# 1 Westgate Avenue and 32 Honeymyrtle Street, Thornton, New South Wales – Stage 2: Archaeological Report

FINAL REPORT

Prepared for Thornton Brentwood Pty Ltd

20 May 2022

## Biosis offices

**NEW SOUTH WALES**

**Albury**
Phone: (02) 6069 9200
Email: albury@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


## Document information

| | |
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| **Report to:** | Thornton Brentwood Pty Ltd |
| **Prepared by:** | Anthea Vella<br>Ashleigh Keevers-Eastman |
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## Acknowledgements


Biosis gratefully acknowledges the contributions of the following people and organisations in preparing this report:

- James Turner and Dean Turner (Thornton Brentwood Pty Ltd).
- Jason Brown (Mindaribba Local Aboriginal Land Council (LALC)).
- Kerrie Brauer, Tracey Howie and Peter Leven (Awabakal Guringai Pty Ltd).

Biosis staff involved in this project were:

- Sonika Kumar (GIS and mapping).

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# Glossary

| | |
|---|---|
| **ACHA** | Aboriginal Cultural Heritage Assessment |
| **AHIP** | Aboriginal Heritage Impact Permit |
| **AHIMS** | Aboriginal Heritage Information Management System |
| **AMBS** | Australian Museum Business Services |
| **AR** | Archaeological Report |
| **Biosis** | Biosis Pty Ltd |
| **CBD** | central business district |
| **Consultation requirements** | *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* |
| **DA** | Development Application |
| **DECCW** | Department of Environment, Climate Change and Water (now Heritage NSW) |
| **DP** | Deposited Plan |
| **EP&A Act** | *Environmental Planning and Assessment Act 1979* |
| **GPS** | Global Positioning System |
| **GSV** | ground surface visibility |
| ***Heritage Act 1977*** | Heritage Act |
| **Heritage NSW** | Heritage NSW, Department of Planning and Environment |
| **ICOMOS** | International Council on Monuments and Sites |
| **LALC** | Local Aboriginal Land Council |
| **LEP** | Local Environmental Plan |
| **LGA** | Local Government Area |
| **McCardle** | McCardle Cultural Heritage |
| **MGA** | Map Grid of Australia |
| **NPW Act** | *National Parks and Wildlife Act 1974* |
| **NPWS** | National Parks and Wildlife Service |
| **NSW** | New South Wales |
| **PAD** | Potential Archaeological Deposit |
| **RAP** | Registered Aboriginal Party |
| **SEPP** | State Environmental Planning Policy |

| | |
|---|---|
| **Study area** | 32 Honeymyrtle Street and 1 Westgate Avenue, Thornton (Lots 425 and 428 DP 1262858) |
| **the Code** | *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* |
| **Thornton Brentwood Pty Ltd** | Thornton Brentwood |

# Summary

Biosis Pty Ltd (Biosis) was commissioned by Thornton Brentwood Pty Ltd (Thornton Brentwood) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the Stage 2 of the three-staged subdivision of 1 Westgate Avenue and 32 Honeymyrtle Street, Thornton, New South Wales (NSW) (Lots 425 and 428 DP1262858, respectively). The study area is located 2.5 kilometres north of Thornton and approximately 30 kilometres north-west of the Newcastle central business district (CBD).

The project is to be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Maitland City Council is the determining authority and will assess the Development Application (DA). 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 2010a) (the Code), the AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

An Aboriginal Heritage Impact Permit (AHIP) for Stage 1 and Stage 3 has been approved by Heritage NSW, Department of Planning and Environment (Heritage NSW): Stage 1 - AHIP #C0004256 and Stage 3 – AHIP 4762.

A search of the Aboriginal Heritage Information Management System (AHIMS) database (Client Service ID: 529575 and 679571) identified 81 Aboriginal archaeological sites within a 1.5 by 1.5 kilometre search area, centred on the study area. Eleven of these registered sites are located within the study area (AHIMS 38-4-0939, 38-4-0938, 38-4-0937, 38-4-0936, 38-4-0927, 38-4-1989, 38-4-1976, 38-4-1983, 38-4-1982, 38-4-1981, and 38-4-1977). The AHIMS register also indicated that Jones (1986) had recorded an artefact scatter of 50 artefacts within the study area (AHIMS 38-4-0124). However, a review of the site card for AHIMS 38-4-0124 confirmed that the site is not located within the study area.

AHIMS 38-4-0939, 38-4-0938, 38-4-0937, 38-4-0936, 38-4-1989, 38-4-1976, 38-4-1983, 38-4-1982, 38-4-1981, and 38-4-1977 are located within the Stage 2 development area.

The Aboriginal community was consulted regarding the heritage management of the project throughout its lifespan. Consultation has been undertaken as per the process outlined in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b) (consultation requirements).

Biosis previously completed an ACHA for 530 Raymond Terrace Road, Thornton, NSW in 2018 that included an archaeological survey and test excavations within Stage 1, Stage 2 and 3 development areas (now known as 1 Westgate Avenue and 30 Honeymyrtle Close, Thornton, NSW) (Biosis 2018). The ACHA was prepared to obtain an AHIP for Stage 1 of the proposed development. An AHIP (AHIP #C0004256) was obtained for Stage 1 of the proposed works on 7 February 2019 for a period of 10 years.

The archaeological survey completed as part of Biosis' 2018 assessment of the study area was undertaken on Friday 25 May 2018. The survey resulted in the identification of three previously unrecorded Aboriginal sites, within the current study area (AHIMS 38-4-1989, 38-4-1976, and 38-4-1983). The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed high. This was attributed to moderate to high levels of disturbance noted across large portions of the study area, with high levels of ground surface visibility (GSV) and exposure assisting surveyors in the identification of Aboriginal sites.

A supplementary survey of the study area was conducted on 26 August 2020 to determine whether further sites may be present within the study area, and to locate AHIMS sites previously recorded within the study area. The supplementary survey resulted in the identification of three Aboriginal sites (RTRD15 AHIMS 38-4-

2069, RTRD16 AHIMS 38-4-2070, and RTRD17 AHIMS 38-4-2071) which had not previously been identified, one of which is located outside of the current study area.

Test excavations were undertaken by Biosis between 16 and 19 July 2018 within the study area (Biosis 2018). Test excavations were conducted in accordance with Requirement 16a of the Code. The test excavations resulted in the identification of three low density subsurface deposits, associated with AHIMS 38-4-1977, 38-4-1981, 38-4-1982, within the southern portion of the study area. Overall, the results of the testing program suggested that the potential for intact subsurface cultural deposits within the study area is low.

Another ACHA was prepared to obtain an AHIP for Stage 3 of the proposed development. An AHIP (AHIP #4762) was obtained for Stage 3 of the proposed works on 21 May 2021 for a period of 10 years.

An assessment of impacts has determined that there is potential for development activities within the Stage 2 development areas to impact AHIMS 38-4-1989, 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) (Table 1).

Future development of the Park Reserve located north of the southern portion of the study area (Stage 1 area) following the completion of Stage 2 of the proposed development will also result in impacts to RTRD15 (AHIMS 38-4-2069). It is recommended that any AHIMS sites located within the Park Reserve be salvaged via community collection under AHIP #C0004256.

AHIMS 38-4-1989 was previously assessed in 2018 by Biosis and is also currently covered by AHIP #C0004256, obtained in 2019. The future management of AHIMS 38-4-1989 should therefore be undertaken in accordance with the conditions of AHIP #C0004256. AHIP #4762 was issued to allow harm to AHIMS 38-4-0927.

AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 will not be impacted by the proposed development (Table 1).

**Table 1 Summary of potential archaeological impacts by Stage area**

| AHIMS site no. | Site name | Significance | Degree of harm | Consequence of harm |
|---|---|---|---|---|
| **Stage 1 area** | | | | |
| **AHIMS 38-4-2069** | RTRD15 | Low | Total | Total loss of value – covered by AHIP #C0004256 |
| **Stage 2 area** | | | | |
| **AHIMS 38-4-1989** | RTRD02 | Low | Total | Total loss of value – covered by AHIP #C0004256 |
| **AHIMS 38-4-1976** | RTRD03 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-1983** | RTRD11 | Low | Total | Total loss of value |
| **AHIMS 38-4-1982** | RTRD12 | Low | Total | Total loss of value |
| **AHIMS 38-4-1981** | RTRD13 | Low | Total | Total loss of value |
| **AHIMS 38-4-1977** | RTRD14 | Low | Total | Total loss of value |

| AHIMS site no. | Site name | Significance | Degree of harm | Consequence of harm |
|---|---|---|---|---|
| **AHIMS 38-4-0936** | Thornton North Site 6 - Lot 20 | Low | Total | Total loss of value |
| **AHIMS 38-4-0937** | Thornton North Site 7 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-0938** | Thornton North Site 8 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-0939** | Thornton North Site 9 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-2070** | RTRD16 | Low | Total | Total loss of value |
| **AHIMS 38-4-2071** | RTRD17 | Low | Total | Total loss of value |
| **Stage 3 area** | | | | |
| **AHIMS 38-4-0927** | Thornton North Site 1 - Lot 20 | Low | Total | Total loss of value – covered by AHIP #4762 |

### AHIP application

This ACHA is for Stage 2 of the proposed development will support an application for an AHIP to impact AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071).

### Management recommendations

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) Burra Charter.
  - the Code.

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

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

#### Recommendation 1: Application for an AHIP to harm AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) within Stage 2 area

Biosis recommends that an application for an area wide AHIP for the stage 2 area be obtained to impact AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071). The AHIP should allow for direct impacts to occur through community collection and development works. The AHIP should be obtained prior to works proceeding. **The AHIP should be for a**

**term of 10 years.** An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places. Heritage NSW issues AHIPs under Part 6 of the NPW Act.

### Recommendation 2: Cultural Heritage Awareness Training provided to all contractors prior to works commencing within Stage 2 impact area

Cultural Heritage Awareness Training should be provided to all contractors prior to works commencing within Stage 2 impact area, as recommended by RAPs.

### Recommendation 3: Salvage through community collection

AHIMS sites 38-4-0936, 38-4-1983, and RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) should be salvaged through community collection under an AHIP and in accordance with a Community Collection Methodology prior to the proposed works being undertaken.

### Recommendation 4: Management of AHIMS 38-4-1989 and RTRD15 (AHIMS 38-4-2069) under AHIP #C0004256

AHIMS 38-4-1989 and RTRD15 (AHIMS 38-4-2069) should be managed and salvaged via community collection in accordance with AHIP #C0004256 prior to the proposed works within the Stage 2 impact area and the Park Reserve being undertaken.

### Recommendation 5: Fencing of Stage 2 site boundaries and Aboriginal sites that will not be harmed

Prior to any works taking place, the Stage 2 boundary should be clearly fenced in order to prevent any unintentional impacts to AHIMS sites located outside of the study area which will not be harmed by the proposed works. Fencing must remain in place over the over the lifespan of the proposed development.

Biosis also recommends that the foot slope landform in which AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 are located should be securely fenced to ensure the proposed works do not impact on any areas of high archaeological potential identified within the no-go zone (Figure 14). Fencing must remain in place over the lifespan of the proposed development.

### Recommendation 6: Further archaeological works required if impacts cannot be avoided

It is recommended that test excavations be undertaken in consultation with the RAPs, if impact to AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 cannot be avoided. Land management strategies related to the management of invasive flora species and bush regeneration within the E3 Zone, will need to be undertaken in a manner in which soil deposits will not be directly impacted within the E3 Zone.

### Recommendation 7: No further archaeological works

No further archaeological test or salvage excavations are required for AHIMS sites 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) or any areas within the current development footprint apart from the sites proposed for community collection or management under an AHIP. Once community collection has been undertaken, works may proceed with caution in these areas in line with the approved AHIP, and Recommendations 8 to 11.

### Recommendation 8: Establishment of a long term care agreement

The establishment of a long term care agreement in consultation with RAPs should be developed in order to ensure the artefacts are adequately cared for. Several management options are possible depending on the wishes of RAPs. Artefacts recovered from the test excavations and community collection salvage may be returned to the Aboriginal community through a long term care agreement where they can then be used to

teach subsequent generations about Aboriginal culture or can be reburied in a culturally appropriate place. This approach considers the principles of Ecologically Sustainable Development (ESD) and intergenerational equity and more importantly ensures that recovered artefacts are managed according to the wishes of RAPs.

### Recommendation 9: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to disturb an Aboriginal site without a consent permit issued by Heritage NSW. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and RAPs.

### Recommendation 10: Discovery of unanticipated Historical relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the *Heritage Act 1977* (Heritage Act). Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. Heritage NSW will require notification if the find is assessed as a relic.

### Recommendation 11: Stop works provision – Discovery of Aboriginal ancestral remains

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

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

# 1 Introduction

## 1.1 Project background

Biosis was commissioned by Thornton Brentwood to undertake an ACHA for Stage 2 and Stage 3 of the three staged subdivision of 1 Westgate Avenue and 32 Honeymyrtle Street, Thornton, NSW (the study area) (Lots 428 and 425 DP1262858, respectively) (Figure 1). The project is to be assessed under Part 4 of the EP&A Act.

