Medowie Drainage Union by 1959.

Historic aerial imagery suggests the waterways and landforms within the vicinity of the study area have been subject to disturbances ranging from minor to major vegetation clearance. A 1954 aerial photograph shows the alignment of Abundance and Ferodale Roads have existed since at least 1954. A diagonally aligned electricity easement also appears to have been cleared in the vicinity. Dense vegetation is also present in the southern portion of the study area (Photo 3). The cultivation of orchards has begun in the north-east section of the study area.

Photo 3 1954 aerial photograph with the study area outlined in red (Source: NSW Spatial Services 2023)

Aerial imagery from 1967 shows significant changes have occurred within the study area during this time with further vegetation clearance, with vegetation remaining only in the south-western portion of the study area. Replanting with an unknown crop has begun and the cultivation of orchards has expanded to incorporate all but the south-western corner of the study area (Photo 4).

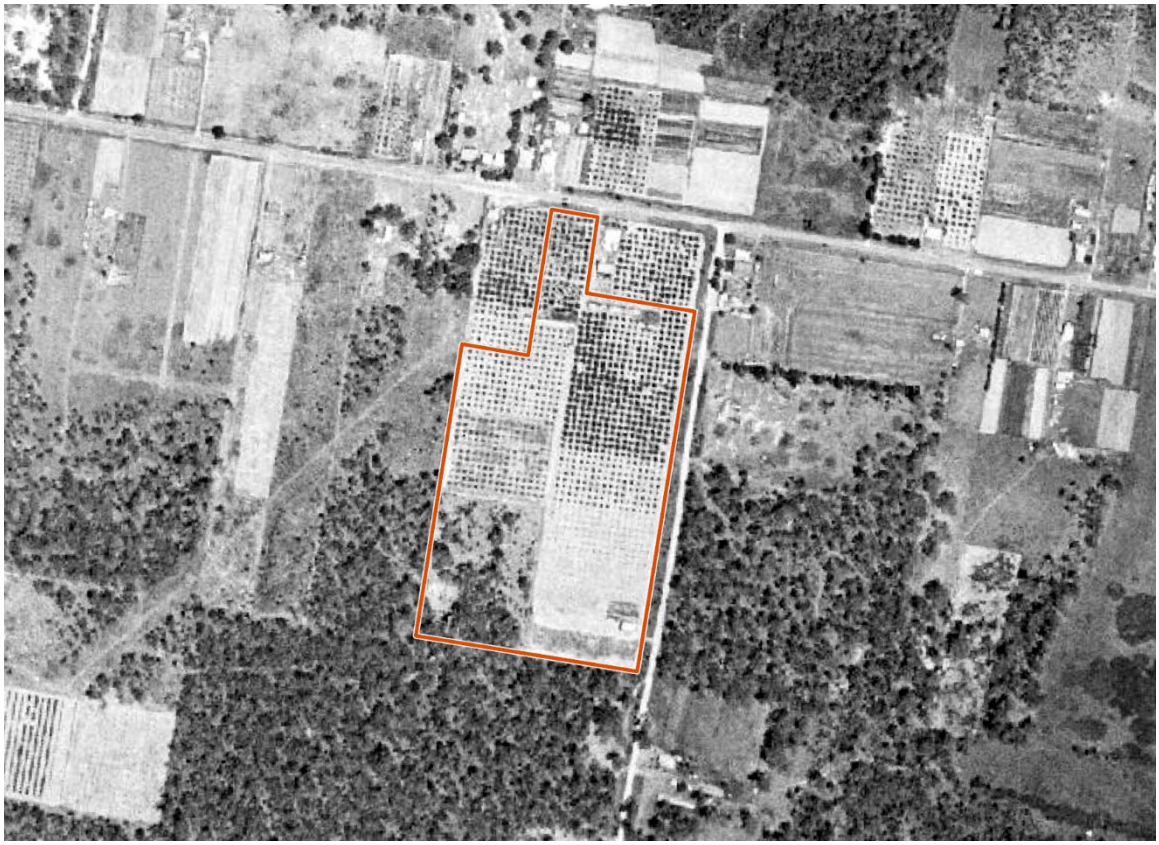


Photo 4 1967 aerial photograph with the study area outlined in red (Source: NSW Spatial Services 2023)

Aerial imagery from 1977 shows that while no significant changes have occurred to the ground within the study area, construction of dwellings has occurred in the north-east and south-east portions of the study area (Photo 5).

Photo 5 1977 aerial photograph with the study area outlined in red (Source: NSW Spatial Services 2023)

Aerial imagery from 1984 shows that cultivation within the study area has ceased and further structures have been constructed in the intervening period in the north. Note regrowth of vegetation in the south-western corner of the study area (Photo 6).

Photo 6 1984 aerial photograph with the study area outlined in red (Source: NSW Spatial Services 2023)

Aerial imagery from 1994 shows no significant changes have taken place since the previous image, although cultivation has continued in the north-western quadrant (Photo 7).

Photo 7 **1994 aerial photograph with the study area outlined in red (Source: NSW Spatial Services 2023)**

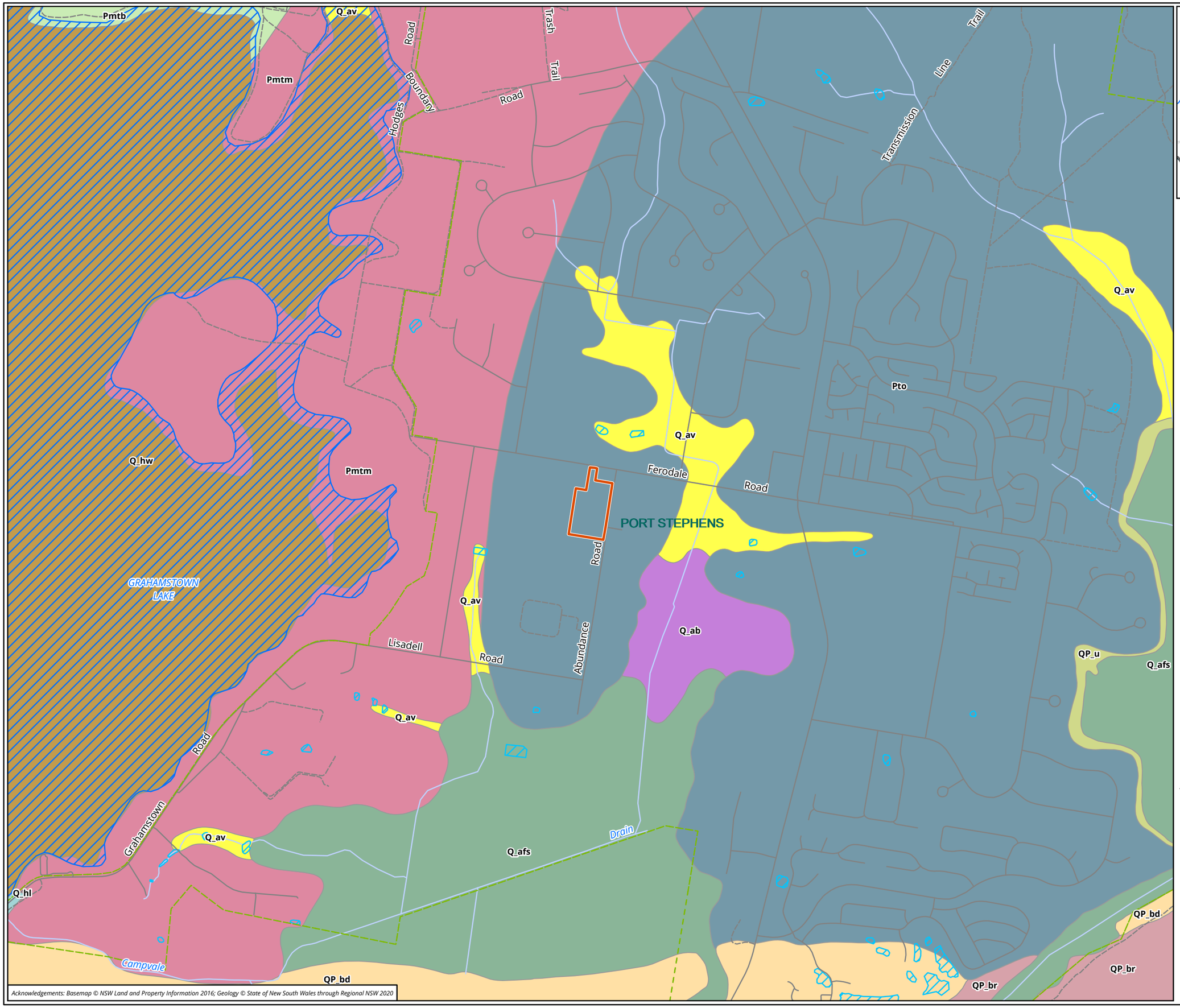
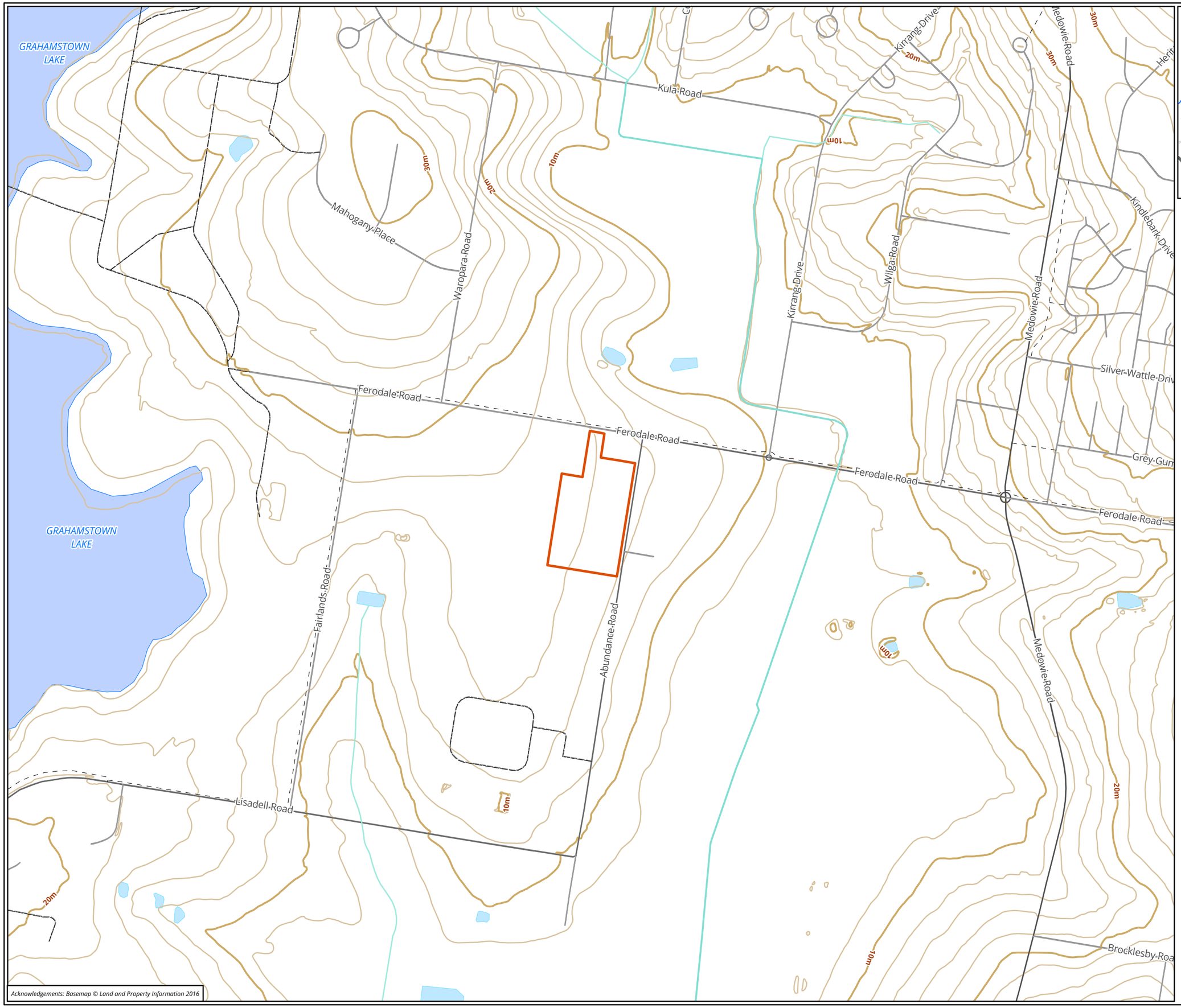
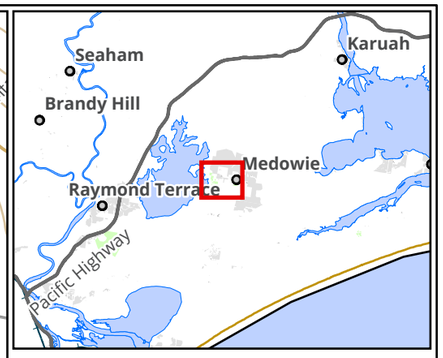