Biosis previously completed an ACHA for 530 Raymond Terrace Road, Thornton, NSW in 2018 which included a survey and test excavations within the Stage 2 and 3 development areas (now known as 1 Westgate Avenue and 30 Honeymyrtle Close, Thornton, NSW) (Biosis 2018). The ACHA was prepared to obtain an AHIP for Stage 1 and 3 of the proposed development. A summary of the results of Biosis 2018 assessment are provided below Section 3.2.2 of this report, and the complete report can be found in Appendix 2.

An AHIP (AHIP #C0004256) was obtained for Stage 1 of the proposed works on 7 February 2019 for a period of 10 years. An AHIP (AHIP #4762) was obtained for Stage 3 of the proposed works on 21 May 2021 for a period of 10 years.

As consultation for Stage 1 of the project had lapsed, consultation in line with the consultation requirements, and an updated ACHA and AR are required for Stage 2 and 3 of the proposed development. This AR documents the findings of the archaeological investigations conducted as part of the current ACHA. The AR provides evidence about the material traces of Aboriginal land use to support the conclusions and management recommendations in the ACHA.

This investigation has been carried out under Part 6 of the 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. The archaeological investigation must be undertaken in accordance with the requirements of the Code.

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 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.

## 1.2 Study area

The study area (Lots 428 and 425 DP1262858) is located approximately 2.5 kilometres north of Thornton and approximately 30 kilometres north-west of the Newcastle CBD (Figure 1 and Figure 2).

The study area is within the:

- Maitland LGA.
- Parish of Alnwick.
- County of Northumberland.

The study area is bounded by Raymond Terrace Road to the north, and residential housing to the east and the south. The study area is divided by Stage 1 of the proposed development, which has undergone preparation for residential development. Within the southern portion of the study area (Stage 1 development area) is an E3 environmental management land zone which extends into the adjacent lot to the west of the study area. The study area has been partially disturbed by land clearing, quarrying and recreational activities where large portions of the study area have been subject to previous ground disturbance. Various access tracks also transverse the study area.

## 1.3 Planning approvals

The proposed development will be assessed against Part 4 of the EP&A Act. Other relevant legislation and planning instruments that will inform this assessment include:

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- NSW *National Parks and Wildlife Act 1974* (NPW Act).
- NSW *National Parks and Wildlife Amendment Act 2010.*
- *Maitland Local Environmental Plan 2011* (LEP)
- *Maitland Development Control Plan 2011 (*DCP).

### 1.3.1 AHIP applications

This ACHA is for Stage 2 of the proposed development will support an application for an AHIP to impact AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071).

## 1.4 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 Mindaribba LALC.
- 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 supplementary 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.

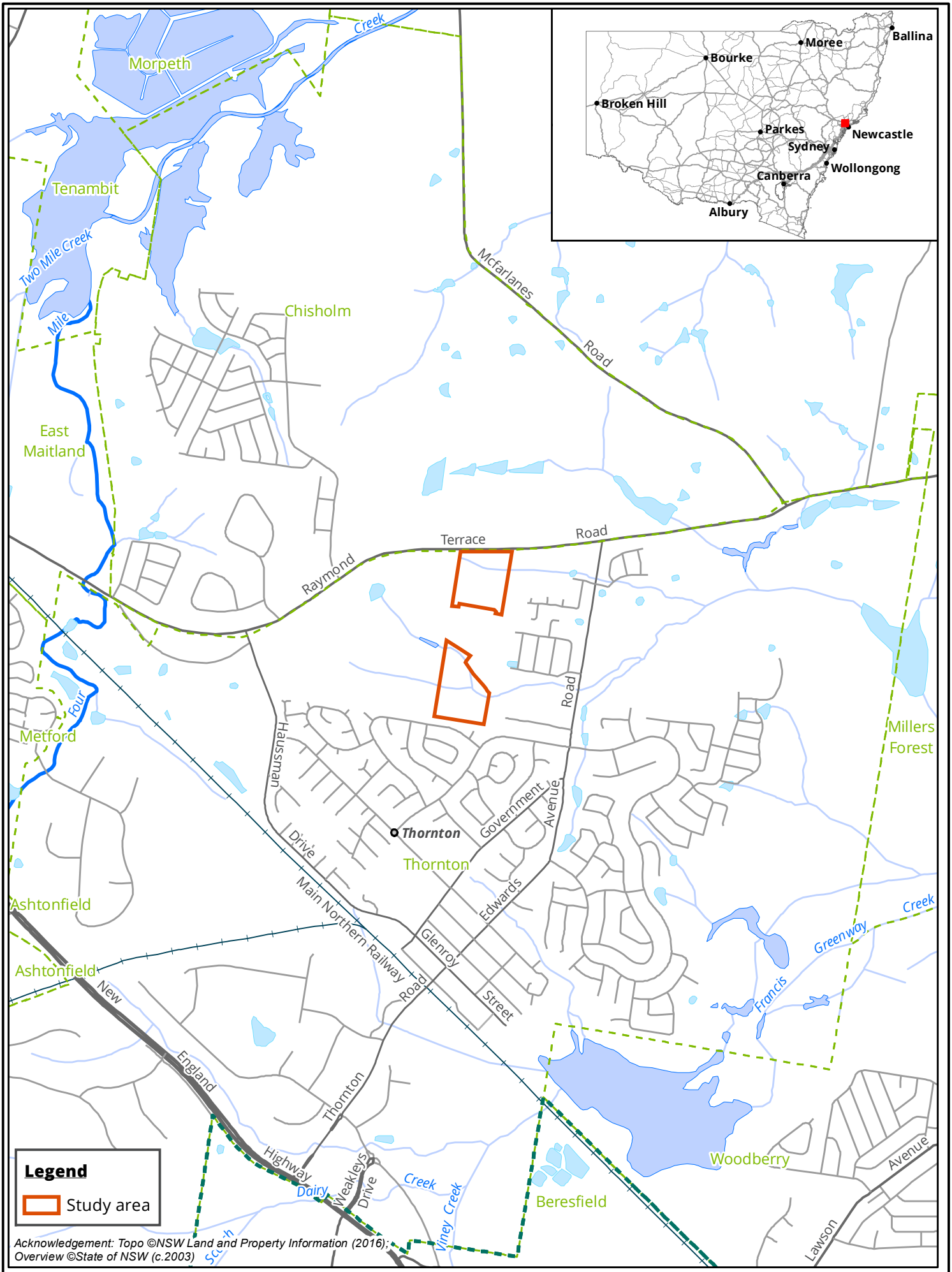
- To recommend strategies for the management of Aboriginal cultural heritage within the context of the proposed development.

## 1.5 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 2.

**Table 2 Investigators and contributors**

| Name and qualifications | Experience summary | Project role |
|---|---|---|
| **Taryn Gooley**<br>**BASc (Hons)** | Taryn has over 10 years' experience in archaeological consulting and has successfully completed numerous projects throughout NSW. Taryn has extensive experience in undertaking Aboriginal archaeological assessments, archaeological surveys, and large scale archaeological testing and salvage excavation programs across NSW. Taryn has participated in and managed a number of long term archaeological programs. | • Quality assurance |
| **Ashleigh Keevers-Eastman**<br>**BA (Hons)** | Ashleigh is a Consultant Archaeologist with over three years' experience. Ashleigh is experienced in conducting Aboriginal heritage assessments, field surveys and archaeological test excavations and salvage works within NSW and the Australian Capital Territory. Ashleigh's strengths are in consulting with the Aboriginal community to build strong relationships that assist in the assessment of Aboriginal cultural heritage values and significance. Ashleigh possesses skills in lithic identification, technical report writing and project management. | • Project management<br>• Field investigation<br>• Reporting |
| **Anthea Vella**<br>**B.Arch, M.AHM** | Anthea is a Consultant Archaeologist with over three years' experience. Anthea has experience in conducting Aboriginal and historical heritage assessments, surveys and archaeological test excavations for a variety of projects throughout NSW. Anthea possesses specialist skills in analysing Ground Penetrating Radar data. Anthea has experience in undertaking desktop assessments, project administration, collating internal and external research, and reporting. | • Background research<br>• Project management |
| **Madeleine Lucas**<br>**BA (Hons) Archaeology**<br>**BSC** | Madeleine joined Biosis as an Archaeologist with over one years' experience. Madeleine possesses skills in zooarchaeological analysis and is experienced in the identification of faunal remains and taphonomic analysis. Since joining Biosis, Madeleine has further developed her skills in historical and Aboriginal background research, data entry, and report production. Madeleine is also experienced in undertaking Aboriginal community consultation. | • Aboriginal community consultation |




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

## Figure 1 Location of the study area

Matter: 33608
Date: 24 August 2020,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location:P:\33600s\33608\Mapping\

0 200 400 600 800 1,000
Metres

N

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


**Legend**

- Study area
- Lot
- Stage 1

**Figure 2 Location of the study area**

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 26 April 2021,
Checked by: AV, Drawn by: SSK, Last edited by: lharley
Location: P:\33600s\33608\Mapping\35169_F2_StudyArea.mxd

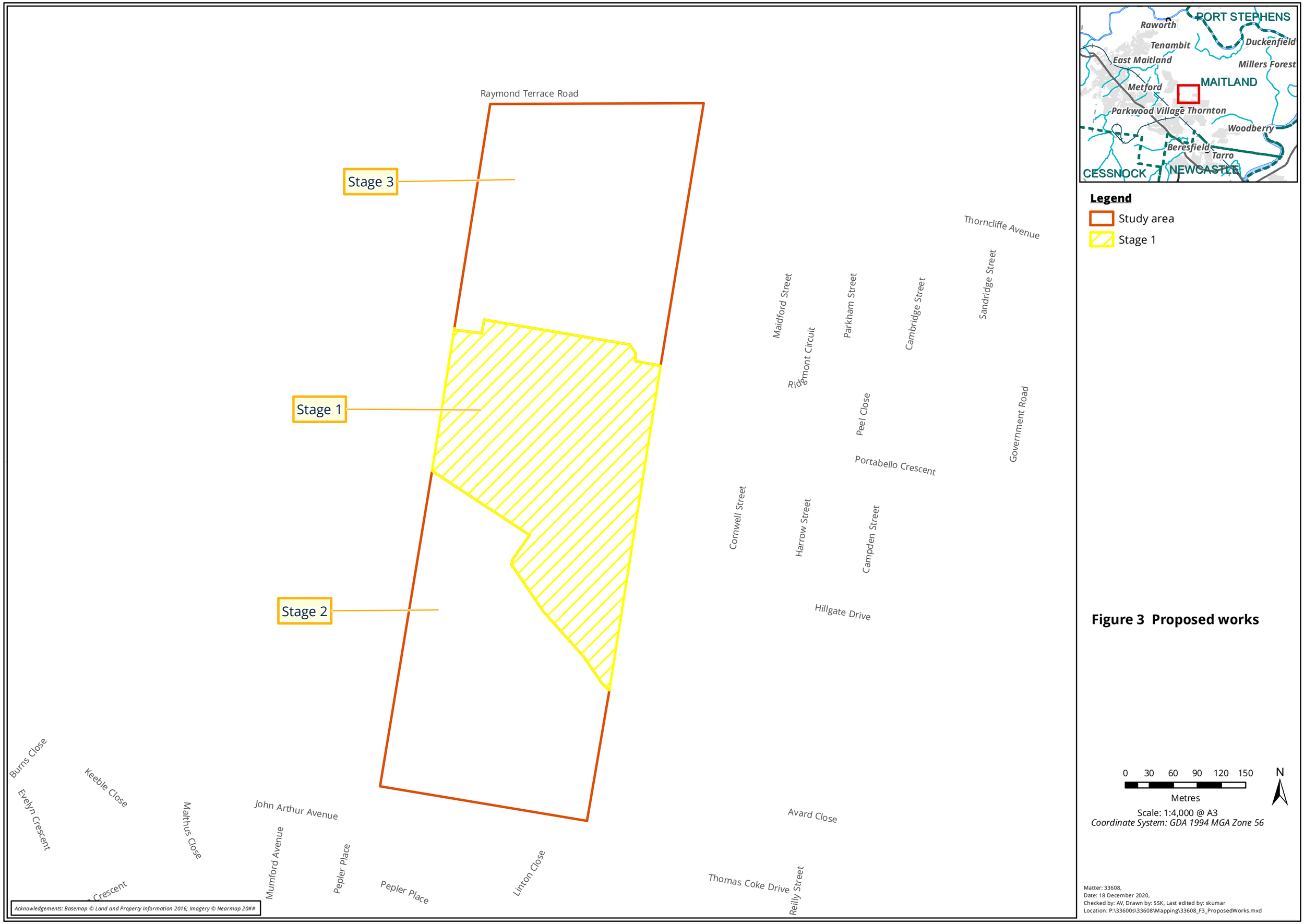
# 2 Proposed development

Thornton Brentwood have previously undertaken Stage 1 and 3 of the proposed residential subdivision of 530 Raymond Terrace Road, Thornton, NSW, and are now planning to undertake Stage 2 of the residential subdivision (Figure 3).

The proposed works for Stage 2 will include the subdivision of further 28 lots for residential development, a drainage reserve and a neighbourhood park.

Potential impacts to Aboriginal heritage values within the study area will include but not be limited to:

- Weed management.
- Revegetation.
- Filling in of quarry through bulk earthworks.
- Ground disturbance through earthworks for the construction of a drainage reserves.
- Construction of residential utilities including roads and services.
- Construction of residential buildings.
- Construction of a childcare facility.
- Development of neighbourhood parks that will also require further earthworks.







**Legend**

- Study area
- Stage 1

## Figure 3 Proposed works

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 18 December 2020,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F3_ProposedWorks.mxd

# 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 within the Lower Hunter Plain, which consists of the floodplains of several rivers, namely the lower Williams, Paterson and Hunter rivers (Matthei 1995, p.3). The Hunter Valley consists of a mature riverine estuary (Kuskie 2007, p.8). Following the end of the last glacial maximum (approximately 24,000 to 17,000 years ago), the melting of the ice sheets led to an increase in sea levels (Kuskie 2007, p.8). During the mid-Holocene, the Hunter Valley was filled with marine/brackish water with an estuary approximately 32 kilometres inland from the present coastline. From approximately 3,600 years ago, the sea levels dropped, transforming the study area into a shallow estuary of swamps and terrestrial floodplains (Kuskie 2007, p.8).

The Mulbring Siltstone geological unit dominates the study area, and also contains alluvial valley deposits (Figure 4). The Mulbring Siltstone consists of fine grained offshore sediments of siltstone, minor grained sandstone, and claystone and is part of the Maitland group (Nashar 1964). Alluvial valley deposits are also present along the banks of the unnamed watercourse that runs through the southern portion of the study area.

Stream order is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of campsites as they would have been more likely to provide a stable source of water and by extension other resources which would have been used by Aboriginal groups, and are more likely to be found upon well drained topographies associated with permanent watercourses (creek banks, flats, terraces) (Dyall 1979, Dean-Jones 1990, Biosis Pty Ltd 2017).

The stream order system used for this assessment was originally developed by Strahler (1952). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in Photo 1. As stream order increases, so does the likelihood that the stream would be a perennial source of water. Hydrological features identified within the study area would have most likely been associated with temporary land use due to their non-perennial nature, and Aboriginal sites within the study area are more likely to be identified within well-drained topographies such as footslopes and gentle slopes within proximity to these water sources.

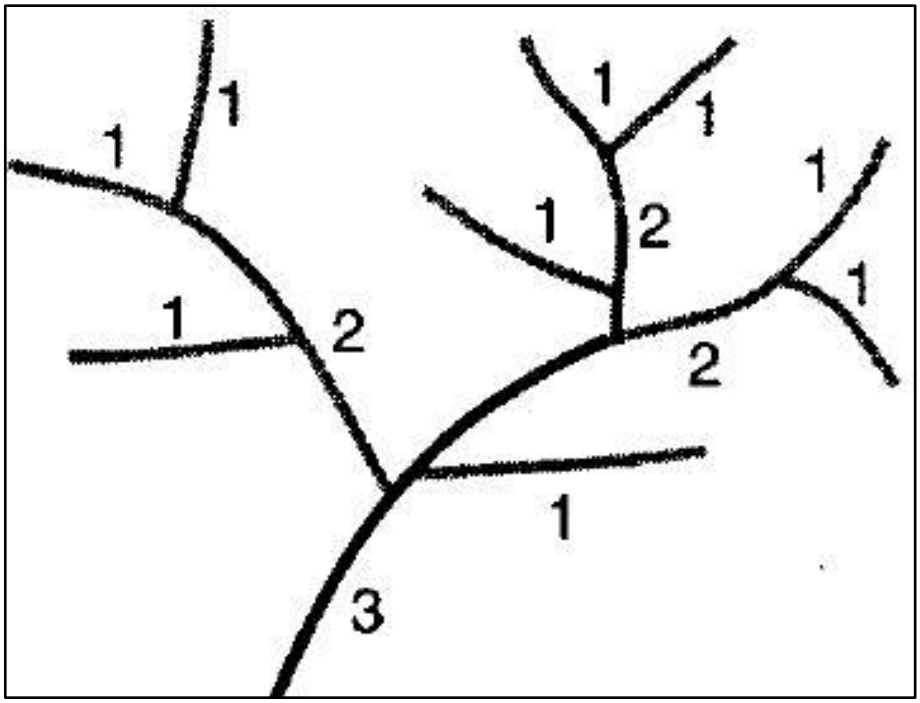



**Photo 1 Diagram showing Strahler stream order (Ritter et al. 1995, p.151)**

Within the southern portion of the study area, two first order tributaries converge around a footslope landform to form a second order, non-perennial drainage line, which flows east outside of the study area. A second drainage line is located in the northern portion of the study area, and is a first order non-perennial source of fresh water.

These hydrological features that originate from a second order, non-perennial, natural watercourse located approximately 1.25 kilometres east of the study area (Figure 5). Landforms associated with these hydrological features located within the study area include a system of simple slopes, containing a flat crest within the northern portion of the study area and a footslope within the southern (Figure 5).

### 3.1.2 Soil landscapes

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

There are two soil landscapes present within in the study area; the Beresfield soil landscape, and the Millers Forest soil landscape (Figure 6). The dominant soil landscape within the study area is the Beresfield soil landscape. The Beresfield soil landscape is a residual landscape, formed by in situ weathering of parent materials, presumably over a long period of time. The Beresfield soil landscape is characterised by undulating low hills and rises on Permian sediments in the East Maitland Hills region. The slope gradient ranges from 3-15%, with landscape elevation varying from 20-50 metres and with a local relief is up to 50 metres (Matthei 1995, p.30).

Soils within this landscape consist of moderately deep (<120 centimetre), moderately well to imperfectly drained brown and yellow Podzolic Soils and Brown Soloths occurring within crest landforms, moderately deep (<120 centimetre), well-drained red Podzolic soils and red Soloths on upper slopes, moderately well to imperfectly drained brown and yellow Soloths on side slopes, and deep (>200 centimetre) deposits of imperfectly to poorly drained yellow Podzolic soils, yellow Soloths, and gleyed Podzolic soils on lower slopes (Matthei 1995, p.30). The dominant soil materials of this landscape are summarised in Table 3.

**Table 3 Beresfield soil landscape characteristics (Matthei 1995, pp.31–32)**

| Soil Material | Description |
|---|---|
| ***Be1*** **– Friable brownish black loam** | Brownish black (10YR 2/2, 10YR 2/3) occasionally black (10YR 2/1) or dark brown (10YR 3/3) coloured, sandy loam to fine sandy or silty loam, which is often friable and can becomes firm when dry. The structure of this soil material is made up of 10-20 mm of weak, fine sub-angular blocky peds, which part easily to <2 mm crumb peds. This material occurs as topsoil, $A^1$ horizon, and is highly permeable and possesses a rough ped fabric. Inclusions include few gravel sized platy ironstone and sub angular sandstone, with few charcoal fragments. Acidity of this soil material ranges from moderately acidic to neutral (pH 5.5-7.0). |
| ***Be2*** **– Hard setting dull yellowish brown sandy loam** | Dull yellowish brown (10YR 4/3) to dark brown (10YR 3/3, 7.5YR 3/3) sandy loam through clay loam to fine sandy loam. Bleached dull yellow orange (10YR 7/2, 10YR 6/3) when dry. Rusty mottles occur down root traces. The structure of this soil material is massive, and is rarely weak to moderate, with 5-10 mm sub-angular blocky peds occurring. This material occurs as topsoil, $A^2$ horizon, and is moderately permeable and possesses an earthy fabric. Inclusions include few to commonly occurring gravel sized tabular ironstone fragments and conglomerate pebbles, with few charcoal fragments. Acidity of this soil material ranges from moderately acidic to slightly acidic (pH 5.5-6.0). |
| ***Be3*** **– Pedal brown plastic mottled clay** | Brown (7.5YR 4/4, 7.5YR 4/6), dark brown (7.5YR 3/3, 10YR 5/4), bright yellowish brown (10YR 6/6) and yellowish brown (10YR 5/6, 2.5Y 5/3) commonly occurring, but ranging to greyish yellow brown (10YR 4/2) and dull yellowish brown (10YR 5/3, 10YR 4/3). Red, grey and orange mottles occurring. Soil material is dominantly medium clay, ranging from light-medium to heavy plastic clay, and occasionally fine sandy clay. The structure is strong and dense and made up of 10-20 mm angular blocky peds. A 50-100 mm prismatic or angular blocky macrostructure is generally present. This material occurs as subsoil, $B^2$ horizon, and possesses a smooth ped fabric. Inclusions include few to commonly occurring angular and sub-angular ironstone fragments. Acidity of this soil material ranges from moderately to slightly acidic (pH 5.0-6.0). |
| ***Be4*** **– Reddish brown plastic pedal clay** | Reddish brown (5YR 4/6, 2.5YR 4/6), dull reddish brown (5YR 4/4) soils with red/grey mottles. Soil material is dominantly medium to heavy plastic clay. The structure made up of 20-50 mm angular blocky ped which part easy to 10-20 mm angular blocky or polyhedral peds. This material occurs as subsoil, $B^2$, $B^3$ horizons, and possesses a smooth ped fabric. Inclusions include few to commonly sub-angular and tabular ironstone fragments. Acidity of this soil material ranges from strongly to slightly acidic (pH 4.5-6.0). |
| ***Be5*** **– Gleyed 'puggy' silty clay** | Dull yellow orange (10YR 7/2, 10YR 6/4), light grey (10YR 7/1), light yellow (2.5YR 7/3) soils with red/grey/orange mottles. Soil material is dominantly silty clay, or sandy clay to light medium clay. The structure made up of large 100-200 mm prismatic peds which part easy to 20-50 mm angular blocky or sub-angular blocky peds. This material occurs as subsoil, $B^2$, $B^3$, C horizons, and possesses a smooth ped fabric. Inclusions include few to abundant sub-angular and tabular ironstone fragments. Acidity of this soil material moderately acidic (pH 5-7.0). |

The Millers Forest soil landscape is an estuarine landscape, and contains deep (>150 centimetres) soils. This soil landscape is an extensive alluvial plain from recent sediments in the Lower Hunter Plain region. It is generally comprised of clay, silt, and sand and overlies estuarine mud deposits at depth (Matthei 1995, p.194). Slope gradients are commonly more than 1%, and elevation is more than 3 to 6 metres. This soil landscape is also subject to waterlogging, and high water tables. The soil materials of this landscape are summarised in Table 4.

**Table 4 Millers Forest soil landscape characteristics (Matthei 1995, pp.194–196)**

| Soil Material | Description |
|---|---|
| ***mf1* – Brownish black silty clay loam** | Brownish black (7.5YR 3/2, 10YR 3/2, 7.5YR 2/3, 10YR 2/ 3), occasionally dark brown (7.5YR 3/3, 10YR 3/3) or black (10YR 2/1) silty clay loam to fine sandy clay loam to silty clay. This soil occurs as a top soil (A horizon), and is well structured with moderate to occasionally strong 10 – 20 mm sub-angular blocky or polyhedral peds. It has a smooth ped that can be occasionally rough, and has a pH of slightly acid (5.5-6.0) that ranges to neutral (7.0). When exposed this soil is firm to hardsetting when dry, and occasionally self-mulching. Roots are few to many. |
| **mf2 – Brown silty clay** | Brownish black (10YR 3/2, 7.5YR 3/2, 10YR 2/3, 10YR 2/2) to dark brown (7.5YR 3/3, 7.5YR 3/4, 10YR 3/4), and rarely dull yellowish brown (10YR 4/3) silty clay to medium clay. Orange mottles occur occasionally. This soil occurs as a sub soil (B horizon) and is well structured with 20 – 50 mm angular or sub-angular blocky peds which may part to 5 – 10 mm polyhedral peds. It has a smooth ped, and clay skins area common on ped faces, with a pH of moderately acid to moderately alkaline (5.5-9.5). When exposed this soil forms a fine surface mulch, with a weak most consistency. Ironstone nodules and roots occur. |


**Legend**

Study area

**Geological Units**

- Pmtb - Branxton Formation
- Pmtm - Mulbring Siltstone
- Pmtu - Muree Sandstone
- Pto - Tomago Coal Measures
- Q_ab - Alluvial backswamp deposits
- Q_at - Alluvial terrace deposits
- Q_av - Alluvial valley deposits
- QH_hfr - Anthropogenic deposits-Fill on Quaternary deposits
- QP_at - Alluvial terrace deposits

**Figure 4 Geological units within the vicinity of the study area**

0 100 200 300 400 Metres

N

Scale: 1:10,000 @ A3

*Coordinate System: GDA 1994 NSW Lambert*

Matter: 33608,
Date: 24 August 2020,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F4_Geology.mxd

*Acknowledgements: Basemap © NSW Land and Property Information 2016*
*Geology © Colquhoun G.P, Phillips, G., Hughes, K.S, Deyssing L., Fitzherbert, J.A., & Troedson, A.L. 2015. New South Wales Zone 54/56 Seamless Geology, version 1 [Digital Dataset]. Geological Survey of New South Wales, Maitland*