Figure 4 Geological units in the vicinity of the study area





Legend

- Study area
- Contour (2m)

Strahler Order

- 1
- 2

Figure 5 Hydrology and topography in the vicinity of the study area

0 100 200 300 400

Metres

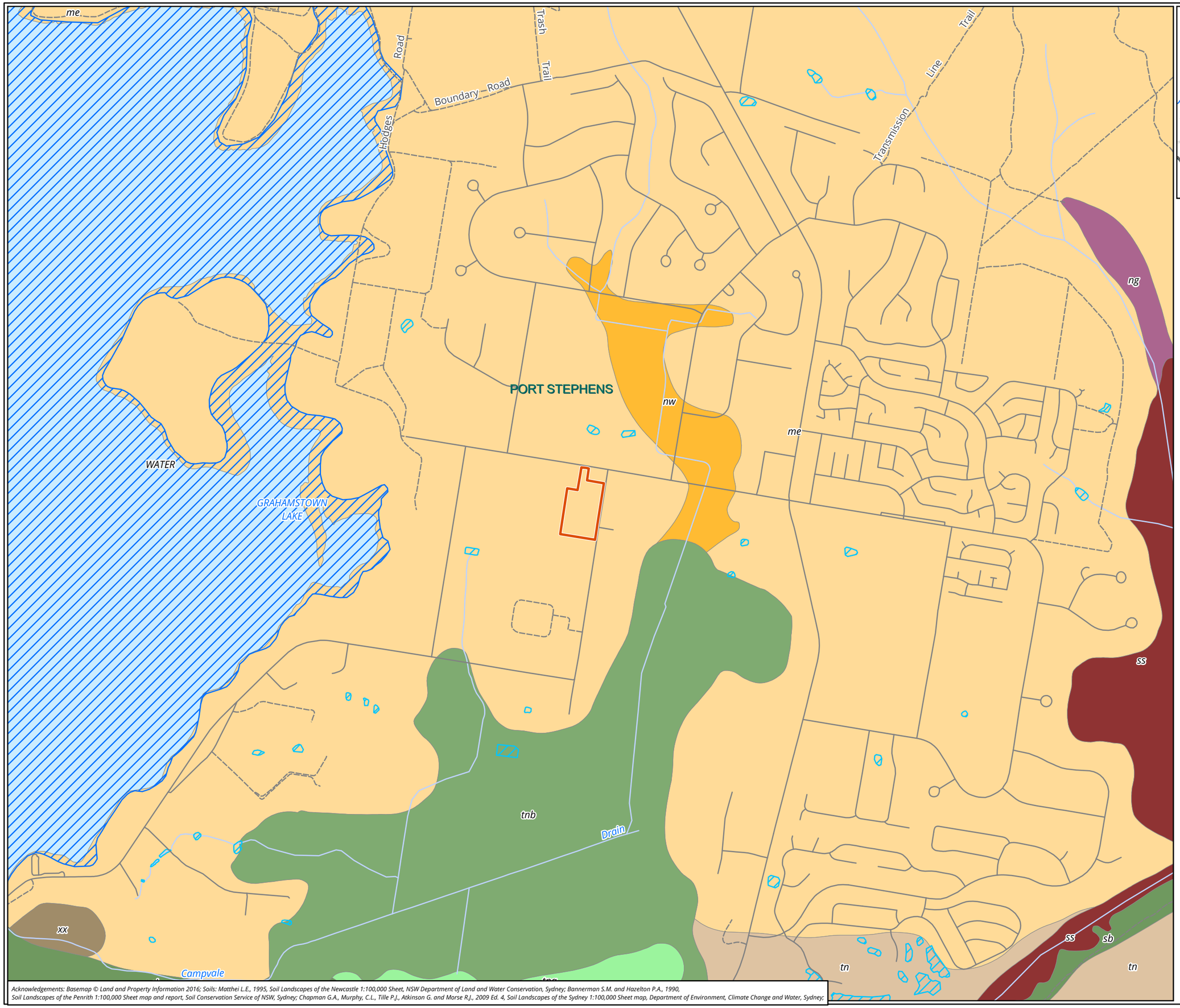
Scale: 1:10,000@ A3

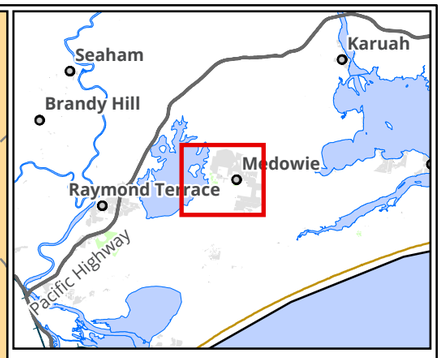
Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 40105, Date: 16 July 2024,
Prepared for: DB, Prepared by: JB, Last edited by: mknudsen
Location: P:\40100s\40105\Mapping\,
40105_ACHA_AR_Medowie,
Layout: 40105_Medowie_F5_Hydrology_AR





Legend

Study area

Soil landscape units

- me - MEDOWIE
- ng - NUNGRA
- nw - NERONG WATERHOLES
- sb - SHOAL BAY
- ss - SHOAL BAY SWAMP
- tn - TEA GARDENS
- tna - TEA GARDENS variant a
- tnb - TEA GARDENS variant b
- WATER - WATER
- xx - DISTURBED TERRAIN

Figure 6 Soil landscapes in the vicinity of the study area

0 200 400 600 800 N

Metres

Scale: 1:20,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

biosis

Matter: 40105, Date: 16 July 2024,
Prepared for: DB, Prepared by: JB, Last edited by: mknudsen
Location: P:\40100s\40105\Mapping\
40105_ACHA_AR_Medowie,
Layout: 40105_Medowie_F6_Soils_AR

Acknowledgements: Basemap © Land and Property Information 2016; Soils: Matthei L.E., 1995, Soil Landscapes of the Newcastle 1:100,000 Sheet, NSW Department of Land and Water Conservation, Sydney; Bannerman S.M. and Hazelton P.A., 1990, Soil Landscapes of the Penrith 1:100,000 Sheet map and report, Soil Conservation Service of NSW, Sydney; Chapman G.A., Murphy, C.L., Tille P.J., Atkinson G. and Morse R.J., 2009 Ed. 4, Soil Landscapes of the Sydney 1:100,000 Sheet map, Department of Environment, Climate Change and Water, Sydney;

3.2 Previous archaeological work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout NSW in the past 35 years. There has been an increasing focus on cultural heritage assessments in NSW due to ever-increasing development, along with the legislative requirements for this work and greater cultural awareness of Aboriginal cultural heritage.

3.2.1 Regional overview

Many cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the Hunter region of New South Wales in the past 35 years. There has been an increasing focus on cultural heritage assessments in NSW due to ever increasing development, along with the legislative requirements for this work and greater cultural awareness of Aboriginal cultural heritage.

Pam Dean Jones (1990) undertook an extensive and systematic survey of the Newcastle Bight, 9.1 kilometres south-east of the study area, an area highly regarded for its archaeological significance and potential. The Newcastle Bight lies within the Port Stephens LGA (aside from its far southern end at Stockton). The purpose of the assessment was to establish a representative sample of the region's cultural heritage, in order to ensure that sufficient constraints to developments within the area could be identified.

Seventy Aboriginal sites had previously been identified within the Newcastle Bight area. The results of the survey doubled the number of known sites within the Newcastle Bight area and clarified the distribution of Aboriginal sites within the coastal landscape. Sites of Aboriginal occupation comprised of shell middens and stone artefact scatters. A total of 110 artefact scatters were recorded and an additional 40-50 middens were also noted. Areas of greatest archaeological sensitivity within the Central Lowlands of the Hunter Valley were within the vicinity of creek flats, the banks of large rivers and creeks, and within alluvial terraces. Minor watercourses were also considered to be areas of archaeological potential. Within the Coastal Margin and Plain landscape, middens were the most common site type along the coast and estuarine margins. Open campsites were most likely to occur on level, well drained grounds, adjacent to fresh water sources, or on relatively level ground upon crests and ridgelines. Scarred trees were contained within remanent forests, and burials were generally found in areas characterised by deep profiles of soft sediments and aeolian sand and alluvium, or within midden sites (Dean-Jones 1990).

Navin & Officer (1994) were contracted by Sinclair Knight and Partners to provide a preliminary cultural heritage assessment on behalf of Optus, for the proposed cable route to be installed from Sydney to Newcastle, and onwards to Orange. The purpose of the assessment was to provide a predictive model for site locations within the assessment area that would influence the cable route. Within the report the archaeological sensitivity of five landforms (Sandstone Ranges of the Sydney Basin, Central Lowlands of the Hunter Valley, Cumberland Plain, the Coastal Margin and Plain, Western Rangelands) were assessed, and a predicted site location criteria was provided for each landform (Navin & Officer 1994, pp. 23–4). The following locations were determined to be archaeologically sensitive areas:

- Level ground on the elevated margins around wetlands and soaks: including estuaries, perched or upland swamps and floodplain wetlands.
- Elevated flat ground adjacent to floodplains and riparian zones.
- The well drained banks of creeks, major streams and rivers, especially in valley floor and lowland contexts.
- Low spurs, ridgelines and low gradient basal slopes adjacent to tributary streams situated above main valley cold air drainage and flood levels within upland plateau and rangeland contexts.

- Areas of old forest growth.
- Rock shelters wherever they occur, but especially on basal valley slopes and upper ridgetop slopes.
- Sandstone platforms i.e. flat, continuous expanses of exposes, homogenous, sandstone bedrock. The platforms have the potential to contain rock engravings and/or grinding grooves when associated with a local water source.
- Sand deposits adjacent to wetlands, fluvial corridors and marine shorelines.
- Elevated ground adjacent to coastal rock platforms and/or freshwater sources at or near sandy shores and embayments (Navin & Officer 1994, pp. 23–4).

Australian Museum Business Services (2005) conducted an Aboriginal Heritage Study for the Newcastle City Council of Newcastle LGA, in order to provide a greater understanding of the Aboriginal heritage of the Newcastle area, and to develop a framework for the strategic conservation and management of local Aboriginal cultural heritage. A desktop assessment revealed that areas where a wide range of available subsistence resources or stone materials occurred, such as the Hunter Estuary Delta, Hexham Swamp, Stockton Bight, and Black Hill Spur, were found to be key locations in relation to the Aboriginal occupation of the region. A landscape model of the archaeological sensitivity of the Newcastle area also indicated that the density of archaeological sites varies between different landscape contexts, with sites more frequently identified in association with wetlands and watercourses.

3.2.2 Local overview

A number of Aboriginal cultural heritage investigations have been conducted within the Hunter region (within approximately 10 kilometres of the study area). Most of these investigations were undertaken as part of development applications and included surface and sub-surface investigations. These investigations are summarised below.

Jillian Comber (1991) was engaged by Outline Planning Consultants Pty Ltd, on behalf of ACI Industrial Materials to undertake an assessment of Lot 4 DP774726, Oakvale Road, Salt Ash, 9 kilometres south-east of the current study area, for Outline Planning Consultants Pty Ltd on behalf of ACI Industrial Minerals. Three artefact scatters were identified during the survey. AHIMS 38-4-0298/SA1, a middens site, was of significance, and it was recommended that no further disruptions be made to the site. The site was located on the outer margin of the Holocene transgressive dune system on an undulating sandy hill landform. The site is located in a coastal area which likely had an abundance of food resources due to the close proximity to fresh water. Revegetation of the area of AHIMS 38-4-0298/SA1 was also recommended to prevent its deflation. Midden sites AHIMS 38-4-0299/SA2 and AHIMS 38-4-0300/SA3 were assessed as possessing little significance. It was recommended that ACI submit a request for a permit of Consent to Destroy if they wished to continue further mining and other activities within and near AHIMS 38-4-0299/SA2 and AHIMS 38-4-0300/SA3.

Resource Planning Pty Ltd (1992) prepared a report for RZM Pty Ltd detailing the results of an archaeological investigation of a dune adjacent to Moffats Swamp, 3.5 kilometres east of the current study area; this location had previously been mined for its mineral sand by RZM Pty Ltd. Several artefacts had been identified prior to the report within the reject pile of mined sand material dredged up from the base of the dune. Artefacts were also noted at the base of the dune. The stone artefacts comprised range of raw materials considered to be closely relatable to other sites within the Newcastle Bight Area, such as white tuff, silcrete, yellow mudstone, pink mudstone/tuff, quartz, quartzite, and chert. It was recommended that RZM Pty Ltd apply for a permit with Consent to Destroy from the National Parks and Wildlife Service. The permit was approved with the condition that salvage work be carried out.

Resource Planning Pty Ltd (1993) carried out subsurface testing for RZM Pty Ltd as part of the assessment undertaken in 1992. Two stone artefact scatters were identified, AHIMS 38-4-0615/MS2 and AHIMS 38-4-0620/DMS3. AHIMS 38-4-0615/MS2 was assessed and considered not to be of any danger of destruction from dredge mining. AHIMS 38-4-0620/DMS3 on the other hand was at risk, and Resource Planning Pty Ltd advised RZM Pty Ltd to apply for a permit for Consent to Destroy, so that artefacts from the site might be salvaged in a controlled manner.

Baker (1994) undertook archaeological salvage works at Moffats Swamp Dune during December 1992 under National Parks and Wildlife Services Consent to Destroy #440. Further archaeological subsurface testing using an auger was carried out in February 1993 under NPWS Preliminary Research permit #459. The testing program sought to clarify the extent of both the cultural material and its stratigraphic context across the site. Auger transects were dug across cleared RZM exploration borelines spaced at 80 metre intervals. Auger holes were spaced at 10 metre intervals. A total of 54 auger holes were excavated, with some extending to a depth of 2 metres. The auger transects were dug over an undisturbed mine run area which comprised of seven transects across the dune system and one along the dune. A total of 6190 artefacts from Moffats Swamp Dune were recorded. Artefacts identified from the works were comprised on predominantly of tuff and silcrete, followed by quartz. The tuff present at the site is prevalent within the Newcastle Bight.

Umwelt Australia Pty Ltd (Umwelt) (1999) was engaged by Hunter Sewage to investigate the Aboriginal archaeological potential of the site of the proposed sewage reticulation works in Sutton Park Estate, Medowie, approximately 1.2 kilometres to the north of the study area, on behalf of Hunter Sewage Project. The study provided detail of what Aboriginal sites a field survey might be expected to locate and where they would be in the landscape.

The most likely type of occupation evidence was considered to be open campsites, i.e. scatters of flaked stone artefacts. No shell was expected in the Medowie area, ruling out midden sites. The existence of scarred trees, grinding grooves, burials and other ceremonial sites were unlikely. No Aboriginal sites or objects were identified during the archaeological survey of the 25 kilometre sewage pipeline corridor. Consultation with Aboriginal community members suggested that the area would have been considered 'unattractive' for occupation, particularly when in comparison with the nearby dune field. No further archaeological investigations were recommended.

ERM (2003) was engaged by Energy Australia to undertake an archaeological survey for the proposed upgrade of power lines from Tomago to Tomaree, 4.5 kilometres south of the current study area. The survey incorporated investigations of the Inner Pleistocene Barrier System, the Outer Holocene Barrier System and the interbarrier depression.

Nine new sites were recorded during the survey effort. Seven areas of Potential Archaeological Deposit (PAD) were also identified within the Inner Pleistocene Barrier System and the Outer Holocene Barrier System. Four previously recorded sites were located. Of these four sites, three were recorded as shell middens and were reassessed by ERM to be natural shell deposits. The geographical location of sites indicated that Aboriginal occupation focused on the dune areas overlooking the interbarrier depression, which would have formerly been a lagoon. The interbarrier depression itself was assessed as having low archaeological potential. The proximity of freshwater sources was also an important factor in site location.

Umwelt (2009) were contracted by Mackas Sand Pty Ltd to provide an Environmental Assessment of the sand extraction operations from Lot 218, and 220, DP 1049608, 8.5 kilometres south-east of the current study area; this included an assessment of the Aboriginal cultural significance of the area. An ACHA was included as part of the report. A search of the AHIMS resulted in 160 sites within a 16 by 15 kilometre search area surrounding and including the lots intended for future sand extraction. Of these 160 sites, 113 were middens, 39 were isolated artefacts and artefact scatters, three were burial sites, two were culturally scarred trees, two were

resource gathering sites, and one was a PAD. Background research determined that the majority of sites within the region consist of middens and stone artefact scatters. It was predicted that in relation to the study area that:

- Due to vegetation coverage and the nature of sand deposits, sites have generally been detected in disturbed areas.
- The ongoing process of burial, deflation and re-burial of stabilised soil surfaces in the area has resulted in a discontinuous and unpredictable distribution of these surfaces beneath wind-blown sand deposits.
- Archaeological material located in the transgressive dunes, such as those found on Lot 218 is generally associated with buried stabilised soil surfaces.
- Within the stabilised dunes, such as those found on Lot 220, it is likely that greater concentrations of archaeological material occur on low ridgelines, spurs and low dunes associated with wetland resources.

Archaeological surveys were undertaken in July 2008. The survey identified one PAD (Mackas1) in Lot 218 which contained five stone artefacts, fish bone and shell fragments. Three middens were also identified within Lot 220. Two of the three middens from within Lot 220 had been previously recorded in an archaeological assessment carried out by Umwelt in 2004 (sites known as AHIMS 38-4-1184/SFMS1 and AHIMS 38-4-1185/MFMS2). It was noted that the sites consisting of fragmented shell material had become considerably sparser compared to other sites in the vicinity. The third site identified AHIMS 38-4-1148/MFMS3, was situated in the central portion of Lot 220 and was considered a PAD. It was concluded that AHIMS 38-4-1148/MFMS3 would be impacted by the proposed operations. The sites are located on the outer margin of the Holocene transgressive dune system on an undulating sandy hill landform. The site is located in a coastal area which likely had an abundance of food resources due to the close proximity to fresh water. Mackas 1 was also considered to be at risk as the proposed sand extraction activity would disturb the stabilised soils present at the site, and therefore any archaeological material contained within. An Aboriginal Cultural Heritage Management Plan was recommended for Lot 218 and 220, and screening operations were to be undertaken daily on Lot 220 from a sample of reject material.

Myall Coast Archaeological Services (MCAS) (2010) prepared an ADDA report for Hunter Development Brokerage, to assess the impact of the proposed developments at Lots 411, 412, and 413 of DP 1063902, Medowie Road, Medowie, 3 kilometres south of the current study area. Twenty-eight previously recorded AHIMS sites were identified within a 5 by 5 kilometre search area of the assessment area, 27 of which were artefacts, and one PAD. Background research determined that the assessment area was probably used as a resource area with the possibility of transient and or seasonal camping. The ethnographic record identifies other areas as more favoured for intensive occupation and base camps. The landscape tends to suggest that the assessment area was conducive to attracting and sustaining a variety of food and water resources at least seasonally. The assessment area had the potential for subsurface archaeological deposits within the first 300 millimetres provided the soil profile has not been disturbed.

It was determined that the landform of the assessment area had been so extremely modified that any archaeological evidence that may have existed on site is no longer extant. It was also identified that no potential for intact subsurface evidence existed within the assessment area. A site assessment was carried out and the area was found to be heavily disturbed. No Aboriginal sites were identified during the site assessment, and further investigation of the archaeological potential was not recommended.

Umwelt (2010) was commissioned by Ausgrid (previously known as Energy Australia) to undertake an archaeological survey. The alignment consisted of a 20-metre corridor for the proposed 11 kV feeder that extends approximately 3.5 kilometres. It followed Medowie Road from Williamtown Royal Australian Air Force base and was located 5 kilometres south of the current study area. Two sites were identified during the

assessment. Artefact site AHIMS 38-4-1206/EA Williamtown 1 was identified during the survey effort, and artefact site AHIMS 38-4-0256/M D 7 was a previously recorded site from 1990 that was not visible due to high levels of ground surface disturbance. It was concluded that low relief dunes with gently inclined slopes within proximity to localised fresh water sources within swales and adjacent to swamp landforms were of high archaeological sensitivity. Five PADs were identified pertaining to this assessment of archaeological sensitivity were also recorded.

Biosis Pty Ltd (2011) completed an ACHA for Energy Australia at Campvale and Medowie, 3 kilometres south of the current study area for the proposed transmission cable works. One artefact site AHIMS 38-3-0038/TK2 had been previously recorded within the area of the proposed cable works. It was predicted that site types that are most likely to occur within the project area include:

- Isolated artefact discard and artefact scatters - it is likely that the project area was used for hunting and resource gathering activities. There is potential that discard of stone tools occurred on such trips and, as such, that isolated stone tools and open scatters might be present within the project area. Knapping event sites may also be present.
- Middens - a high number of middens are recorded within the vicinity of the project area. There is the potential for middens to occur within the project area; however, this is considered to be unlikely due to the distance from water bodies from which shellfish and other resources would originate.
- Human burials - a confirmed Aboriginal skull was recovered from a site approximately 5 km south of the project area, just north of some sand ridges. Sand deposits within the project area have the potential for burials to be present, although the possibility of this is considered low.

A survey was undertaken, and one previously unrecorded Aboriginal site was identified AHIMS 38-4-1281/Campvale AS1 located at the base of a slope approximately 1 kilometre south of Grahamstown Dam. The site consisted of six artefacts of various raw materials, such as silcrete, tuff and siltstone. There was no evidence of AHIMS 38-3-0038/TK2 at the location; however, the potential for further subsurface deposits within the site was noted. Subsurface testing was recommended for AHIMS 38-3-0038/TK2 and 38-4-1281/Campvale AS1.

Umwelt (2013) was commissioned by Ausgrid to undertake an Aboriginal Cultural Heritage and Archaeological Assessment for the proposed upgrade of the electricity infrastructure along a section of Medowie Road, Campvale 3 kilometres south of the current study area. A comprehensive assessment had already been undertaken by Umwelt of the southern portion of Stage 2, which included an archaeological survey, sub-surface investigations under an AHIP, and a subsequent AHIP to harm Aboriginal objects. The remaining portions of the assessment area underwent an archaeological survey for this assessment.

One previously recorded site AHIMS 38-4-1206/EA Williamtown 1was located within the assessment area and one new surface artefact was recorded during the survey. The isolated artefact was a broken flake located within an existing electricity easement on the northern shoulder of a low relief dune crest. Due to sections of the assessment area containing both surface and sub-surface deposits located on low relief dunes, a program of archaeological testing was undertaken. Test excavations were conducted at 10 locations within AHIMS 38-4-1618/ TP4, AHIMS 38-4-1628/ TP5, AHIMS 38-4-1619/ TP7, TP9, TP10 and 38-4-1627 Medowie Power Aboriginal Site 2. Test excavations determined that these sites contained low density subsurface deposits and low-density sub-surface deposits which were recovered from all but one test pit. The highest density occurring within the dune crest landform.

A total of 90 artefacts were recovered and consisted of flakes and broken flakes, cores, and one occurrence each of a manuport, geometric microlith, and Bondi point. The test excavations also demonstrated that the upper soil units in most test pits had been subjected to varying levels of disturbance and modifications to the

lower soil units were relatively low and limited to natural factors. The results of this assessment were congruent with the 2010 and 2011 (Umwelt 2010, Umwelt 2011) assessments and the general expectations of the area. It was recommended that Ausgrid apply for an AHIP to cover the entirety of the study area.