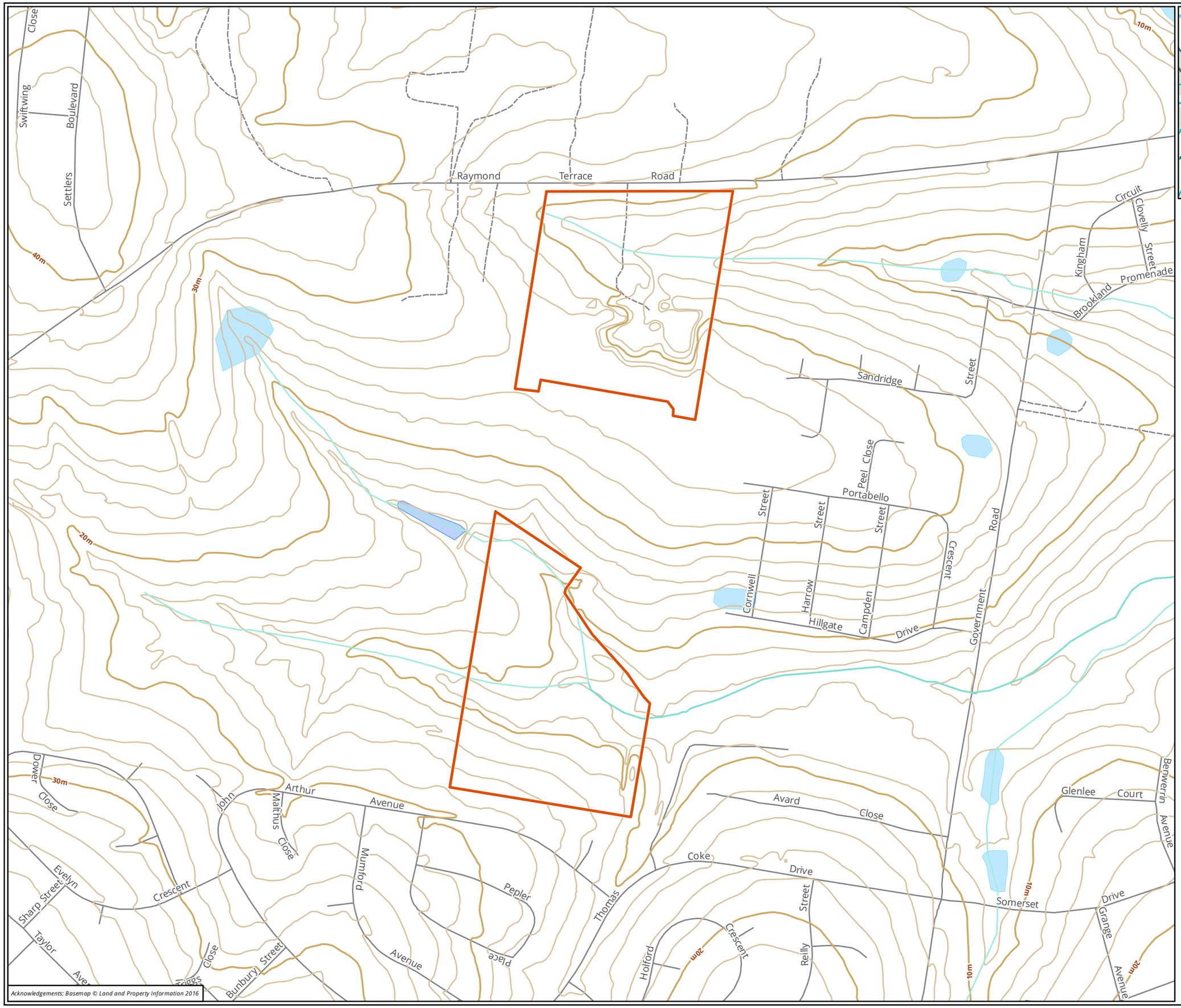
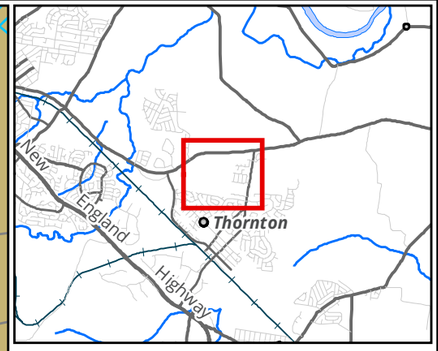



**Figure 5 Hydrology and topography in the vicinity of the study area**

Matter: 33608,
Date: 24 August 2020,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F5_Hydrology.mxd




**Legend**

Study area

**Soil Landscape units**

be - BERESFIELD

mf - MILLERS FOREST

**Figure 6 Soil landscapes in the vicinity of the study area**

0 50 100 150 200

Metres

N

Scale: 1:5,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: [matter]
Date: 24 August 2020,
Checked by: [Cons], Drawn by: [GIS], Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F6_Soils.mxd

*Acknowledgements: Basemap © Land and Property Information 2016; Soils: NSW Department of Environment and Climate Change (2008), Mitchell Landscapes (version 3)*

### 3.1.3 Landscape resources

The Beresfield soil landscape is generally vegetated by partially cleared tall open-forest vegetation comprising of Spotted Gum *Eucalyptus maculata*, Broad-leaved Ironbark *Eucalyptus fibrosa*, Grey Gum *Eucalyptus punctata*, Narrow-leaved Stringybark *Eucalyptus oblonga*, Thin-leaved Stringybark *Eucalyptus eugenioides* and Grey Ironbark *Eucalyptus paniculata*. Understorey vegetation also includes species such as Blackthorn *Bursaria spinosa*, Paperbark *Melaleuca nodosa*, and Wattle *Acacia falcata* (Matthei 1995, p.30).

The Millers Forest soil landscape is a cleared tall open forest containing Swamp Oak *Casuarina glauca*, Prickly-leaved Paperbark *Melaleuca stypheliodies*, Tuckeroo *Cupaniopsis anacardiodes*, and occasional Cabbage Gum *Eucalyptus amplifolia*. River Mangrove *Aegiceras corniculatum* occurs on river banks, and common reed *Phragmites australis* grows in shallow water (Matthei 1995, p.194).

Plant resources were used in a variety of ways. According to Rankmore (2013), the leaves, bark and gum from a range of eucalyptus trees were used in bush medicine practices. Gum was also used as an adhesive in the manufacturing of everyday items, such as spears, stone axes, stone chisels. Swamp Paperbark *Melaleuca ericifolia* and other paperbarks were also utilised for their leaves, and the bark was use in healing practices. Fibres were also 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 also used in the provision of shelter; with a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2010). Bark could also be used to manufacture shields, clothing, canoes, or dishes (Attenbrow 2010).

Terrestrial and freshwater animals would have been locally abundant and consistently present all year round. A variety of terrestrial native animals such as kangaroos *Macropodidae*, wallabies *Macropodida*, and possum *Phalangeriformes* species would have been an important food source. Animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For instance, skins could be used as clothing (possum skin cloaks), bone points as awls, and sinews could be used for sewing (Attenbrow 2010, p.109). Animal teeth, bones, and sinews could also be used in tool manufacture; and animal products, such as feathers, fish bones and teeth were used as personal decoration (Attenbrow 2010, p.109).

### 3.1.4 Land use history

Aerial imagery from 1954 shows the study area to be heavily vegetated with only a small portion of land along the southern end of the eastern boundary and within the north eastern corner of the study area having been cleared (Photo 2). Vegetation within the study area appears to be a continuation of vegetation to the north, interrupted at the northern boundary by Raymond Terrace Road. No rural dwellings or farm infrastructure can be seen within the surrounding areas. The lot adjacent to the western boundary has been partially cleared and the portion of land adjacent to south western boundary has been heavily cleared.

Aerial imagery from 1984 indicates that quarrying activities at the site of the large quarry had begun to occur within the study area, and some clearing activities had occurred to provide access to the site (Photo 3). The plot of land abutting the western boundary now contains a rural dwelling, and the regrowth of vegetation within the area which had been partially cleared has occurred. To the south, a large residential development has been constructed and surrounding lands to the north have also been heavily cleared and disturbed for agricultural purposes or residential development. The natural drainage line to the north has also been heavily dammed. Present day aerial imagery shows that the study area has remained mostly the same, however more recent disturbance from recreational use of the study area is not visible (Figure 2). Surrounding areas have been increasingly occupied by residential dwellings as the area became semi suburban, rather than remaining as a rural landscape.

**Photo 2 1954 aerial with study area outlined in red (Source: NSW Spatial Services)**

**Photo 3 1984 aerial with study area outlined in red (Source: NSW Spatial Services)**

## 3.2 Previous archaeological work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the region of NSW in the past 30 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

A number of Aboriginal cultural heritage investigations have been conducted for the Hunter Valley region. Models for predicting the location and type of Aboriginal sites with a general applicability to the Hunter Valley region and thus relevant to the study area have been formulated as a part of these investigations, and others from cultural heritage investigations for relatively large developments.

Dyall (1979) completed an environmental impact survey for a proposed aluminum smelting site in Farley, located approximately 14 kilometres north-west of the study area. The survey targeted creeklines and areas of eroded ground where sites were predicted to be found. Sandstone horizons along creeklines were also inspected for possible grinding grooves, and ridges checked for appropriate outcrops of sandstone. Remnant trees were also inspected for signs of scarring. The survey identified 18 artefact scatters and three grinding groove sites. The majority of the artefact scatters identified were located directly adjacent to creeklines.

Pam Dean Jones (1990) undertook an extensive and systematic survey of the Newcastle Bight (20 kilometres east of the study area), an area highly regarded for its archaeological significance and potential. The Newcastle Bight lies within the Port Stephens Shire (aside from its far southern end at Stockton). The purpose of the study 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 to 50 middens were also noted. Areas of greatest archaeological sensitivity within the Central Lowlands of the Hunter Valley were considered to be within the vicinity of creek flats, the banks of large rivers and creeks, and upon alluvial terraces. Minor watercourses were also considered to be areas of archaeological potential. Within the Coastal Margin and Plain landscape, middens were found to be 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 located 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.

Navin and 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 predicative model for site locations within the study area that would influence the cable route. Within the report the archaeological sensitivity of five landforms (Sandstone Ranges of the Sydney Basin, Central Lowlands of the Hunter Valley, Cumberland Plain, the Coastal Margin and Plain, Western Rangelands) were assessed, and a predicted site location criteria was provided for each region. Within the Lower Hunter Valley, sites were more likely to occur along the banks and flats of large creeklines, rivers or alluvial terraces. However, sites also had the potential to occur in association with minor water courses. It was also concluded that potential deposits commonly occurred within the

upper 20-40 centimetres, and slopes with a gradient greater than 10 degrees were less likely to contain sites.

Australian Museum Business Services (AMBS) (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.

McCardle Cultural Heritage (MCH) (2005) undertook a cultural heritage assessment of 15 hectares of land on the eastern side of Vincent Street Cessnock, NSW, (located 27 kilometres south-west of the study area) as part of a proposal to re-zone the area for mixed development. MCH surveyed the south-eastern portion of the site, as the area to the north and north-east was occupied by previous mining activities and highly disturbed. Predictive modeling suggested that the area had the potential to contain concentrations of archaeological material, and the most likely to occur site types were artefact scatters and isolated finds. During the survey no Aboriginal sites or objects were located due to low ground surface visibility and exposure.

RPS (2013) were engaged by York and Company Pty Ltd to provide a Aboriginal Due Diligence Assessment of four lots of land (Lot 11 DP 61751, Lot 1 DP 1119043, Lot 17 DP 263196 and Lot 18 9DP 263196) west of Ryans Road, Gillieston Heights, approximately 10 kilometres west of the study area, that were proposed for rezoning and development. One Aboriginal site was identified during the desktop assessment (AHIMS 38-4-1376) that comprised of an artefact scatter of three artefacts. It was also noted that the area would have been an ideal transit corridor for Aboriginal people in the past due to the topographical nature of the landscape and the proximity of Swamp Creek. Further assessment in the form of a site inspection was recommended prior to the lodgment of a Development Application.

Biosis (2017) was commissioned by Community Healthcare Trustees to undertake an ACHA and archaeological assessment for the proposed medical centre at 275 Vincent Street in Cessnock, NSW, located 27 kilometres south-west of the study area. Biosis had previously conducted a desktop assessment for the proposed development in 2016. Predictive modelling summarised that the region had a high potential for artefact scatters, isolated finds and Potential Archaeological Deposits (PAD) sites in well-drained topographies in close proximity to reliable sources of fresh water. AHIMS 37-6-1386 was identified within the study area during this primary assessment. AHIMS 37-6-1386 consists of an isolated artefact and associated PAD. The site was relocated during the survey effort and was assessed to hold the potential to contain archaeological deposits, particularly due to its position within a single landform unit. Test excavation were carried out and two artefacts were recovered.

### 3.2.2 Local overview

A number of Aboriginal cultural heritage investigations have been conducted within approximately 5 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.