Biosis (2018a) was commissioned to undertake an ACHA to support an Environmental Impact Statement for the proposed development of the Catherine McAuley Catholic College, at 507 Medowie Road, Medowie NSW (Lot 412 & 413, DP 1063902) approximately 3 kilometres to the south-east of the study area. Background research on the study area indicated that:

- Aboriginal sites frequently occur on the margins of wetlands or estuaries, within dune systems, and within creek flat and alluvial terrace landforms.
- Predicative modelling conducted for the region indicates that artefact sites are most likely to occur on level, well drained grounds, adjacent to fresh water sources, or on relatively level ground upon crests and ridgelines.
- Previous archaeological testing within the assessment area conducted by Umwelt in 2013 confirmed that subsurface archaeological deposits are present within the assessment area.

Surface visibility was found to be generally low (less than 5%) throughout the assessment area. No Aboriginal objects or sites were identified during the survey. The previously recorded AHIMS sites were also not able to be relocated. Portions of the assessment area had been subject to previous disturbances; however, several areas of high and moderate archaeological potential were identified. Following the results of the field survey, a test excavation program was undertaken to characterise the extent, nature, and archaeological (scientific) value of Aboriginal cultural heritage within identified Aboriginal sites and areas of PAD within the assessment area. Test excavations were conducted in accordance with Requirement 16a of the Code. As a result of the test excavation program, a total of six additional PAD sites AHIMS 38-4-1970/Medowie PAD 01, AHIMS 38-4-1971/Medowie PAD 02, AHIMS 38-4-1973/Medowie PAD 03, AHIMS 38-4-1972/Medowie PAD 04, AHIMS 38-4-1974/Medowie PAD 05 and AHIMS 38-4-1975/Medowie PAD 06 were located. AHIMS 38-4-1970/Medowie PAD 01 contained moderate to high density, intact archaeological deposits and has been assessed as having moderate archaeological significance.

A total of 306 artefacts were identified from 21 test excavation units within this site. Soil deposits consisted of three separate stratigraphic contexts and reached maximum depths of 900 millimetres. Minimal disturbances were observed within PAD 01 during excavations, indicating the archaeological deposits are relatively intact. Artefact deposits were present in all stratigraphic contexts identified, suggesting repeated long-term occupation of this site. AHIMS 38-4-1971/Medowie PAD 02, AHIMS 38-4-1973/Medowie PAD 03, AHIMS 38-4-1972/Medowie PAD 04, AHIMS 38-4-1974/Medowie PAD 05 and AHIMS 38-4-1975/Medowie PAD 06 contained low density subsurface deposits and have been assessed as having low archaeological significance. These sites were identified within the slope and hill crest landforms near AHIMS 38-4-1618/TP 4 & 5 Medowie Power and AHIMS 38-4-1628/TP5#########. These PAD sites indicate that the hill crest and slope landform units within proximity to AHIMS 38-4-1618/TP 4 & 5 Medowie Power (2018a)contain sporadic occurrences of low density subsurface archaeological deposits. The sporadic deposits identified within these landforms are unlikely to be part of the same site habitation event and have therefore been classified as individual low density PAD sites. As a result of this assessment a large assemblage of artefacts have been acquired and analysis of these objects is still ongoing. Management recommendations for the identified sites were as follows:

- If impacts AHIMS 38-4-1970/Medowie PAD 01 cannot be avoided this site should be salvaged through salvage excavations under an approved CHMP. Salvage excavations should focus on the areas of highest density along transect 1.
- The western portion of AHIMS 38-4-1619/TP7, TP9 & TP10 and AHIMS 38-4-1627/ Medowie Power Aboriginal Site 2 is located within the study area. The first 400 millimetres of deposit within this site is

expected to be impacted on by the proposed works. It is recommended the deposits below 400 millimetres in depth be conserved in order to preserve the archaeological value of this site.
- A salvage methodology for AHIMS 38-4-1970/Medowie PAD 01 should be developed in consultation with the Registered Aboriginal Parties (RAPs), Department of Planning, Industry and Environment and the Department of Climate Change, Energy, the Environment and Water (Heritage NSW). The salvage methodology should also be undertaken under an approved CHMP.

Biosis undertook archaeological salvage of AHIMS 38-4-1970/Medowie PAD 01 from August to December 2019. Initially a total of five 4 by 4 metre open areas (80 metres squared) were excavated by hand. The five open areas overlaid previously excavated test pits where high density artefact deposits had been identified by Biosis in 2018 (T1 TP1, T1 TP2, T1 TP3, T7 TP1, and T8 TP2). Following the completion of the initial hand excavations of Open Area 1, 2, 3, 4 and 5, Biosis consulted with the RAPs present during the excavations to determine where they would like to conduct additional expansion pits. As a result of this consultation and after preliminary review of the artefacts recovered, further excavations were carried out in Open Area 1. A total of 103 metres squared was salvaged across the extent of AHIMS 38-4-1970/Medowie PAD 01. Preliminary artefact counts concluded that approximately 26,977 artefacts were recovered from a total of 103 metres squared across the five open areas. A total of 14 different raw material types were recorded in the salvage excavation assemblage. Tuff was the most common raw material, accounting for 48.5% (n=7997) of the total assemblage. This was followed closely by silcrete, which accounted for 46.06% (n=7594) of the assemblage. The remaining 12 raw materials present made up the additional 5.43% of the assemblage. This clearly shows tuff and silcrete as the favoured raw materials for manufacture of artefacts in the area.

Biosis (2020)

Biosis was commissioned by ADW Johnson on behalf of the Diocese of Maitland Newcastle to undertake an ACHA for the proposed signalised intersection at 507 Medowie Road, and associated road upgrades in the road reserve spanning between 529 Medowie Road to 437 Medowie Road, Medowie approximately 3 kilometres to the south-east of the study area. Biosis undertook a field investigation and subsurface test excavations which identified four Aboriginal heritage sites AHIMS 38-4-2028/Medowie RD AD-01, AHIMS 38-4-2029/Medowie RD AD-02, AHIMS 38-4-2034/Medowie RD IF-2, and AHIMS 38-4-2030/Medowie RD IF-3. AHIMS 38-4-2028/Medowie RD AD-01 and AHIMS 38-4-2029/Medowie RD AD-02. AHIMS 38-4-2028/Medowie RD AD-01 consisted of a moderate density intact archaeological deposit, and AHIMS 38-4-2029/Medowie RD AD-02 consisted of a low density, largely intact archaeological deposit. It was recommended that archaeological salvage of AHIMS 38-4-2028/Medowie RD AD-01 be completed prior to the proposed works being undertaken. No further assessment was recommended for AHIMS 38-4-2029/Medowie RD AD-02, AHIMS 38-4-2034/Medowie RD IF-2, and AHIMS 38-4-2030/Medowie RD IF-3 would not be impacted by the proposed works.

3.2.3 AHIMS site analysis

A search of the AHIMS database (Client Service ID: 905917) identified 106 Aboriginal archaeological sites within a 7.5 x 7.5 kilometre search area, centred on the study area (Figure 4). None of these registered sites are located within the study area (Figure 4). AHIMS search results are provided in Appendix 1. Table 3 provides the frequencies of Aboriginal site types in the vicinity of the study. The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available.

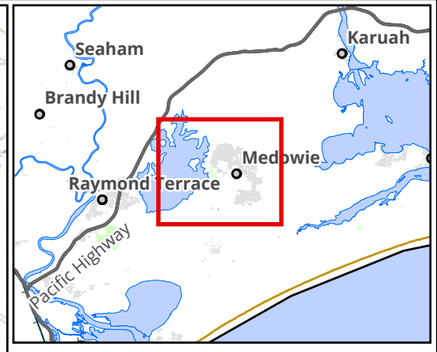
It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete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

Aboriginal sites within a given area. Some recorded sites consist of more than one element, for example artefacts and a modified tree, however for the purposes of this breakdown and the predictive modelling, all individual site types will be studied and compared. This explains why there are **130** results presented here, compared to the **106** sites identified in AHIMS.

Table 3 AHIMS site type frequency

Site type	Number of occurrences	Frequency (%)
Artefact	87	66.92
Shell	23	17.69
Potential Archaeological Deposit (PAD)	18	13.85
Burial	1	0.77
Hearth	1	0.77
Total	**130**	**100.00**

A simple analysis of the Aboriginal cultural heritage sites registered within the **7.5** x **7.5**-kilometre buffer of the study area indicates that dominant site type is artefact sites representing 66.92% (n=87). Shell sites were the second most comment, representing 17.69% (n=23), followed by PAD sites at 13.85% (n=18). Lastly, burials and hearths each representing 0.77% (n=1) of sites.



Legend

- AHIMS
- Study area

NOT TO BE MADE PUBLIC

Figure 7 AHIMS within the vicinity of the study area

0 500 1,000

Metres

Scale: 1:30,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 40105, Date: 16 July 2024,
Prepared for: DB, Prepared by: JB, Last edited by: mknudsen
Location: P:\40100s\40105\Mapping\
40105_ACHA_AR_Medowie,
Layout: 40105_Medowie_F7_AHIMS_AR

3.3 Discussion

The study area is situated within the Tomago Coal Measures geological unit upon a higher ground that sits above a large transgressive dune field. The local soil landscape is characterised by gentle, undulating low hills on relict sediments, and broad, flat crests with low incline slopes. The study area reflects this by consisting of an undulating flat which slopes to the west. Artefact sites, shell midden and PAD sites are common site types throughout this region.

Hydrology in the vicinity of the study area includes two small unnamed first order tributaries of an unnamed second order drainage which rises to the east of the study area and feeds into Moffatts Swamp. The water sources are located approximately 533 metres and 2.2 kilometres to the east of the study area. Due to the lack of water sources located within the study area it suggests that the study area was unlikely to support human subsistence through lack of resources. The study area was likely utilised as a travel route towards perennial water sources situated in the region. Areas located closer to water sources would have been utilised as the sub-surface aquifer associated with the Tomago sand sheet would have provided an abundant supply of water, food and material resources which would have been exploited by Aboriginal people.

Historic aerial imagery suggests the waterways and landforms within the vicinity of the study area have been subject to disturbances ranging from minor to major vegetation clearance. The cultivation of orchards and cropping has occurred across much of the study area which would have caused disturbances to the upper layers of soil whereas dense vegetation still exists in the southern portion of the study area (although it is unclear how much of this vegetation is regrowth).

Previous archaeological assessments identified that regionally, Aboriginal sites frequently occur on the margins of wetlands or estuaries, within dune systems, and within creek flat and alluvial terrace landforms (AMBS Ecology & Heritage 2005, Dean-Jones 1990, Umwelt 2010). The site type, and site density within any given area will depend on the landforms present (AMBS Ecology & Heritage 2005). Middens are a common site type identified within the Stockton Bight formation; they are most frequently found along coastal and estuarine margins (Dean-Jones 1990). Open campsites or artefact scatters are also frequently identified within the Stockton Bight formation and are the most frequently recorded site type within a 1 kilometre radius of the study area. Scarred trees are most frequently identified in areas of remnant, old growth vegetation. Large portions of the study area have been cleared of vegetation; however, remnant vegetation is present within the western section.

3.3.1 Predictive statements

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

This model is based on:

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

Table 4 indicates the site types most likely to be encountered across the present study area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 4 Aboriginal site prediction statements

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	High: Stone artefact sites have been previously recorded in the region on level, well-drained topographies in proximity to reliable sources of fresh water, particularly upon crests and gently inclined slopes of dunes or within proximity to localised fresh water sources within swales, and adjacent to swamp landforms. There is a high potential for artefacts sites to be present in the study area.
Shell middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time. May also contain flaked stone artefacts and bone material.	Moderate: Shell midden sites have not been recorded within the vicinity of the study area. However, the study area is in an area adjacent to swamp landforms which are known to be high potential resource zones. Although there has been disturbance to the ground surface there is a moderate potential for undisturbed deposits at depth.
PADs	Potential sub surface deposits of cultural material occurring in areas of undisturbed stratigraphy. .	Moderate: PADs have been previously recorded in the region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or swamplands upon high points in undisturbed landforms. Although there has been disturbance to the ground surface there is a moderate potential for undisturbed deposit at depth.
Modified Trees	Trees with cultural modifications	Moderate: Scarred trees have not been recorded within the vicinity of the study area. However, they are known to occur regionally within areas of remnant vegetation. There is a moderate potential for scarred trees to occur in the study area within areas of remnant vegetation.
Burials	Aboriginal burial sites.	Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The Medowie Soil Landscape is unlikely to have potential for this site type to occur.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area.
Aboriginal Ceremony and Dreaming Sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the study area.
Post-Contact Sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp	Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one.