Hamm (2003) was engaged by L & A Wells Property Pty Ltd to complete an archaeological risk assessment for lots 310 DP 835968, 311 DP 835968 and 8881 DP 776757, located directly east of the study area. Predictive modelling for the assessment concluded that sites were likely to be found

nearby or adjacent to wetlands or upon knolls with suitable outcrops of 'flakeable' material. Predictive modelling also suggested that site density would likely increase on slopes with a slope gradient of less than 5 degrees. Seventeen Aboriginal artefacts were identified as a result of the assessment within the main ridge/crest landform, in association with a small drainage line east of Woodberry Swamp. The assessment concluded that the study area possessed moderate sensitivity to contain archaeological deposits, and if disturbed by future development is was considered likely that archaeological deposits would be contained within parts of the ridge crest and creek margins.

Hamm (2004) completed an archaeological assessment of Lot 20 DP 10419 (inclusive of the current study area) for A.V. Randell. Site predictions for the region concluded that areas that were generally located in association with permanent watercourses, upon level sandy soils had the potential to contain sites. Sites also had the potential to be found in areas with an abundance of food resources, such as wetlands, and open forest near watercourses. During the survey, Hamm identified nine sites within the study area, including six artefact scatters and three isolated finds. The dominant raw material type was silcrete, with low counts of rhyolite tuff recorded within the assemblages. High levels of heat treatment were also noted. These sites were considered to be representative of low to medium level Aboriginal occupation within the Four Mile Creek/Woodberry Swamp catchment landscape. Hamm argues that the study area showed continual use of landscape features associated with drainage lines and open woodland. The assessment concluded that AHIMS 38-4-0927, 38-4-0928, 38-4-0929, 38-4-0934, 38-4-0935, 38-4-0937, 38-4-0938, and 38-4-0939 were of low archaeological potential, and AHIMS 38-4-0936 was of medium to high significance. The potential for archaeological deposits in areas associated with AHIMS 38-4-0936, and AHIMS 38-4-0937, 38-4-0938, and 38-4-0939, along the existing drainage lines in transects 3 and 4 of surveyed area was identified. It was recommended that a 30 metre buffer either side of the drainage line be conserved, and a 50-100 metre buffer prevent any disturbance to AHIMS 38-4-0936.

Biosis (2006) undertook an Aboriginal heritage and archaeological assessment for the Third Crossing of the Hunter River near Maitland, approximately 2.5 kilometres from the current study area. No Aboriginal archaeological sites were identified during the survey, although an area of low-moderate archaeological potential was identified. This area of low-moderate archaeological potential was a residual terrace landform determined to be generally disturbed by pastoral activities in the area.

South East Archaeology Pty Ltd (2006) undertook subsurface archaeological investigations for the proposed Somerset Park residential development extension at Thornton, located 850 metres east of the study area. A total of 66 test pits were excavated over three areas. Two hundred and sixty three artefacts were recovered, and silcrete was the most common raw material (85.55%), followed by tuff (12.55%), and quartz (1.90%). The results of the assessment concluded that the sites were likely to have been representative of transitory movement, or hunter gatherer sites.

Kuskie (2007) completed an Aboriginal heritage impact assessment for a 90 hectare property at Thornton North, approximately 1.5 kilometres south-west of the current study area, in advance of the proposed sale and subdivision of the property. Seven Aboriginal sites were identified during the survey, and comprised of silcrete flakes, flake fragments, cores and a core fragment. Higher artefact densities were noted within gentle ridge crest landforms in comparison to gentle spur crest and gentle slope landforms where sites were identified. Levels of disturbance and hence potential for archaeological deposits were identified as negligible, low, or moderate to high. A program of subsurface testing was recommended; however no record of the testing (if conducted) is available. This report was an updated version of an earlier (2004) report for the same area.

McCardle (2010) prepared an Aboriginal archaeological assessment for the proposed residential subdivision of Lot 20 DP 10419 (the current study area) at Thornton North. No new sites were identified during the survey effort. None of the nine sites previously recorded by Hamm (2004) within the study area were relocated. McCardle noted that the 2007 floods had severely affected the

likelihood of relocating previously recorded sites. The assessment concluded that due to the known effects of the flooding in 2007 and the evident high levels of erosion across the study area with the 'B' horizon exposed, the previously identified PADs have been greatly impacted upon and were considered by McCardle to be no longer identified as so. It was recommended that an AHIP to collect, incorporating the entire study area, would be required for the nine sites before any future work commenced.

Biosis (2018) completed an ACHA for 530 Raymond Terrace Road, Thornton, which is inclusive of the current study area that has been previously assessed by Hamm (2004), and McCardle (2010). Hamm (2004) identified nine sites within the study area, including six artefact scatters and three isolated finds. A search of the AHIMS register also indicated that Jones (1986) had recorded an artefact scatter of 50 artefacts (Parkwood, AHIMS 38-4-0124). However, a review of the site card for site 38-4-0124, confirmed that the site is not located within the study area. During the field investigations 11 previously unrecorded Aboriginal heritage sites were recorded within the study area. These sites consisted of one PAD site, five isolated finds, and five artefact scatters. Following the results of the field investigations, a test excavation program was undertaken. The test excavation program identified three low density artefact sites. The ACHA recommended that an AHIP be applied for sites AHIMS 38-4-1978, 38-4-1989, 38-4-1979, 38-4-1980, 38-4-1988, 38-4-1987, 38-4-1986, 38-4-1984, 38-4-1928, 38-4-1929, 38-4-1934, 38-4-1935. If impacts were unable to be avoided, further archaeological assessment would be required for AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939.

### 3.2.3 AHIMS site analysis

A search of the AHIMS database (Client Service ID: 529575) identified 81 Aboriginal archaeological sites within a 1.5 by 1.5 kilometre search area, centred on the study area. An updated search was undertaken on 3 May 2022 that identified 79 Aboriginal archaeological sites (Client Service ID: 679571). Eleven of these registered sites are located within the study area (Figure 7 and Table 5). AHIMS 38-4-0927 is located within the Stage 3 development area, whilst AHIMS 38-4-0939, 38-4-0938, 38-4-0937, 38-4-0936, 38-4-1989, 38-4-1976, 38-4-1983, 38-4-1982, 38-4-1981, and 38-4-1977 area located within the Stage 2 development area. The AHIMS register also indicated that Jones (1986) had recorded an artefact scatter of 50 artefacts within the study area (AHIMS 38-4-0124). However, a review of the site card for site 38-4-0124 confirmed that the site is not located within the study area. The site card indicated that AHIMS 38-4-0124 located within 300 metres of Raymond Terrace Road, on the right hand side of an improved third order drainage line

AHIMS search results are provided in Appendix 1. Table 6 provides an analysis of the frequencies of Aboriginal site types in the vicinity of the study area. The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied where notable discrepancies occurred.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area. 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 84 results presented in Table 6, compared to the 81 sites identified by the initial AHIMS search.

**Table 5 AHIMS sites recorded within the study area**

| Site no. | Site name | AHIMS number | Site description |
|---|---|---|---|
| **1** | Thornton North Site 1 - Lot 20 | 38-4-0927 | Artefact Scatter |
| **2** | Thornton North Site 6 - Lot 20 | 38-4-0936 | Artefact Scatter |
| **3** | Thornton North Site 7 - Lot 20 | 38-4-0937 | Isolated Find, PAD |
| **4** | Thornton North Site 8 - Lot 20 | 38-4-0938 | Artefact Scatter, PAD |
| **5** | Thornton North Site 9 - Lot 20 | 38-4-0939 | Isolated Find, PAD |
| **6** | RTRD02 | 38-4-1989 | Artefact Scatter |
| **7** | RTRD03 | 38-4-1976 | Artefact Scatter, PAD |
| **8** | RTRD11 | 38-4-1983 | Artefacts Scatter |
| **9** | RTRD12 | 38-4-1982 | Subsurface Deposit, Artefact Scatter |
| **10** | RTRD13 | 38-4-1981 | Subsurface Deposit, Artefact Scatter |
| **11** | RTRD14 | 38-4-1977 | Subsurface Deposit, Isolated Find |

**Table 6 AHIMS search results**

| Site type | Number of occurrences | Frequency (%) |
|---|---|---|
| **Artefact** | 79 | 94% |
| **PAD** | 5 | 6% |
| **Total** | **84** | **100%** |

A simple analysis of the Aboriginal cultural heritage sites registered within the 1.5 by 1.5 kilometre buffer of the study area indicates that artefacts are the most dominant site type representing 94% (n=79). This is followed by PAD which account for 6% (n=5) of Aboriginal site types within the proximity of the study area.

### 3.2.4 AHIMS sites previously recorded within the study area

As discussed above a total of 11 AHIMS sites have been previously recorded within the study area. The AHIMS register also indicated that Jones (1986) had recorded an artefact scatter of 50 artefacts within the study area (AHIMS 38-4-0124) (Table 7). However, a review of the site card for site 38-4-0124 confirmed that the site is not located within the study area. The site card indicated that AHIMS 38-4-0124 located within 300 metres of Raymond Terrace Road, on the right hand side of an improved third order drainage line

The study area has been previously assessed by Hamm (2004), McCardle (2010), and Biosis (2018). Hamm's (2004) assessment identified nine artefact sites, consisting of isolated finds and artefact scatters (Table 7) within the study area, and the Stage 1 development area. Hamm concluded that these sites showed a continued use of landscape features such as well-drained topographies and drainage lines (Hamm 2004). No further sites were recorded by McCardle in 2010, and the sites previously recorded by Hamm were not relocated. McCardle suggested this was due to the 2007

floods, which may have displaced surface artefacts identified by Hamm (McCardle Cultural Heritage 2010).

**Table 7 AHIMS sites previously recorded within the study area by Hamm (2004), McCardle (2010), Jones (1986)**

| Site no. | Site name | AHIMS number | Site description |
|---|---|---|---|
| **1** | Thornton North Site 1 - Lot 20 | 38-4-0927 | Artefact Scatter |
| **2** | Thornton North Site 2 - Lot 20 | 38-4-0928 | Isolated Find |
| **3** | Thornton North Site 3 - Lot 20 | 38-4-0929 | Artefact Scatter |
| **4** | Thornton North Site 4 - Lot 20 | 38-4-0934 | Artefact Scatter |
| **5** | Thornton North Site 5 - Lot 20 | 38-4-0935 | Artefact Scatter |
| **6** | Thornton North Site 6 - Lot 20 | 38-4-0936 | Artefact Scatter |
| **7** | Thornton North Site 7 - Lot 20 | 38-4-0937 | Isolated Find, PAD |
| **8** | Thornton North Site 8 - Lot 20 | 38-4-0938 | Artefact Scatter, PAD |
| **9** | Thornton North Site 9 - Lot 20 | 38-4-0939 | Isolated Find, PAD |
| **10** | Parkwood | 38-4-0124 | Artefact |

Biosis conducted a field survey and archaeological test excavations as part of the 2018 ACHA under the Code), which included the current study area and the Stage 1 development area. The survey was undertaken on Friday 25 May 2018 by Ashleigh Keevers-Eastman, Biosis Archaeologist, and Jason Brown, site officer from Mindaribba Local Aboriginal Land Council (LALC). The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed high.

During the field investigations 11 previously unrecorded Aboriginal heritage sites were recorded within the study area (Table 8). These sites consisted of one PAD site, five isolated finds, and five artefact scatters.

Following the results of the field investigations, a test excavation program was undertaken to determine whether subsurface archaeological deposits could be identified within undisturbed areas located within the vicinity of Aboriginal sites which had been identified during the survey, and as a result of the AHIMS search. Test excavations were conducted in accordance with Requirement 16a of the Code. The test excavation program identified three low density artefact scatters associated with AHIMS 38-4-1977, 38-4-1981, 38-4-1982 (Table 8).

**Table 8 Sites located and recorded during the 2018 survey and test excavations (Biosis 2018)**

| Site no. | Site name | AHIMS number | Site description |
|---|---|---|---|
| **1** | RTRD01 | 38-4-1978 | Artefact Scatter |
| **2** | RTRD02 | 38-4-1989 | Artefact Scatter |
| **3** | RTRD03 | 38-4-1976 | Artefact Scatter, PAD |
| **4** | RTRD04 | 38-4-1979 | Isolated Find |

| Site no. | Site name | AHIMS number | Site description |
|---|---|---|---|
| **5** | RTRD05 | 38-4-1980 | Isolated Find |
| **6** | RTRD06 | 38-4-1988 | Isolated Find |
| **7** | RTRD07 | 38-4-1987 | Isolated Find |
| **8** | RTRD08 | 38-4-1986 | Isolated Find |
| **9** | RTRD09 | 38-4-1985 | Artefact Scatter |
| **10** | RTRD10 | 38-4-1984 | Artefact Scatter |
| **11** | RTRD11 | 38-4-1983 | Artefact Scatter |
| **12** | RTRD12 | 38-4-1982 | Subsurface Deposit, Artefact Scatter |
| **13** | RTRD13 | 38-4-1981 | Subsurface Deposit, Artefact Scatter |
| **14** | RTRD14 | 38-4-1977 | Subsurface Deposit, Isolated Find |

The 2018 ACHA concluded that the proposed Stage 1 works would impact upon 12 Aboriginal sites. An AHIP was therefore obtained for AHIMS 38-4-1978, 38-4-1989, 38-4-1979, 38-4-1980, 38-4-1988, 38-4-1987, 38-4-1986, 38-4-1984, 38-4-1928, 38-4-1929, 38-4-1934, 38-4-1935 to allow for harm and community collection. AHIP #C0004256 was granted on 7 February 2019.