Site type	Site description	Potential
	sites and buildings associated with post-contact Aboriginal use.	
Aboriginal Places	Aboriginal places may not contain any "archaeological" indicators of a site but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often, they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or buildings.	Low: There are currently no recorded Aboriginal historical associations for the study area.
Grinding Grooves	Grooves created in stone platforms through ground stone tool manufacture.	Nil: Suitable horizontal sandstone rock outcrops do not occur within the study area.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Nil: This site type will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist and are not present within the study area.

4 Archaeological survey

A field survey of the study area was undertaken on the 31 May 2024 and 22 July 2024 by Molly Crissell (Biosis, Heritage Consultant) as part of the Preliminary Indigenous Heritage Assessment Impact report. A field survey for the Aboriginal Cultural Heritage Assessment was undertaken on the 15 October 2024 by Mathew Smith (Biosis, Senior Heritage Consultant), Bec Young (Murrooma, Cultural Sites Officer) and Dylan Haug-Russell (Nur-Run-Gee, Cultural Sites Officer). The field survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey objectives

The objectives of the survey were to:

- Provide RAPs an opportunity to view the study area and to discuss previously identified Aboriginal object(s) and/or place(s) in or within close proximity to the study area.
- Undertake a systematic survey of the study area targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of PADs.

4.2 Archaeological survey methodology

The survey methods were intended to assess and understand the landforms and to determine whether any archaeological material from Aboriginal occupation or land use exists within the study area.

4.2.1 Sampling strategy

The survey effort targeted all landforms that will potentially be impacted by the development. It focused on areas with increased GSV and exposure as this enables Aboriginal objects to be identified on the ground surface.

4.2.2 Survey methods

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

- Aboriginal objects or sites present in the study area during the survey.
- Survey coverage.
- Any resources that may have been exploited by Aboriginal people.
- Landform.
- Photographs of the site indicating landform.
- Evidence of disturbance.

- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, ground surface visibility (GSV) and the recording of soil information for each survey unit were possible.

Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a handheld Global Positioning System (GPS) and the Map Grid of Australia (94) coordinate system.

4.3 Archaeological survey results

A total of one transect was walked across one landforms with the three surveyors walking 2 metres apart (Figure 5). This follows the methodology set out in Burke & Smith (2004, p. 65), which states that a single person can only effectively visually survey an area of two linear metres. No Aboriginal sites and one area of moderate archaeological potential were identified in the study area. The results from the field survey have been summarised in Table 5 below and full transect details are provided in Figure 5.

Table 5 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility (%)	Exposure (%)	Effective coverage area (m²)	Effective coverage (%)
1	Flat	12738	10	10	127.4	1

Table 6 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	Landform effectively surveyed (%)	No. of Aboriginal sites	No. of artefacts or features
Flat	65716.8	127.4	0.19	0	0

4.3.1 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to the effectiveness of the survey were reduced visibility caused by extensive grass coverage and tree litter.

4.3.2 Visibility

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010).

GSV during the survey varied throughout the study area but was generally low (0–10%) with the average being approximately 10%. GSV was hindered by extensive grass coverage and tree litter (Photo 8 to Photo 10).

Photo 8 **GSV (0%) in the central portion of the study area, facing west**

Photo 9 **GSV (0%) in the south-western portion of the study area, displaying tree litter, facing west**

Photo 10 **GSV (0%) within the north-western portion of the study area, depicting regrowth and grass coverage, facing north**

4.3.3 Exposure

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

Overall, the study area displayed very few areas of exposure, ranging between 0–10%. Exposure was mainly seen around vehicle access areas and in areas where erosion was evident from horse use (Photo 11 to Photo 13).

Photo 11 **Area of exposure (10%) beneath tree in the southern portion of the study area, facing east**

Photo 12 **Area of exposure (10%) due to livestock in the northern portion of the study area, facing south**

Photo 13 **Area of exposure (10%) in the southern portion of the study area at driveway to residential lot, facing south**

4.3.4 Disturbances

Disturbance levels within the study area were assessed during the visual inspection. Levels of disturbance were categorised through an inspection of the ground surface, landforms, and aerial imagery. Disturbance levels within the study area have been categorised according to the following criteria:

- High disturbance—the landform has been heavily disturbed and all natural soil horizons have been displaced or removed, these areas are unlikely to contain Aboriginal cultural material.
- Moderate disturbance—the landform has undergone disturbances to a certain degree, but the extent and nature of these disturbances cannot be fully quantified. Aboriginal cultural material may be present within these locations but is unlikely to be *in situ*.

- Low disturbance—the landform has not been significantly disturbed and is highly likely to contain intact soil horizons. Aboriginal cultural material if present is likely to be *in situ*.

The study area has been subject to a moderate to high level of disturbance from human activity. Historic and recent aerials (Photo 3 to Photo 7) show that the study area has been subject to moderate to high levels of disturbance. This has occurred in the forms of vegetation clearance, the cultivation of orchards and cropping across much of the study area which would have caused disturbances to the upper layers of soil and the use of the study area for residential use and housing livestock. A representation of the disturbances that were noted during the archaeological survey are shown in Photo 14 and Photo 16.

Photo 14 **Residential dwelling located in the south-eastern corner of the study area, facing south-east**

Photo 15 **Shed and horses located in the northern portion of the study area, facing west**

Photo 16 **Disturbance from rabbit burrow, located in the south-western corner of the study area, facing north-west**

4.4 Discussion of archaeological survey results

The archaeological survey consisted of two meandering transects walked across the entire study area. The results of the survey have been summarised below and transect locations are provided in Figure 5. Overall, the survey was hindered by low GSV (10%), as a result of extensive grass coverage and dense vegetation. This affected the surveyor's abilities to identify Aboriginal sites upon the grounds surface, and prohibited surveyors from making further observations on levels of exposure and disturbance to subsurface deposits.

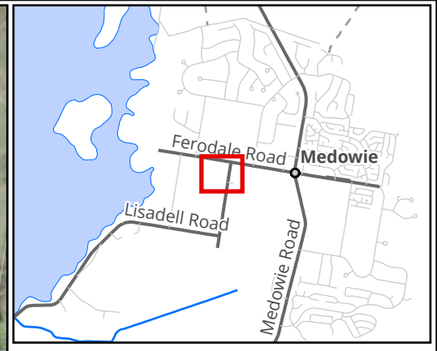
The study area is situated within the Tomago Coal Measures geological unit upon a higher ground that sits above a large transgressive dune field. The local soil landscape is characterised by gentle, undulating low hills on relict sediments, and broad, flat crests with low incline slopes. The study area reflects this by consisting of an undulating flat which slopes to the west. Artefact sites, shell midden and PAD sites are common site types throughout this region. The study area is contained within the Medowie soil landscape. The Medowie soil landscape is characterised by gentle, undulating low hills on relict sediments, and broad, flat crests with low incline slopes. Soil changes across the landscape are considered a direct result of the extensive clearing of native vegetation (Matthei 1995, p. 41). The degree and nature of disturbances in the study area have varied throughout time. This coupled with the soil depths throughout the Medowie landscapes suggests that intact, subsurface archaeological deposits could be found within the study area, in areas subjected to lower levels of disturbance.

A review of historical aerial photographs, paired with the archaeological investigation, identified that portions of the study area have been disturbed by agricultural practices such as cultivation of orchids and market gardening, residential development and the use of the land for livestock. These activities would have involved land clearing, excavations and soil displacement and could have likely resulted in the displacement or destruction of *in situ* archaeological material. While the study area indicated evidence of these disturbances, the depth and degree to which these activities impacted subsurface layers is unclear and cannot be determined from a surface analysis alone.

Previous archaeological assessments identified that regionally, Aboriginal sites frequently occur on the margins of wetlands or estuaries, within dune systems, and within creek flat and alluvial terrace landforms

(AMBS Ecology & Heritage 2005, Dean-Jones 1990, Umwelt 2010). The site type, and site density within any given area will depend on the landforms present (AMBS Ecology & Heritage 2005). Middens are a common site type identified within the Stockton Bight formation; however, they are most frequently found along coastal and estuarine margins (Dean-Jones 1990). Artefact scatters are also frequently identified within the Stockton Bight formation and are the most frequently recorded site type within 2 kilometres of the study area. Salvage excavations undertaken by Biosis within 2 kilometres of the study area identified that the Medowie soil landscape in hill crest and slope landforms have the potential to hold low density artefact scatters, with soil depths to a maximum of 48 centimetres.

The field investigation did not identify any Aboriginal objects; however, this is mostly likely due to limited visibility, exposure and extensive levels of disturbance identified during the survey, rather than an absence of Aboriginal occupation of the area. Based on the results of the field investigation, the proposed activity will not impact the area of moderate archaeological potential in the western portion of the study area. Due to the existing disturbance throughout the remainder of the study area, the impact area is unlikely to contain any intact Aboriginal sites and has therefore been assessed as holding low archaeological potential.



Legend

- Study area
- Survey track

Archaeological potential

- Low

Figure 8 Survey coverage and results

0 20 40 60 80

Metres

Scale: 1:2,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

biosis

Matter: 40105, Date: 25 July 2024,
Prepared for: DB, Prepared by: JB, Last edited by: hliswoyo
Location: P:\40100s\40105\Mapping\
40105_PIHAI_Medowie,
Layout: 40105_Medowie_F8_SurveyResults_PIHAI

5 Scientific values and significance assessment

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report will assess scientific values while the ACHA report will detail the cultural values of Aboriginal sites in the study area.

5.1 Introduction to the assessment process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Burra Charter. This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include:

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the Australian Commonwealth Department of Climate Change, Environment, Energy, and Water (Cth DCCEEW), Heritage NSW, NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW). The relevant sections of these guidelines are presented below.

These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the Heritage NSW Guidelines (OEH 2011) also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

Although other values may be considered — such as educational or tourism values — the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

5.2 Archaeological (scientific significance) values

Archaeological significance (also called scientific significance, as per the Burra Charter) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally the value of this type of significance is determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke & Smith 2004, p. 249, NPWS 1997, p. 26).

For this reason, the NPWS summarises the situation as 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential' (NPWS 1997, p. 26).

The NPWS criteria for archaeological significance assessment are based largely on the Burra Charter.

Research potential

Research potential is assessed by examining site content and site condition. Site content refers to all cultural materials and organic remains associated with human activity at a site. Site content also refers to the site structure – the size of the site, the patterning of cultural materials within the site, the presence of any stratified deposits and the rarity of particular artefact types. As the site contents criterion is not applicable to scarred trees, the assessment of scarred trees is outlined separately below. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded.

Table 7 and Table 8 outline the site content and site condition rating used for archaeological sites.

Table 7 Site contents ratings used for archaeological sites

Rating	Description
0	No cultural material remaining.
1	Site contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident stratification.
2	Site contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or are or unusual example(s) of a particular artefact type.
3	Site contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way in which the cultural materials were deposited.

Table 8 Site condition ratings used for archaeological sites

Rating	Description
0	Site destroyed.
1	Site in a deteriorated condition with a high degree of disturbance; lack of stratified deposits; some cultural materials remaining.
2	Site in a fair to good condition, but with some disturbance.
3	Site in an excellent condition with little or no disturbance. For surface artefact scatters this may mean that the spatial patterning of cultural materials still reflects the way in which the cultural materials were laid down.

Pearson & Sullivan (1995, p. 149) note that Aboriginal archaeological sites are generally of high research potential because 'they are the major source of information about Aboriginal prehistory'. Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity's history. Research potential can also refer to specific local circumstances in space and time — a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke & Smith 2004, pp. 247–8). When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

The following sections provide statements of significance for the Aboriginal archaeological sites recorded during the sub-surface testing for the assessment. The significance of each site follows the assessment process outlined above. This includes a statement of significance based on the categories defined in the Burra Charter. These categories include social, historic, scientific, aesthetic and cultural (in this case archaeological) landscape values. Nomination of the level of value — high, moderate, low or not applicable — for each relevant category is also proposed. Where suitable the determination of cultural (archaeological) landscape value is applied to both individual sites and places (to explore their associations) and also, to the Study Area as a whole. The nomination levels for the archaeological significance of each site are summarised below.

Representativeness

Representativeness refers to the regional distribution of a particular site type. Representativeness is assessed by whether the site is common, occasional, or rare in a given region. Assessments of representativeness are subjectively biased by current knowledge of the distribution and number of archaeological sites in a region. This varies from place to place depending on the extent of archaeological research. Consequently, a site that is assigned low significance values for contents and condition, but a high significance value for

representativeness, can only be regarded as significant in terms of knowledge of the regional archaeology. Any such site should be subject to re-assessment as more archaeological research is undertaken.

Assessment of representativeness also considers the contents and condition of a site. For example, in any region there may only be a limited number of sites of any type that have suffered minimal disturbance. Such sites would therefore be given a high significance rating for representativeness, although they may occur commonly within the region.

Table 9 outlines the site representativeness ratings used for archaeological sites.

Table 9 Site representativeness ratings used for archaeological sites

Rating	Description
1	Common occurrence
2	Occasional occurrence
3	Rare occurrence

Overall scientific significance ratings for sites, based on a cumulative score for site contents, site integrity and representativeness are provided in Table 10.

Table 10 Scientific significance ratings used for archaeological sites

Rating	Description
1–3	Low scientific significance
4–6	Moderate scientific significance
7–9	High scientific significance

Each site is given a score on the basis of these criteria. The overall scientific significance is determined by the cumulative score. This scoring procedure has been applied to the Aboriginal archaeological sites identified during the sub-surface testing. The results are provided in Table 11.

5.3 Statements of archaeological significance

The following archaeological significance assessment is based on Requirement 11 of the Code. Using the assessment criteria detailed in Scientific Values and Significance Assessment, an assessment of significance was determined and a rating for each site was determined. The results of the archaeological significance assessment are given in Table 11 below.

Table 11 Scientific significance assessment of archaeological sites recorded within the study area.

Site name	Site content	Site condition	Representativeness	Scientific significance
Area of moderate archaeological potential	Unknown	2	1	Unknown

Table 12 Statements of scientific significance for archaeological sites recorded within the study area

Site name	Statement of significance
Area of moderate archaeological potential	A survey of the study area identified one area of moderate archaeological potential. This is located within the western portion of the study area and was identified due to being an area of low disturbance, in which the landform has not been highly disturbed through market gardening and previous occupation. It is highly likely that this portion of the study area contains intact archaeological deposits. The study area is located in close proximity to a range of water resources which indicates that by extension food resources, were readily accessible. The presence of several hydrological features within proximity to the study area, suggests that the study area would have provided natural resources which may have been utilised by Aboriginal people in the local region. Due to the location of the proposed works, the area of moderate archaeological potential will not be impacted and will be avoided.

6 Impact assessment

There are no recorded Aboriginal sites that may be subject to harm within the study area. It is expected that the potential of harm to Aboriginal archaeological sites from activity in the study area ranges from negligible to low. No significant impacts will occur as a result of the current proposed activity. Strategies to avoid or minimise harm to Aboriginal heritage in the study area are discussed below.

As previously outlined, the proposed works involve the activity of a small high school, which will comprise of the following works:

- Construction of a high school to facilitate 50 teachers and 1,000 students.
- Demolition of any existing structures.
- New administration building and staff facilities.
- Library, hall/gymnasium, and a canteen for a small high school.
- Staff and student car parking with kiss n drop facilities.
- Outdoor sports courts/fields.
- Installation of services.
- Landscaping.

6.1 Predicted physical impacts

The impacts to the study area consists of the construction of a new small high school predominantly in the northern portion of the study area. The construction of the proposed works will likely impact the ground surfaces and subsurface soils. The results of background research and field investigations and consultation with RAPs have identified an area of moderate archaeological potential in the western portion of the study area, where less visible disturbance was present, and some soils may be intact. Due to the layout of the proposed works, the area of moderate archaeological potential will not be impacted by the activity with works proposed to completely avoid this area. As a result, the predicted physical impacts are restricted to areas of low archaeological potential; the potential for these works to impact Aboriginal sites is considered low.

6.2 Ecologically Sustainable Development

One of the primary aims of the NPW Act is the 'conservation of objects places and features … of cultural value within the landscape, including … places, objects and features of significance to Aboriginal people …' ((s.2A(1)(b)(i)). The *Operational Policy: Protecting Aboriginal Cultural Heritage (Version 2)* (DECC NSW 2011) provides guidance to proponents in terms of 1.1 Ecologically Sustainable Development (ESD).

ESD has been defined in Part 3, 6. (2) Objective of the Authority of the *Protection of the Environment Administration Act 1991* (NSW). This outlines that the ESD requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

Intergenerational equity

The principle of intergenerational equity states that the present generation should make every effort to ensure the health, diversity and productivity of the environment – which includes cultural heritage – for the benefit of future generations.

In terms of Aboriginal cultural heritage, intergenerational equity can be considered in terms of the 'cumulative impacts' of any proposal to Aboriginal objects and places. For example, if few Aboriginal objects and places remain in a region (because of harm authorised under previous AHIPs), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the significance of Aboriginal cultural heritage values associated with the Aboriginal objects and places proposed to be harmed will be relevant to the consideration of intergenerational equity and an understanding of the cumulative impacts of a proposal.

Where there is uncertainty, the precautionary principle should also be followed (see below).

The precautionary principle

The precautionary principle states that the lack of full scientific certainty about the threat of harm should not be used as a reason for not taking measures to prevent harm from occurring.

In applying the precautionary principle, decisions should be guided by:

- *a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment (which includes cultural heritage)*
- *an assessment of the risk-weighted consequences of various options. The precautionary principle is relevant to OEH consideration of potential harm to Aboriginal cultural heritage where:*
- *the proposal involves a risk of serious or irreversible harm to Aboriginal objects or places or to the value of those objects or places, and*
- *there is a lot of uncertainty about the significance of Aboriginal cultural heritage values of the Aboriginal objects or places proposed to be harmed.*

Where this is the case, a precautionary approach should be taken and all cost-effective measures implemented to prevent or reduce harm to the Aboriginal objects/place.

6.3 Management and mitigation measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of 'doing as much as necessary, as little as possible' (Australia ICOMOS 2013). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation. Avoidance of impact to archaeological and cultural heritage sites through the design of the development is the primary mitigation and management strategy and should be implemented where practicable.

As part of the management and mitigation measures for the proposed works, an ACHA including background research, a field investigation and consultation with the Aboriginal community was undertaken. This was done to determine the presence and nature of any potential Aboriginal sites so that appropriate management could be undertaken in line with the precautionary principles. The field investigation identified

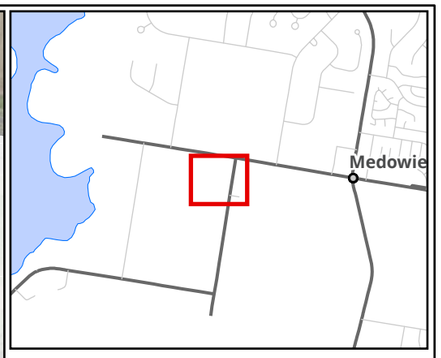
areas of low and moderate archaeological potential, however no Aboriginal objects were identified. Avoidance of impact to archaeological and cultural heritage sites through the design of the development is the primary mitigation and management strategy and has been implemented where practicable. The proposed works design illustrate that all impacts are contained to the areas of low potential, with no impacts to areas of moderate potential proposed. This follows the principle of intergenerational Equity, preserving this resource for future generations.

It should be noted that if unexpected Aboriginal objects are identified during works, or if the scope of works should change to include impacts within an area of moderate potential, further assessment would be required (Table 13).

Table 13 Mitigation measures

Mitigation Measures	Relevant Section of Report
No further archaeological work required Based upon the observations made during the field investigation and current scope of the proposed works, the works are currently limited to the area of low archaeological potential. Due to this, no further investigation of the study area is warranted. It should be noted that if unexpected Aboriginal objects are identified during works, or if the scope of works should change to include impacts within an area of moderate potential, further assessment would be required.	Refer to Section 3, Section 4, Section 5 and Section 6. Refer to Section 5 of the ACHA.
Heritage induction Heritage inductions for all site workers and contractors should be undertaken in order to prevent any unintentional harm to Aboriginal sites located within the study area and its surrounds. This includes the following items: • Relevant legislation. • Location of identified Aboriginal heritage sites, areas of archaeological potential, and areas of archaeological sensitivity. • Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains. • Procedure to follow in the event of an unexpected heritage item find during construction works. • Procedure to follow in the event of discovery of human remains during construction works. • Penalties and non-compliance.	Refer to Section 5 and Section 6.Refer to Section 4 within the ACHA.
Stop works provision – Discovery of previously unidentified sites or objects • All Aboriginal places and objects are protected under the NPW Act. This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during the proposed works. Work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under an AHIP. (Heritage NSW and the archaeologist must be notified to make an assessment of the find and advise on subsequent management).	Refer to Section 5 and Section 6.Refer to Section 4 within the ACHA.
Stop works provision for any potential discovery of human remains • If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains,	Refer to Section 5 and Section 6.Refer to Section 4 within the ACHA.

Mitigation Measures	Relevant Section of Report
or suspected human remains are discovered. Any such discovery at the study area must follow these steps: • **Discovery:** If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place and protected from harm or damage. • **Notification:** Once suspected human skeletal remains have been found, the NSW Police must be notified immediately, and they will subsequently inform the Coroner's Office. Following this, and if the human remains are likely to be Aboriginal in origin, the find will be reported to the Aboriginal parties and Heritage NSW. If the find is likely to be non-Aboriginal in origin and more than 100 years in age, the Heritage Council of NSW will be notified of the find under s.146 of the Heritage Act.	



Legend

Study area

Archaeological potential

Moderate

Low

Figure 9 Impact assessment

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40105, Date: 29 January 2025,
Prepared for: MC, Prepared by: AA, Last edited by: aabid
Location: P:\40100s\40105\Mapping\
40105_ACHA_AR_Medowie,
Layout: 40105_AR_F8_ImpactAssessment

7 Recommendations

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the study area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Burra Charter.
  - The Code.

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

Recommendation 1: No further assessment or Aboriginal Heritage Impact Permit is required

The proposed activity avoids the area of moderate archaeological potential therefore no further archaeological investigation or works such as an AHIP are required to be undertaken for the study area. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to recommendation 3 and 4 below.

Recommendation 2: If the project design changes and works impact the area of moderate archaeological potential, further assessment is required

No further archaeological investigation or works are required to be undertaken for the study area. If the proposed works change to include the area of moderate potential, further assessment is warranted. In the event that unexpected finds, including human remains, are unearthed during any phase of the project please refer to Recommendation 3 and 4 below.

Recommendation 3: Stop works provision – Discovery of previously unidentified sites or objects

All Aboriginal places and objects are protected under the *NSW National Parks and Wildlife Act 1974* (NPW Act). This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during the proposed works. Work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under an AHIP. Heritage NSW, Department of Climate Change, Energy, the Environment and Water (Heritage NSW) and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Recommendation 4: Stop work provision for any potential discovery of human remains

If any suspected human remains are discovered during any activity works, all activity in the vicinity must cease immediately. The remains must be left in place and protected from harm or damage. The following contingency plan describes the immediate actions that must be taken in instances where human remains, or suspected human remains are discovered. Any such discovery at the study area must follow these steps:

1. **Discovery:** If suspected human remains are discovered all activity in the vicinity must stop to ensure minimal damage is caused to the remains; and the remains must be left in place and protected from harm or damage.

2. **Notification:** Once suspected human skeletal remains have been found, the NSW Police must be notified immediately, and they will subsequently inform the Coroner's Office. Following this, and if the human remains are likely to be Aboriginal in origin, the find will be reported to the Aboriginal parties and Heritage NSW. If the find is likely to be non-Aboriginal in origin and more than 100 years in age, the Heritage Council of NSW will be notified of the find under s.146 of the *Heritage Act 1977* (Heritage Act).

Recommendation 5: Heritage induction for all contractors

Heritage inductions for all site workers and contractors should be undertaken to prevent any unintentional harm to any unexpected Aboriginal objects. The heritage induction should include the following items:

- Relevant legislation.
- Location of identified Aboriginal heritage sites, and areas of archaeological sensitivity within proximity to the study area.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts, and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.