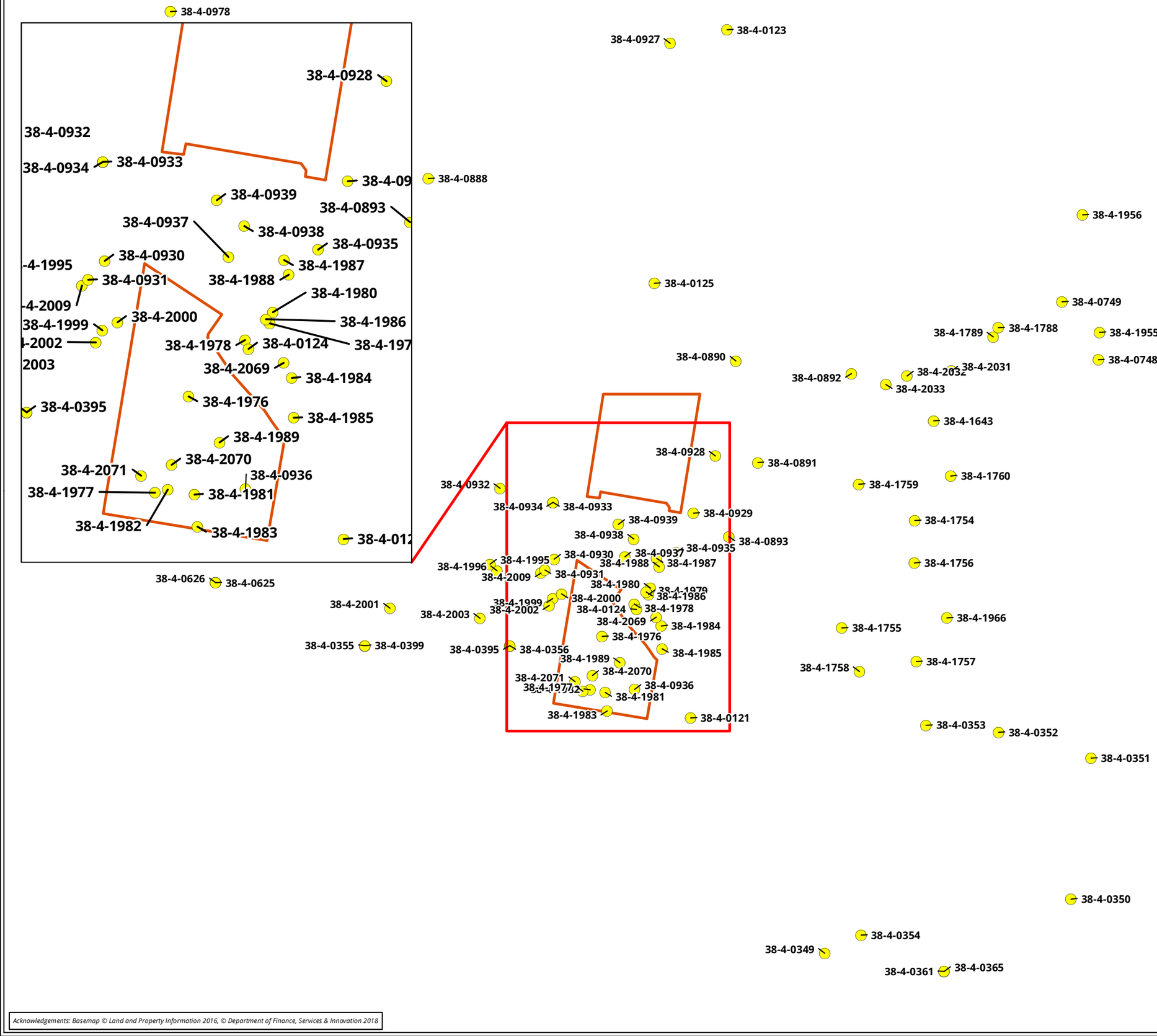
Community collection works were carried out over a period of three days between 22 to 26 February 2019 under AHIP #C0004256, by Eco Logical Pty Ltd (Eco Logical) with Mindaribba LALC in attendance (Eco Logical 2019). Eleven of the 12 AHIMS sites were collected (refer to Table 9), and are currently being held by Eco Logical, until reburial can be undertaken. AHIMS 38-4-1989 was not salvaged via community collection as it was determined on site by Eco Logical in consultation with RAPs that the site would not be harmed and therefore should remain intact until impacts were known (Eco Logical 2019).

**Table 9 AHIMS sites collected under AHIP #C0004256**

| Site no. | Name | AHIMS number | Site type | Status on AHIMS |
|---|---|---|---|---|
| **1** | RTRD01 | 38-4-1978 | Artefact Scatter | Destroyed |
| **2** | RTRD04 | 38-4-1979 | Isolated Find | Destroyed |
| **3** | RTRD05 | 38-4-1980 | Isolated Find | Destroyed |
| **4** | RTRD06 | 38-4-1988 | Isolated Find | Destroyed |
| **5** | RTRD07 | 38-4-1987 | Isolated Find | Destroyed |
| **6** | RTRD08 | 38-4-1986 | Isolated Find | Destroyed |
| **7** | RTRD10 | 38-4-1984 | Artefact Scatter | Destroyed |
| **8** | Thornton North Site 2 - Lot 20 | 38-4-0928 | Isolated Find | Destroyed |
| **9** | Thornton North Site 3 - Lot 20 | 38-4-0929 | Artefact Scatter | Destroyed |

| Site no. | Name | AHIMS number | Site type | Status on AHIMS |
|---|---|---|---|---|
| **10** | Thornton North Site 4 - Lot 20 | 38-4-0934 | Artefact Scatter | Valid |
| **11** | Thornton North Site 5 - Lot 20 | 38-4-0935 | Artefact Scatter | Destroyed |

AHIMS 38-4-0934 remains recorded as valid on the AHIMS database. Correspondence with Tyler Beebe from Eco Logical on 30 October 2020, confirmed that an Aboriginal Site Impact Recording Form was submitted to the AHIMS database to update the status to destroyed; however, an error must have occurred and the update has not been completed. The AHIMS database record for AHIMS 38-4-0934 will therefore need to be correctly updated with the correct status.





**Legend**

- Study area
- AHIMS records

**NOT TO BE MADE PUBLIC**

**Figure 7 AHIMS records near the study area**

0 100 200 300 400 500 N

Metres

Scale: 1:10,500 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

*Acknowledgements: Basemap © Land and Property Information 2016, © Department of Finance, Services & Innovation 2018*

Matter: 37375,
Date: 10 May 2022,
Checked by: AV, Drawn by: AM, Last edited by: amackegard
Location: P:\37300s\37375\Mapping\37375_F7_AHIMS_0522.mxd

## 3.3 Discussion

A review of the landscape context of the study area has determined that Aboriginal people would have likely utilised the landscape for resource gathering and intermittent occupation prior to European settlement, with artefact sites being the most common Aboriginal site type within the local region.

The study area consists of a partially disturbed well vegetated lot which contains two non-perennial watercourses. Landforms within the study area include a flat crest landform in the northern portion of the study area which slopes towards a first order drainage line located less than 150 metres north, and a footslope landform within the southern portion of the study area around which a second order drainage line diverges to form two first order water sources. The study area would have contained a wealth of resources that were associated with the Beresfield soil landscape, which dominates the soil profiles of the study area. The tall open forest vegetation characteristic of the Beresfield soil landscape would have been traditionally utilised for a variety of purposes such as the gathering of foods, medicines and a variety of raw materials for tools manufacturing and the construction of shelter. The presence of ephemeral watercourses would have also attracted a variety of fauna to the area, ranging from frogs, to birds and larger terrestrial animals that are abundant within the region.

Transitory occupation sites consisting of low density artefact sites are regionally considered to commonly occur in areas where resources were readily available, in association with wetlands, and open forest within the proximity of watercourses (Hamm 2003, Hamm 2004, South East Archaeology 2006). Previous studies also suggest that stone artefact sites, consisting of artefact scatters or isolated finds have the potential to be found in association with lower order drainage lines like those found within the study area (Dean-Jones 1990, Navin & Officer 1994), as lower density artefact sites. There is also potential for artefact density to increase in areas where the slope gradient was less than 5 degrees (Dean-Jones 1990, Navin & Officer 1994).

Hamm (2004) and McCardle (2010) have conducted previous archaeological investigations of the study area, with both concluding that the area had been partially disturbed. Hamm's (2004) assessment identified nine artefact sites, consisting of isolated finds and artefact scatters. Hamm concluded that these sites showed a continued use of landscape features such as well-drained topographies and drainage lines. No further sites were recorded by McCardle in 2010, and the sites previously recorded by Hamm were not relocated. McCardle suggested this was due to the 2007 floods, which may have displaced surface artefacts identified by Hamm in 2004 (McCardle Cultural Heritage 2010).

Biosis' 2018 assessment identified a further 11 surface artefact sites, and three subsurface archaeological deposits, which ranged from moderate to low density artefact scatters to isolated finds. The results of Biosis' 2018 archaeological field survey and test excavation program supported Hamm's interpretation of past Aboriginal land use within the study area. An analysis of the surface and subsurface assemblages identified evidence of heat treatment and higher levels of reduction within the surface assemblage. However, the results of the subsurface artefact analysis were not consistent with the characterisation of surface sites in this regard. This may be due to the small size of the subsurface assemblage.

Overall, the results of the artefact analysis concluded that the large number of cores recorded, evidence of heat treatment, and evidence of a highly reduced flaked assemblage indicated that the study area was likely utilised by Aboriginal people as a fauna and flora resource processing area (Odell et al. 2004, pp.126–127).

It is therefore considered likely that should further Aboriginal sites be identified within the study area, they will most likely consist of artefact sites associated with transitory occupation, due to the

abundance of food resources present within the study area, and the proximity of well-drained topographies along drainage lines where sites have been previously recorded. Artefact sites are likely to be found within areas of increased GSV and exposure within a disturbed context.

### 3.3.1 Predictive statement

A series of predictive statements 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.

These predictive statements are 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.

Based on this information, a predictive model has been developed, indicating the site types most likely to be encountered during the survey and subsequent sub-surface investigations across the present study area (Table 10). The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

**Table 10 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 within the study area in association with first order drainage lines located upon well drained topographies or on slopes with a gradient of less than 5 degrees. |
| **PADs** | Potential sub surface deposits of cultural material. | High: PADs have been previously recorded in the region across a wide range of landforms including alluvial flats, and within the study area. PAD sites have the potential to be present in undisturbed landforms and have been previously identified within the footslope landform located in the southern portion of the study area. |
| **Shell middens** | Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time. | Low: Shell midden sites have not been recorded within the study area or in the vicinity. There is a low potential of shell middens being present within the study area. |
| **Quarries** | Raw stone material procurement sites. | Low: There is no record of any quarries being |

| Site type | Site description | Potential |
|---|---|---|
| | | within or surrounding the study area. |
| **Modified trees** | Trees with cultural modifications | Moderate: The potential for mature native trees within the study to feature cultural scars is assessed as moderate. |
| **Axe grinding grooves** | Grooves created in stone platforms through ground stone tool manufacture. | Low: The geology of the study area lacks suitable horizontal sandstone rock outcrops for axe-grinding grooves. Therefore there is low potential for axe grinding grooves to occur in the study area. |
| **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 soil profiles associated with the study area are not commonly associated with burials. |
| **Rock shelters with art and / or deposit** | Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves. | Low: The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are not present in 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 sites and buildings associated with post-contact Aboriginal use. | Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one. |

| Site type | Site description | Potential |
|---|---|---|
| **Aboriginal places** | Aboriginal places may not contain any 'archaeological' indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings. | Low: There are currently no recorded Aboriginal historical associations for the study area. |

# 4 Archaeological survey

As part of Biosis' 2018 assessment, an archaeological survey of the study area and Stage 1 of the proposed development was undertaken on 25 May 2018. A supplementary survey of the study area was also undertaken on 26 August 2020 by Biosis Archaeologist Ashleigh Keevers-Eastman, and Cultural Sites Officer Jason Brown of Mindaribba LALC, as part of the current ACHA.

The field survey sampling strategy, methodology and a discussion of archaeological and supplementary survey 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.
- Attempt to re-identify Aboriginal archaeological sites and/or Aboriginal places previously identified in 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 those portions of the study area that had increased ground surface visibility and ground exposure across all landforms (Figure 8 and Figure 10). Areas where Aboriginal sites had been previously recorded within the study area were also revisited and assessed to ascertain the condition of the sites, and whether cultural material was still present.