References

ADE Consulting Group Pty Ltd 2025. Supplementary Geotechnical Investigation Report. New High School for Medowie. 6 Abundance Road, Medowie NSW 2318. Prepared for Department of Education,.

AMBS Ecology & Heritage 2005. Aboriginal Heritage Study: Newcastle Local Government Area,.

Atlas of Living Australia 2021. 7 Heath Road, Leppington NSW 2179, Australia. All Species List, Atlas of Living Australia, accessed 5 November 2021, https://biocache.ala.org.au/explore/your-area#-33.9761|150.8079|12|ALL_SPECIES.

Attenbrow V 2002. Sydney's Aboriginal Past: Investigating the Archaeological and Historical Records, UNSW Press, Sydney, NSW.

Australia ICOMOS 2013. 'The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance', accessed 20 January 2025, https://australia.icomos.org/publications/charters/.

Australian Museum Business Service 2005. Aboriginal Heritage Study: Newcastle Local Government Area, Newcastle City Council.

Baker N 1994. Moffats Swamp Dune. Final Report on Archaeological Site Salvage, testing, & Artefact Analysis, Report prepared for RZM Pty Ltd. Author: Baker. N.

Biosis 2018a. Archaeological Report: Catherine McAuley Catholic College, Medowie, Webber Architects.

Biosis 2018b. Catherine McAuley Catholic College, Medowie: Aboriginal Cultural Heritage Report, Prepared for Webber Architects.

Biosis 2020. Catherine McAuley Catholic College Signalised Intersection Upgrade: Aboriginal Cultural Heritage Assessment, Report prepared for ADW Johnson on behalf of the Diocese of Maitland Newcastle. Biosis Pty Ltd. Project no: 29645.

Biosis Research 2011. Underground 11kVDistribution Cable, Campvale, Medowie, NSW: Aboriginal Cultural Heritage Archaeological Report., Report prepared for Ausgrid. Matter 11151.

Burke H & Smith C 2004. The Archaeologists Field Handbook, Allen & Unwin, Crows Nest, NSW.

Comber J 1991. Archaeological Survey of ACI Plant Salt Ash, Outline Planning Consultants Pty Ltd, on behalf of ACI Industrial Materials.

Dean-Jones P 1990. Newcastle Bight Aboriginal Sites Study, NSW National Parks and Wildlife Service, and National Estate Grants Committee.

DECC NSW 2011. 'Operational Policy: Protecting Aboriginal Cultural Heritage', Department of Environment and Climate Change NSW, Sydney South, NSW. https://www.environment.nsw.gov.au/resources/cultureheritage/09122ACHOpPolicy.pdf.

DECCW 2010. 'Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW', Department of Environment, Climate Change and Water NSW, Sydney, NSW. https://www.environment.nsw.gov.au/research-

and-publications/publications-search/code-of-practice-for-archaeological-investigation-of-aboriginal-objects-in-nsw.

Environmental Planning and Assessment Act 1979. 'Environmental Planning and Assessment Act 1979', accessed 4 December 2019, New South Wales Government Department of Planning and Environment. Sydney, NSW. https://www.legislation.nsw.gov.au/#/view/act/1979/203.

ERM 2003. Indigenous Cultural Heritage Assessment. Annex D, Tomago to Tomaree Electricity Supply Upgrade Environment Impact Statement, Energy Australia.

Fairbridge RW 1953. Australian Stratigraphy. University of Western Australia. Text Books Board, 2nd edition,.

Haslam P 1984. Aborigines of the Hunter Region, NSW Ministry of Aboriginal Affairs & New South Wales, Department of Education.

Matthei LE 1995. Soil Landscapes of the Newcastle 1:100 000 Sheet Report, Department of Land and Water Conservation, Sydney, NSW.

Myall Coast Archaeological Services 2010. Aboriginal Heritage Due Diligence Assessment: Lots 411, 412, 413 DP1063902, Medowie Road, Medowie, NSW, Hunter Development Brokerage.

National Parks and Wildlife Act 1974. 'National Parks and Wildlife Act 1974', New South Wales Government, Sydney, NSW. Amended October 2023. https://www.legislation.nsw.gov.au/#/view/act/1977/136.

Navin K & Officer K 1994. Preliminary Cultural Heritage Overview: Optus – Sydney, Newcastle, Orange, Report for Sinclair Knight.

NPWS 1997. 'Aboriginal Cultural Heritage: Standards and Guidelines Kit',.

OEH 2011. 'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW', Office of Environment and Heritage, Department of Premier and Cabinet, Sydney NSW.

Pearson M & Sullivan S 1995. Looking after heritage places: the basics of heritage planning for managers, landowners and administrators, Melbourne University Press, Carlton, Victoria.

Resource Planning Pty Ltd 1992. Investigation of Archaeological site at ML 1070 and ML 1078, Moffats Dune, Newcastle Bight,.

Resource Planning Pty Ltd 1993. Archaeological Testing of the RZM Pty Ltd Plant 9 Planned Sand Mine Adjacent to Moffats Swamp, Richardson Road, Medowie, ML 1067, RZM Pty Ltd.

Ritter DF, Kochel RC, & Miller JR 1995. Process Geomorphology, William C Brown Pub, Pennsylvania, USA.

Sokoloffnov B 1977. The Worimi: Hunter-gatherers at Port Stephens,.

Umwelt 2009. Environmental Assessment of Sand Extraction Operations from Lot 218 DP1044608 and Lot 220 DP1049608, Salt Ash, Mackas Sand Pty Ltd.

Umwelt 2010. Proposed route for an 11 kV feeder, Medowie Road from Williamtown Royal Australian Air Force (RAAF) base, Ausgrid.

Umwelt 2011. Aboriginal Cultural Heritage Assessment Report – Archaeological Investigations undertaken under AHIP#3271, Medowie Road, Williamtown, Ausgrid.

Umwelt 2013. Aboriginal Cultural Heritage and Archaeological Assessment Report – Medowie Road 33 kV Overhead Power-Line Upgrade (Stages 1 and 2), Campvale, NSW, Ausgrid.

Umwelt (Australia) Pty Limited 1999. Report of the Surface Investigations of Aboriginal Heritage: Site of Proposed Sewerage Reticulation Works, Sutton Park Estate, Medowie, NSW, Report Prepared for Hunter Sewage Project. Authors: Dean-Jones. P, Umwelt Aus. Pty Ltd.

1997.

Appendices

Appendix 1 AHIMS results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 40105-moc

Client Service ID : 912740

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-4-0522	Medowie 3	AGD	56	394000	6373825	Open site	Valid	Artefact : -	Isolated Find	97535
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	1631	
38-4-0615	MS2	AGD	56	394120	6374100	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Ms.Louise Gay					**Permits**	1378	
38-4-1140	Masonite Rd (Tomago)	GDA	56	385250	6370900	Open site	Valid	Artefact : -		3572,102116
	Contact	**Recorders**	Sue Effenberger					**Permits**		
38-4-1586	BQ PAD1	AGD	56	387300	6382720	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-4-1972	Medowie PAD 4	GDA	56	393611	6374535	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0534	Seaham Quarry	AGD	56	387714	6384076	Open site	Valid	Artefact : -	Isolated Find	104530
	Contact	**Recorders**	Megan Mebberson					**Permits**		
38-4-0053	Williamtown	AGD	56	391373	6368896	Open site	Valid	Artefact : -, Burial : -	Burial/s,Open Camp Site	315,102114
	Contact	**Recorders**	Len Dyall,D Aartsen,Paul Johnson					**Permits**	3157,5034,5221	
38-4-1157	Cabbage Tree Road AS1	GDA	56	390107	6369212	Open site	Partially Destroyed	Artefact : 2, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Ms.Lisa Campbell,Mr.Matthew Barber,NGH Heritage - Fyshwick					**Permits**	5034	
38-4-0285	Oldfield _Track_12;	AGD	56	397600	6370100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-2025	KHW02	GDA	56	385962	6378006	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Mrs.Tessa Boer-Mah,Heritage Now - Belmont					**Permits**	4790	
38-4-2273	SHRQ23 IF1	GDA	56	387658	6384056	Open site	Valid	Artefact : -		
	Contact	**Recorders**	EMM Consulting - St Leonards - Individual users,Mr.Cameron Neal (emm consultin					**Permits**		
38-4-1628	TP5##########	GDA	56	393611	6374448	Open site	Partially Destroyed	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Ms.Alison Lamond					**Permits**		
38-4-1928	HWC Pole 4300-29 IF	GDA	56	394423	6372357	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Ms.Alison Lamond					**Permits**	4177	
37-6-4173	Cabbage Tree Road AS2	GDA	56	390195	6369279	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -, Artefact : -		

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 40105-moc

Client Service ID : 912740

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Mr.Matthew Barber,Mr.Matthew Barber,Mr.Matthew Barber,NGH Heritage - Fyshw					**Permits**	5034	
38-4-0284	Oldfield _Track_11;	AGD	56	397500	6369900	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0299	SA 2;	AGD	56	398200	6370200	Open site	Valid	Shell : -, Artefact : -	Midden	2090
	Contact	**Recorders**	Doctor.Jillian Comber,A Powell					**Permits**		
38-4-0253	M D 3;	AGD	56	397300	6373700	Open site	Valid	Artefact : -	Open Camp Site	1845,102218
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-1619	TP 7, 9 & 10 MedowiePower	GDA	56	393591	6374168	Open site	Partially Destroyed	Artefact : 12		
	Contact	**Recorders**	Ms.Alison Lamond,Ms.Alison Lamond					**Permits**	3644	
38-4-1974	Medowie PAD 5	GDA	56	393543	6374547	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-1148	MFMS3	AGD	56	398889	6370094	Open site	Valid	Artefact : -		102116
	Contact	**Recorders**	Miss.Nicola Roche					**Permits**		
38-4-1524	WILLIAMTOWN AS2	GDA	56	393373	6369580	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AECOM Australia Pty Ltd - Sydney,Mr.Luke Kirkwood					**Permits**		
38-4-1629	BQ PAD2	AGD	56	387185	6382520	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-4-1634	Pole 4300-047	GDA	56	396623	6373649	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Baker Archaeology Pty Ltd					**Permits**	4177	
38-4-0254	M D 4	AGD	56	394800	6372400	Open site	Valid	Artefact : -	Open Camp Site	1845,102218
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0303	Williamtown 4	AGD	56	393600	6369400	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	1845
	Contact	**Recorders**	Pam Dean-Jones,M Heath					**Permits**		
38-4-0331	Moffats Swamp 2	AGD	56	394155	6373189	Open site	Partially Destroyed	Artefact : -	Open Camp Site	2578,102218
	Contact	**Recorders**	Mr.Neville Baker,Miss.Nicola Roche					**Permits**	3621	
38-4-1379	EA Williamtown 2	GDA	56	393142	6372986	Open site	Valid	Artefact : 40		102390
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users					**Permits**	3271,3444,4143	
38-4-1597	OFOC Area 1	GDA	56	394288	6373114	Open site	Partially Destroyed	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Mr.Peter Saad					**Permits**	3621	
38-4-1904	EA Campvale 1	GDA	56	393033	6373353	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 40105-moc

Client Service ID : 912740

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	AMAC Group P/L,Mr.Benjamin Streat					**Permits**	4143	
38-4-2029	Medowie RD AD-02	GDA	56	393601	6374071	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0518	Medowie Four	AGD	56	394000	6373745	Open site	Valid	Artefact : -	Open Camp Site	97535
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	1631	
38-4-1191	Balickera PAD 2	GDA	56	385215	6384491	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102125
	Contact	**Recorders**	Doctor.Alan Williams					**Permits**	3260,3344	
38-4-1929	RAAF Williamtown OLA Site	GDA	56	390764	6372358	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Ms.Alison Lamond					**Permits**	4177	
38-4-1973	Medowie PAD 03	GDA	56	393600	6374494	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0532	F1	AGD	56	393890	6373900	Open site	Valid	Artefact : -	Open Camp Site	97535
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**	1631	
38-4-0678	Medowie ISF 1	AGD	56	393890	6373900	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**	1631	
38-4-1523	WILLIAMTOWN AS1	GDA	56	393303	6369583	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AECOM Australia Pty Ltd - Sydney					**Permits**		
38-4-0287	Oldfield _Track_14;	AGD	56	397700	6370000	Open site	Valid	Shell : -, Artefact : -	Midden,Open Camp Site	1845
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0298	SA 1;	AGD	56	398400	6370350	Open site	Valid	Shell : -, Artefact : -	Midden	2090
	Contact	**Recorders**	Doctor.Jillian Comber,A Powell					**Permits**		
38-4-0328	Moffats Dune;	AGD	56	396600	6374800	Open site	Valid	Artefact : -	Open Camp Site	2411,2559,102218
	Contact	**Recorders**	Mr.Matthew Barber					**Permits**	383,403,431	
38-4-1585	BQ1	AGD	56	386967	6382480	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-4-1620	TP3 MedowiePower	GDA	56	393476	6373883	Open site	Valid	Artefact : 10		
	Contact	**Recorders**	Ms.Alison Lamond					**Permits**	3644	
38-4-1646	AUS1903 -01	GDA	56	393485	6369598	Open site	Destroyed	Artefact : -		
	Contact	**Recorders**	Mr.Peter Saad,Ms.Alison Lamond					**Permits**	3729	
38-4-1627	TP7 9 103#########	GDA	56	393591	6374168	Open site	Partially Destroyed	Artefact : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Ms.Alison Lamond,Ms.Alison Lan					**Permits**		
38-4-1824	NBR Williamtown 1	GDA	56	392269	6369371	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Miss.Nicola Roche					**Permits**		
38-4-1930	HWC Pole 4318-10 access track AS	GDA	56	396055	6372571	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users,Ms.Alison Lamond					**Permits**	4177	
38-4-1971	Medowie PAD 02	GDA	56	393508	6374597	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0255	M D 5	AGD	56	394500	6372300	Open site	Valid	Artefact : -	Open Camp Site	1845,102218
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0251	M D 1;	AGD	56	400200	6374800	Open site	Valid	Artefact : -	Open Camp Site	1845,102218
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0332	Moffats Swamp 3	AGD	56	393905	6373289	Open site	Partially Destroyed	Artefact : -	Open Camp Site	2578,102218
	Contact	**Recorders**	Mr.Neville Baker,Miss.Nicola Roche					**Permits**	469,3621	
38-4-0652	A7 - Tomaree/Tomago	AGD	56	398854	6370376	Open site	Valid	Shell : 1		
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd					**Permits**		
38-4-0521	Medowie 1	AGD	56	394125	6373725	Open site	Valid	Artefact : -	Isolated Find	97535
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	1631	
38-4-1160	Williamtown Drive AS1	GDA	56	391680	6369082	Open site	Not a Site	Artefact : 2		
	Contact	**Recorders**	RPS AAP Consulting Pty Ltd - Hamilton					**Permits**	3157,3159,3386	
38-4-1522	WILLIAMSTOWN IA1	GDA	56	393233	6369666	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AECOM Australia Pty Ltd - Sydney					**Permits**		
38-4-1618	TP 4 & 5 Medowie Power	GDA	56	393611	6374448	Open site	Partially Destroyed	Artefact : 3		
	Contact	**Recorders**	Ms.Alison Lamond,Ms.Alison Lamond					**Permits**	3644	
38-4-1647	AUS1903-02	GDA	56	393486	6369674	Open site	Destroyed	Artefact : -, Shell : -		
	Contact	**Recorders**	Mr.Peter Saad,Ms.Alison Lamond					**Permits**	3729	
38-4-1970	Medowie PAD 01	GDA	56	393541	6374239	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**	5252	
38-4-1975	Medowie PAD 06	GDA	56	393648	6374415	Open site	Partially Destroyed	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0680	PAD 2: Tomaree to Tomago	AGD	56	397000	6375000	Open site	Valid	Potential Archaeological Deposit (PAD) : 0		98386,98387,100959
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd,ERM - Thornton					**Permits**		

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 40105-moc

Client Service ID : 912740

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-4-1381	RPS Fullerton Cove 1	GDA	56	387714	6369109	Open site	Destroyed	Artefact : 64		
	Contact	**Recorders**	Archaeological Risk Assessment Services (ARAS),Mr.Giles (dup ID#12832) Hamm,I					**Permits**		
38-4-2030	Medowie RD IF-3	GDA	56	393438	6373736	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0300	SA 3;	AGD	56	398100	6370150	Open site	Valid	Shell : -, Artefact : -	Midden	2090
	Contact	**Recorders**	Doctor.Jillian Comber,A Powell					**Permits**		
38-4-0301	Williamtown 1	AGD	56	391300	6369000	Open site	Valid	Artefact : -	Open Camp Site	1845,102114
	Contact	**Recorders**	Andrew Ross,Pam Dean-Jones					**Permits**	3157,3159,3386	
38-4-0414	Masonite Road;	AGD	56	385250	6370900	Open site	Valid	Artefact : -	Open Camp Site	102116
	Contact	**Recorders**	Sue Effenberger					**Permits**	823	
38-4-0315	R 1	AGD	56	388600	6373600	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Andrew Ross,Pam Dean-Jones,Mr.Luke Godwin,M Heath					**Permits**		
38-4-1206	EA Williamtown 1	GDA	56	393381	6373626	Open site	Valid	Artefact : 2		102390,104516,104679
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users					**Permits**	3271,3444,3644	
38-4-1527	Williamtown IA1	GDA	56	393233	6369666	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AECOM Australia Pty Ltd - Sydney,Mr.Luke Kirkwood					**Permits**		
38-4-1476	NBR3/1 Shell Midden	AGD	56	385726	6374016	Open site	Valid	Shell : -, Artefact : -		102630,103447
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**	3564	
38-4-1906	EA Campvale 3	GDA	56	392988	6373353	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AMAC Group P/L,Mr.Benjamin Streat					**Permits**	4143	
38-4-2034	Medowie RD IF-2	GDA	56	393621	6374079	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-2272	RAAF WLM	GDA	56	391369	6372381	Open site	Valid	Artefact : -		
	Contact	**Recorders**	BGIS,Mr.Stephen Shaw					**Permits**		
19-4-0019	(REFER TO 38-4-0522)	AGD	56	394000	6373825	Open site	Valid	Artefact : -	Isolated Find	102218
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**		
38-4-0614	MS1	AGD	56	394180	6374120	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Ms.Louise Gay					**Permits**		
38-4-1185	MFMS2	GDA	56	399567	6370190	Open site	Valid	Shell : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users					**Permits**		
38-4-0110	Salt Ash;Middle Ridge;	AGD	56	399800	6374400	Open site	Valid	Shell : -, Artefact : -	Midden	102218
	Contact	**Recorders**	Len Dyall					**Permits**		
38-4-1281	Campvale AS1	GDA	56	389698	6373462	Open site	Valid	Artefact : 6		
	Contact Worimi Local Aboriginal Land	**Recorders**	Biosis Pty Ltd - Sydney,Ms.Jenni Bate					**Permits**	4143	
38-4-0344	BSB 1;	AGD	56	399950	6376300	Open site	Valid	Artefact : -	Isolated Find	2914,102218

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Noeleen Curran					**Permits**		
38-4-0283	Oldfield _Track_10;	AGD	56	397300	6370000	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0220	Galloping Swamp	AGD	56	391300	6372200	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Pam Dean-Jones					**Permits**		
38-4-0651	A6 - Tomaree/Tomago	AGD	56	398907	6370389	Open site	Valid	Shell : 1		
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd					**Permits**		
38-4-0653	A8 - Tomaree/Tomago	AGD	56	399022	6370394	Open site	Valid	Shell : 1		
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd					**Permits**		
38-4-0844	salt ash mine 1	AGD	56	398695	6370545	Open site	Valid	Shell : -, Artefact : -		
	Contact	**Recorders**	Worimi Local Aboriginal Land Council - Tanilba Bay					**Permits**	2268	
38-4-1380	EA Williamtown 3	GDA	56	392867	6371655	Open site	Valid	Artefact : 2		102390
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users					**Permits**	3444,4143	
38-4-2023	KHW01	GDA	56	385640	6377305	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Mrs.Tessa Boer-Mah,Heritage Now - Belmont					**Permits**		
38-4-2028	Medowie RD AD-01	GDA	56	393629	6374138	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
38-4-0517	Medowie Five	AGD	56	394075	6373725	Open site	Valid	Artefact : -	Open Camp Site	97535,102218
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	1631	
19-4-0020	(REFER TO 38-4-0521)	AGD	56	394125	6373725	Open site	Valid	Artefact : -	Isolated Find	
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**		
38-4-0519	Medowie Two	AGD	56	394050	6373735	Open site	Valid	Artefact : -	Open Camp Site	97535,102218
	Contact	**Recorders**	Mrs.Angela Besant					**Permits**	1631	
38-4-1184	SFMS1	AGD	56	399020	6370390	Open site	Valid	Shell : 1		
	Contact	**Recorders**	Umwelt (Australia) Pty Limited - Individual users					**Permits**		
38-4-1648	AUS1903-03	GDA	56	393391	6370559	Open site	Destroyed	Artefact : -, Shell : -		
	Contact	**Recorders**	Mr.Peter Saad,Ms.Alison Lamond					**Permits**	3729	
38-4-2005	CTR-AS01	GDA	56	390563	6369346	Open site	Partially Destroyed	Artefact : -, Hearth : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mr.Matthew Barber,NGH Heritage - Fyshwick,Mrs.Sam					**Permits**	5034,5221	
38-4-0533	Seaham Quarry	AGD	56	387552	6383989	Open site	Valid	Artefact : -	Isolated Find	104530
	Contact	**Recorders**	Megan Mebberson					**Permits**		
38-4-0112	Salt Ash;Tillygerry Creek;	AGD	56	399506	6373896	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Len Dyall					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 40105-moc

Client Service ID : 912740

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
38-3-0037	Tomago 1;TK1;	AGD	56	385600	6369540	Open site	Valid	Artefact : -	Open Camp Site	1339,102116,102420
	Contact	**Recorders**	Hillary Du Cros,Laura-Jane Smith					**Permits**		
38-3-0038	Tomago 2 TK2	AGD	56	389100	6373550	Open site	Valid	Artefact : -	Open Camp Site	1339,1964,102420
	Contact	**Recorders**	Hillary Du Cros,Laura-Jane Smith					**Permits**	3466	
38-4-1146	DAREZ 1	GDA	56	391037	6369258	Open site	Valid	Artefact : 12		102114
	Contact	**Recorders**	Mr.Darrell Rigby					**Permits**	3157,3159,3386	
38-4-1630	BQ PAD1-1	AGD	56	387300	6382720	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-4-0439	Isolated Artefact	AGD	56	387510	6380800	Open site	Valid	Artefact : -	Isolated Find	
	Contact	**Recorders**	Helen Brayshaw,Ms.Laila Haglund					**Permits**		
38-4-0252	M D 2;	AGD	56	399000	6374400	Open site	Valid	Artefact : -	Open Camp Site	1845,102218
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0256	M D 7	AGD	56	393100	6372300	Open site	Valid	Artefact : -	Open Camp Site	1845,102390
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**	3271,3444,4143	
38-4-0286	Oldfield _Track_13;	AGD	56	397800	6370100	Open site	Valid	Shell : -, Artefact : -	Midden	1845
	Contact	**Recorders**	Ms.Bronwyn Conyers,Pam Dean-Jones,M Heath					**Permits**		
38-4-0650	A5 - Tomaree/Tomago	AGD	56	399450	6370700	Open site	Valid	Shell : 2, Artefact : 2		
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd					**Permits**		
38-4-0643	A4 - Tomaree/Tomago	AGD	56	396246	6369064	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	MCH - McCardle Cultural Heritage Pty Ltd					**Permits**		
38-4-1584	BQ PAD 2	GDA	56	387185	6382520	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Ms.Penny Mccardle					**Permits**		
38-4-1905	EA Campvale 2	GDA	56	392988	6373353	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	AMAC Group P/L,Mr.Benjamin Streat					**Permits**	4143	

**** Site Status**

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

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

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

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

Report generated by AHIMS Web Service on 23/07/2024 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 385086.049 - 400359.58, Northings : 6369080.794 - 6384508.594 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 105