### 4.2.2 Survey methods

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

- Aboriginal objects or sites present in the study area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform.
- 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 hand-held Global Positioning System (GPS) and the Map Grid of Australia (MGA) (94) coordinate system.

## 4.3 Archaeological survey results

The study area comprises of a plot of land that has been partially disturbed by quarrying and recreational activities. As part of Biosis' 2018 assessment, an archaeological survey of the study area and Stage 1 of the proposed development was undertaken on 25 May 2018 by Biosis Archaeologist Ashleigh Keevers-Eastman, and Cultural Sites Officer Jason Brown of Mindaribba LALC (Figure 8 and Figure 9).

A supplementary survey of the study area was also undertaken on 26 August 2020 by Biosis Archaeologist Ashleigh Keevers-Eastman, and Cultural Sites Officer Jason Brown of Mindaribba LALC, as part of the current ACHA (Figure 10 and Figure 11).

Each of the surveys consisted of one meandering transect, which was walked by two surveyors spaced at two metres apart (Figure 8 and Figure 10). This follows the methodology set out by Burke and Smith (2004, p.65) which states that a single person can only effectively visually survey an area of two linear metres.

Both survey efforts were unable to successfully access the northern most portion of the study area due to the presence of dense vegetation which made it inaccessible. The northern most portion of the study area is considered to have low archaeological potential due to the steep nature of the slope landform upon which it is situated, as this landform is not commonly associated with the presence of Aboriginal sites (Navin & Officer 1994, Hamm 2003).

A summary of the results of each of the surveys carried out by Biosis is provided below.

### 4.3.1 Results of Biosis' 2018 archaeological survey

Biosis' 2018 survey targeted areas of exposure across all landforms and attempted to relocate AHIMS sites which had been previously recorded within the study area (Table 5 and Figure 7). No visible cultural material associated with AHIMS 38-4-0927, 38-4-0928, 38-4-0929, 38-4-0934, 38-4-0935, 38-4-0936, 38-4-0937, 38-4-0938, 38-4-0939, which were previously recorded by Hamm (2004) was noted during the survey. The absence of these sites was attributed to high levels of disturbance within the study area that may have displaced these items. It is also hypothesised that AHIMS 38-4-0927 located on the edge of the large quarry within the Stage 3 development area may have been further disturbed and displaced by grading or recreational activities within this portion of the study area.

The overall effectiveness of the survey for examining the ground for Aboriginal sites was deemed high. This was attributed to moderate to high levels of disturbance noted across large portions of the study area, with high levels of GSV (40-100%) and exposure (20-50%) assisting surveyors in the identification of Aboriginal sites. The archaeological survey resulted in the identification of a total of 11 previously unrecorded Aboriginal sites, of which three are located within the current study area (AHIMS 38-4-1989, 38-4-1976, and 38-4-1983). These sites comprised of five isolated finds and six

artefact scatters (see Table 8 and Figure 9). Sites were located upon access tracks and areas of exposure that had been disturbed by recreational and quarrying activities within the study area.

The results of the survey effort indicated that undisturbed areas nearby Aboriginal sites identified within the study area had moderate to high potential to contain archaeological deposits (Figure 9). Though no artefacts were identified upon the crest and simple slope landforms within the Stage 2 development area, these landforms were assessed as possessing moderate potential to contain archaeological deposits due to their proximity to a drainage line and their association with site distribution patterns within the region.

Undisturbed areas within the footslope landform upon which AHIMS 38-4-0937, 38-4-0938, 38-4-0939, recorded by Hamm (2004), and RTRD03 (AHIMS 38-4-1976) recorded by Biosis (2018) also has the potential to contain archaeological deposits.

A detailed summary of the archaeological survey results is provided in Biosis' 2018 AR provided in Appendix 2.

### 4.3.2 Results of Biosis' 2020 supplementary survey

The aim of the supplementary survey was to locate Aboriginal sites which had previously been recorded within the study area, and identify any Aboriginal sites which may not have been previously identified by prior assessments (Figure 10).

Sites previously recorded within the study area were revisited as part of the supplementary survey (Figure 10). Within the northern portion of the study area proposed to be developed as part of Stage 3, Biosis attempted to locate AHIMS 38-4-0927. The site was unable to be located by the surveyors despite high levels of surface visibility and exposure (80-100%) within this portion of the study area (Photo 4 and Photo 5). It is hypothesised that the site has been destroyed/displaced by past recreational and erosional activities within the portion of the study area. Artefacts recorded by Hamm (2004) along the large quarry's edge may have been washed/pushed into the quarry. Surveyors were unable to investigate the base of the quarry due to safety concerns that prevented them from accessing this portion of the site.

Increased levels of ground surface visibility were noted to the west of the large quarry where survey efforts previously undertaken in 2018 had recorded high levels of regrowth vegetation and weed species such as Lantana *Lantana camara* (Photo 6). A walk over of this portion of the study area did not identify any Aboriginal sites despite increased levels of ground surface visibility (40%).

Within the southern portion of the study area, surveyors were able to locate material evidence of AHIMS 38-4-1989, and 38-4-1976 previously recorded by Biosis in 2018 (Photo 7 and Photo 8). The footslope landform situated between the diverging drainage lines within the Stage 2 development area, remains an area of high archaeological potential due to the presence of intact soils within this portion of the study area, and the presence of artefacts eroding out of the grounds surface.

Surveyors were also able to locate AHIMS 38-4-0936, previously recorded by Hamm in 2004 and assess its visible site extent (Photo 9). The site is situated within a highly disturbed access track, and surveyors identified nine artefacts across an area of approximately 32 by 16 metres. No areas of archaeological potential were identified in association with the site extent, however, there is potential for further evidence of cultural material remains to be identified within the vicinity of this visible site extent.

The supplementary survey resulted in the identification of an additional two isolated finds (RTRD16 AHIMS 38-4-2070, and RTRD17 AHIMS 38-4-2071) within small ground surface exposures, along an access track within the southern portion of the study area. An isolated artefact was also identified outside of the study area, within the Stage 1 development area within a small surface exposure

(RTRD15 AHIMS 38-4-2069). The identification of these sites was attributed to increased ground surface visibility and exposure within the study area from continued recreational use of access tracks and the erosion of soils within the study area where vegetation had been removed (Photo 10).

**Table 11 Survey coverage**

| Survey unit | Landform | Survey unit area (m²) | Visibility (%) | Exposure (%) | Effective coverage area (m²) | Effective coverage (%) |
|---|---|---|---|---|---|---|
| **1** | Disturbed | 21986.18 | 80-100 | 80-100 | 57.64 | 0.26 |
| **1** | Simple slope | 84446.29 | 80-100 | 80-100 | 2470.84 | 2.93 |
| **1** | Crest | 21337.79 | 80-100 | 80-100 | 1679.92 | 7.87 |
| **1** | Footslope | 25902.60 | 80-100 | 80-100 | 463.62 | 1.79 |

**Table 12 Landform summary**

| Landform | Landform area (m²) | Area effectively surveyed (m²) | Landform effectively surveyed (%) | No. of Aboriginal sites | No. of artefacts or features |
|---|---|---|---|---|---|
| **Disturbed** | 21986.18 | 57.64 | 0.26 | 1 | 1 |
| **Simple slope** | 84446.29 | 2470.84 | 2.93 | 16 | 16 |
| **Crest** | 21337.79 | 1679.92 | 7.87 | 4 | 4 |
| **Footslope** | 25902.60 | 463.62 | 1.79 | 6 | 6 |

**Photo 4** **East facing view of Stage 3 development area, showing highly disturbed context, and high levels of GSV and exposure**

**Photo 5** **North facing view of Stage 3 development area, showing highly disturbed context, and high levels of GSV and exposure**

**Photo 6** **East facing view of area west of the quarry site, showing higher levels of GSV and exposure**

**Photo 7** **East facing view of area where AHIMS 38-4-1976 is was located, showing intact deposits adjacent to access track**

**Photo 8** **North-east facing view of area where AHIMS 38-4-1989 is located**

**Photo 9** **South-west facing view of Stage 2 development area where AHIMS 38-4-0936 is located**

**Photo 10** **South facing view of Stage 2 area, showing high level of GSV and exposure on access track**


**Legend**

- Study area
- Lot
- Survey track
- AHIMS records
- Stage 1

**Landforms**

- Crest
- Disturbed
- Footslope
- Simple slope

**Figure 8 Biosis 2018 survey coverage**

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 18 December 2020,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F8_2018Coverage.mxd


**Legend**

- Study area
- Stage 1
- PAD
- Site extent
- AHIMS records

**Archaeological potential**

- High
- Moderate
- Low

**Find**

- Artefact Scatter
- Isolated find

**Figure 9 Results of Biosis' 2018 survey**

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 25 February 2021,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F9_2018Results.mxd


**Legend**

- Study area
- Lot
- No go zone
- AHIMS records
- Survey tracks

**Archaeological potential**

- High
- Moderate
- Low

# Figure 10 Biosis' 2020 survey coverage

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 24 February 2021,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F10_2020Coverage.mxd

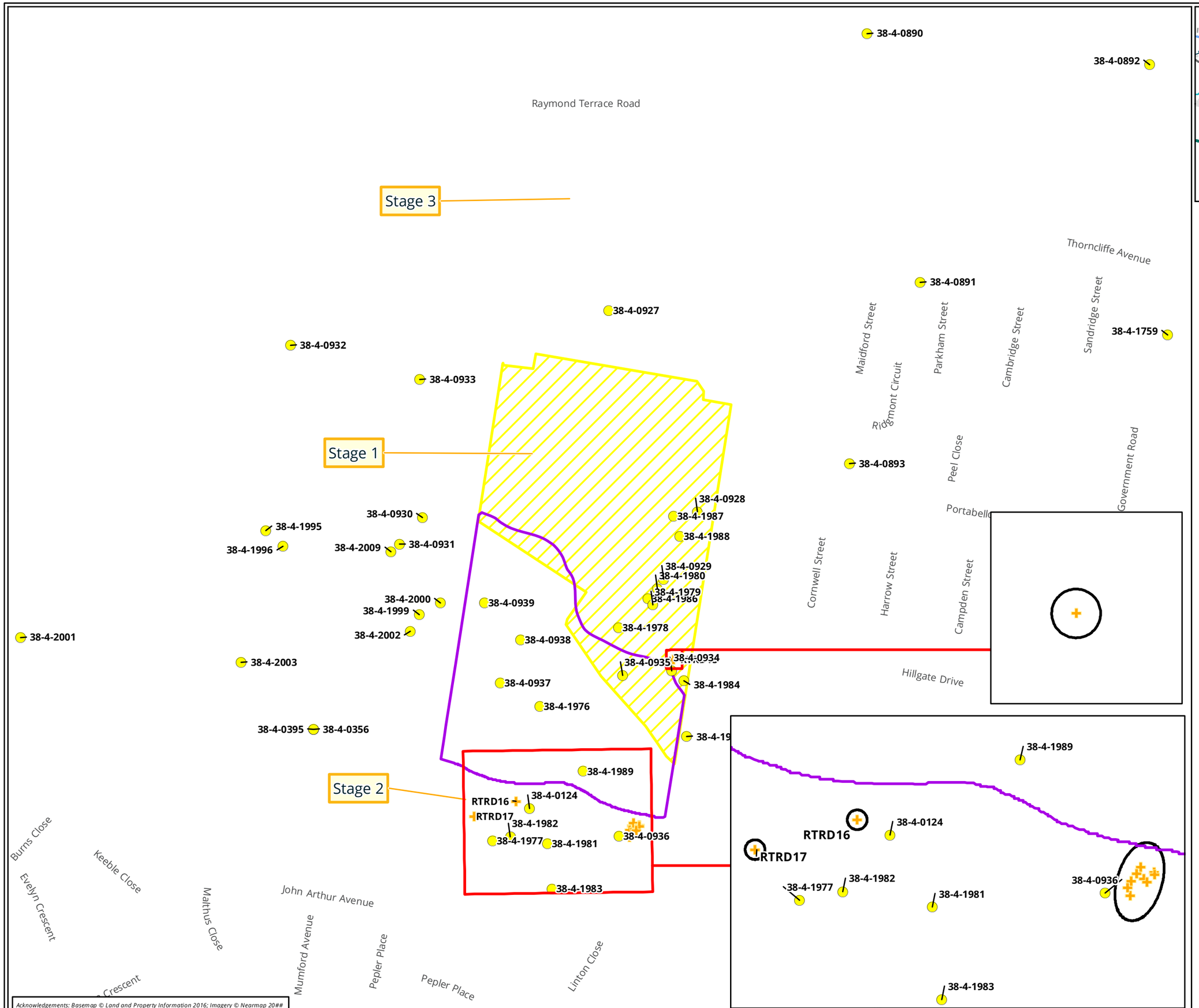



**Figure 11 Results of Biosis' 2020 survey**

Matter: 33608,
Date: 25 February 2021,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F11_2020Results.mxd

# 5 Test excavations

In 2018, a program of test excavations was undertaken within the study area following the results of Biosis 2018 archaeological survey. The survey identified areas of moderate and high archaeological potential within the study area, which would require further investigation (Figure 12) (Biosis 2018).

The objectives of the sub-surface investigation were to characterise the extent, nature and archaeological (scientific) value of cultural heritage within the following areas:

- Area of high/moderate archaeological potential where little to no disturbance has occurred.
- Undisturbed areas adjacent to archaeological sites recorded within the study area.
- The flat crest landform within the northern portion of the study area.

Test excavations were conducted in accordance with Requirement 16a of the Code. A total of 37 test pits were excavated across 19 transects, at 10 – 20 metre intervals. No subsurface testing was conducted within the E3 Zone located within the study area, where AHIMS 38-4-1976 was recorded in 2018, and is inclusive of AHIMS sites 38-4-0939, 38-4-0938, 38-4-0937, previously recorded by Hamm in 2004 as these sites were not to be impacted by the proposed development (Hamm 2004, Biosis 2018).

Of the 37 test pits excavated, only four contained artefacts (Figure 12), which were identified across three site extents (AHIMS 38-4-1977, 38-4-1981, 38-4-1982). No cultural deposits were identified within the flat crest landform upon which AHIMS 38-4-0927 was located, within the northern portion of the study area (Figure 12). Access to the northern-most portion of the study area and the associated drainage line was limited due to high levels of regrowth vegetation and Lantana observed (Biosis 2018).

Subsurface testing was also conducted along the simple slopes of the area proposed for Stage 1 of the subdivision (Figure 3), where a majority of sites located within the study area had been identified previously. No artefacts were retrieved during the testing of this portion of the study area.

The simple slopes within the southern-most extent of the study area were also excavated to determine whether subsurface archaeological deposits were present. Twenty-one artefacts were recovered from Transect 12, which was situated across a gentle slope within the south-western portion of the study area. Of the 21 artefacts recovered, two were retrieved from Spit 1 (0-50 millimetres) of Test pit 1 which was excavated to a depth of 200 millimetres. Artefacts identified within Test pit 1 consisted of one red silcrete flake and one red silcrete broken flake.

Approximately 40 metres away from Test pit 1, was Test pit 3. Test pit 3 was excavated to a maximum depth of 200 millimetres, and contained 14 red silcrete artefacts consisting of angular fragments. A majority of these were located within Spit 1 (0-100 millimetres) of the test pit. A second test pit was then opened up adjacent to Test pit 3, known as 3a. Test pit 3a was excavated to a maximum depth of 200 millimetres and five red silcrete angular fragments were retrieved from Spit 2 (100-200 millimetres). This lack of artefacts within Spit 1 (0-100 millimetres) of Test pit 3a, may suggest that the area has undergone some bioturbation.

North of Transect 12, upon the same simple slope, a single isolated find consisting of a white silcrete core was retrieved from Spit 1 (0-100 millimetres) of Test pit 3, Transect 13. Test pit 3 was excavated to a depth of 200 millimetres, and is consistent with other test pit deposits within its general vicinity.

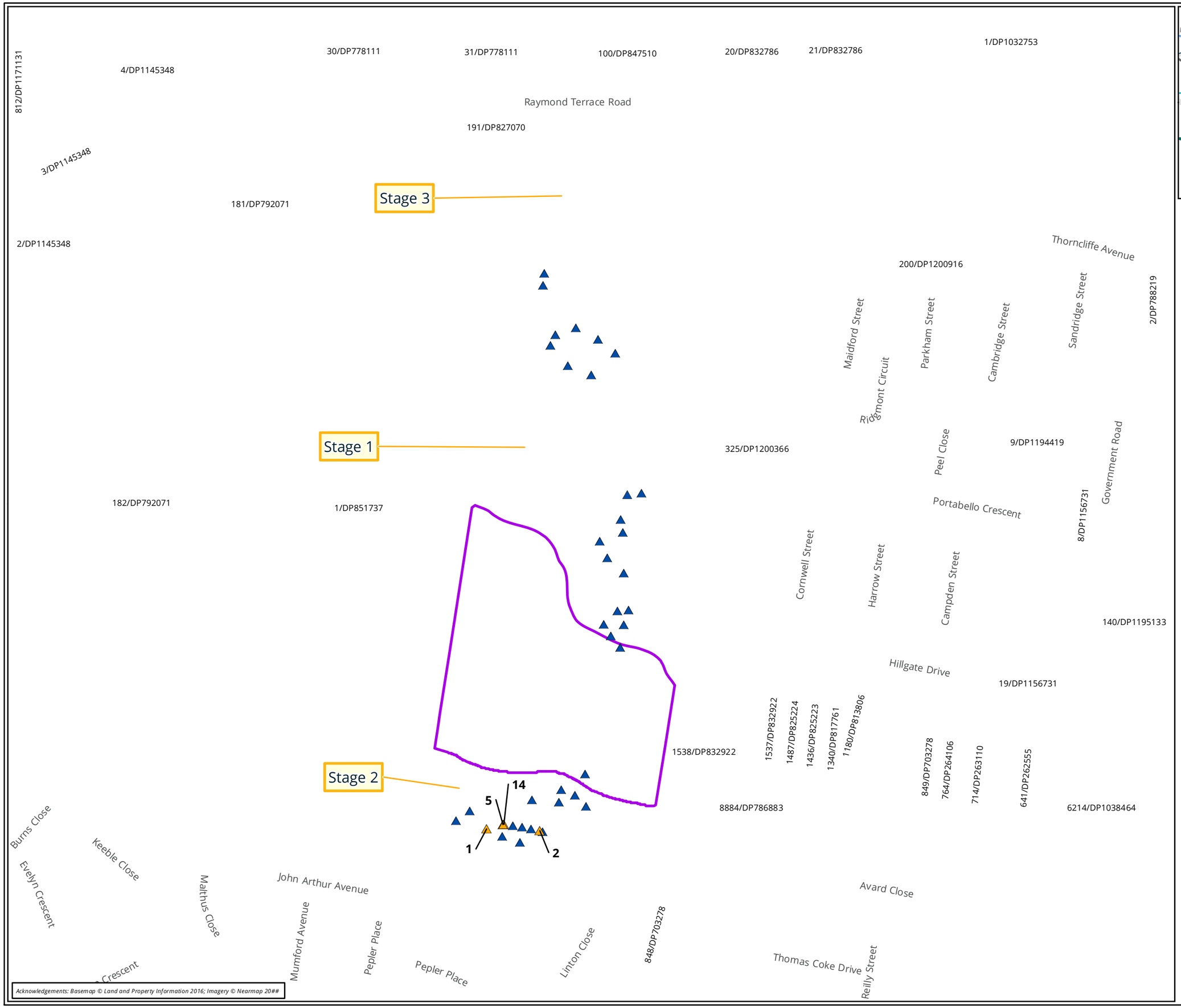
Overall, the results of the testing program suggest that the potential for subsurface cultural deposits within the study area is low (Figure 12). The subsurface deposits identified within the southernmost extent of the study area consisted of poor quality silcrete artefact assemblages, which were not consistent with surface artefacts identified within the study area (Biosis 2018). This can be attributed to the high levels of disturbance

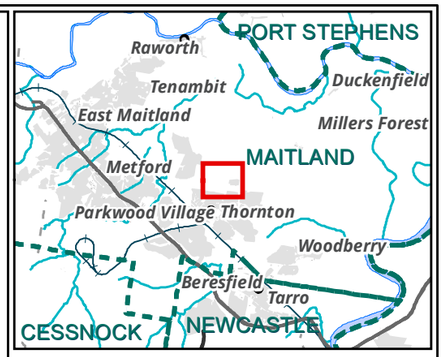
from quarrying, recreational activities and erosion (flooding) within the study area that have heavily disturbed sub-surface deposits (McCardle Cultural Heritage 2010, Biosis 2018).

As part of Biosis' 2018 assessment, an analysis of the subsurface and surface artefacts was undertaken (Biosis 2018). Whilst the artefact assemblage sample size is considered to be generally small, a number of patterns were discernable during this analysis. The majority of artefacts identified within the study area are surface finds comprising 73.5% of the total assemblage. The remaining 26.5% were identified during the subsurface test excavations within the study area. Of the surface artefacts identified within the assemblage the majority consisted of complete flakes at 44% (n=21), and cores at 33% (n=20). This is contrasted by the artefact type composition of the subsurface assemblage which was dominated by angular fragments at 85% (n=19). It is likely that erosional processes and previous man-made disturbances have resulted in the exposure of artefacts to the surface, and disturbances to subsurface deposits.

The large number of cores recorded showed evidence of heat treatment, suggesting a highly reduced flaked assemblage. According to Odell this indicates that the area was likely utilised by Aboriginal people as a fauna and flora resource processing area (Odell et al. 2004, pp.126–127).

A detailed summary of the results of the test excavation program are provided within Biosis' 2018 ACHA and AR (Appendix 2).




**Legend**

- Study area
- Lot
- PAD - no-go-zone
- E3 zone

**Archaeological potential**

- High
- Low

**Test pit**

- Artefact (count)
- No artefact

**Figure 12 Results of test excavations completed by Biosis in 2018**

0 30 60 90 120 150

Metres

N

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

Matter: 33608,
Date: 25 February 2021,
Checked by: AV, Drawn by: SSK, Last edited by: skumar
Location: P:\33600s\33608\Mapping\33608_F12_2018Excavation.mxd

# 6 Aboriginal sites identified within the study area

As discussed above, the study area has been previously assessed by Hamm, McCardle, and Biosis (Hamm 2004, McCardle Cultural Heritage 2010, Biosis 2018), resulting in the identification of 11 Aboriginal sites (refer to Section 6.1 and 6.2, and Figure 13). Biosis 2020 supplementary survey has also identified an additional three Aboriginal sites within the study area (refer to Section 6.3, and Figure 13). A summary of Aboriginal sites within the study area has therefore been provided below.

## 6.1 Aboriginal sites identified by Hamm's 2004 assessment

Hamm's survey of the study area in 2004 resulted in the identification of five Aboriginal sites within the study area (Figure 13).

### 6.1.1 Thornton North Site 1 - Lot 20 (AHIMS 38-4-0927) (Stage 3 area)

This site consisted of an artefact scatter of three to six artefacts (discrepancy between Hamm's report and AHIMS site card), located upon the edge/crest of a large quarry within the northern portion of the study area. The site is situated within an area of 20 metres by 30 metres upon an access track according to the AHIMS site card, however Hamm's report encompasses an 4 metre squared area (Hamm 2004). This site was recorded as being in a poor condition, and was assessed as having low archaeological significance due to the conditions and contents of the site.

This site has been unable to be located by Biosis' survey efforts. It is hypothesised that the site has been destroyed by recreational and erosional activities within the study area.

### 6.1.2 Thornton North Site 6 - Lot 20 (AHIMS 38-4-0936) (Stage 2 area)

This site consisted of an artefact scatter of 40 artefacts, located upon a vehicle track within the southern portion of the study area. The site is situated within an area of 80.5 metres by 15.5 metres within a simple slope landform. Hamm also recommended that a 50 – 100 metre conservation buffer zone be placed around the site. This site was not relocated by McCardle in 2010 (McCardle Cultural Heritage 2010). McCardle believed the site was part of a spoil heap from the John Arthur development and drainage works from detention basin (McCardle Cultural Heritage 2010). The site was recorded in a fair-poor condition with moderate to high significance.

Biosis was able to locate the site during the supplementary field investigation undertaken on 26 August 2020. A total of nine artefacts were identified within the visible site extent. The visible site extent covers an area of approximately 32 metres by 16 metres. There is potential for further evidence of cultural material remains to be identified within the vicinity of this visible site extent which are associated with AHIMS 38-4-0936.

Test excavations carried out by Biosis in 2018 adjacent to this site did not identify any subsurface archaeological deposits (Biosis 2018).

### 6.1.3 Thornton North Site 7 - Lot 20 (AHIMS 38-4-0937) (Stage 2 area)

This site consisted of an isolated find, located along the southern bank of a drainage line on an access track within the E3 zone. The site covers an area of 1 metre by 1 metre. PAD was identified in relation to this site. Hamm also recommended that a 30 metre conservation buffer zone be implemented to protect the site from future disturbance. The site was recorded in a poor condition.

This site has been unable to be located by Biosis' survey efforts. It is hypothesised that the site has been destroyed by recreational activities within the study area or has been covered by regrowth vegetation.

### 6.1.4 Thornton North Site 8 - Lot 20 (AHIMS 38-4-0938) (Stage 2 area)

This site consisted of an artefact scatter of two artefacts, located upon an ants nest on an eroded vehicle track overlooking a drainage line within the E3 zone. The site covers an area of 7 metres by 2 metres. PADs have been recorded as within the vicinity of this site. Hamm also recommended that a 30 metre conservation buffer zone be implemented to protect the site from future disturbance.

This site has been unable to be located by Biosis' survey efforts. It is hypothesised that the site has been destroyed by recreational activities within the study area or has been covered by regrowth vegetation.

### 6.1.5 Thornton North Site 9 - Lot 20 (AHIMS 38-4-0939) (Stage 2 area)

This site consisted of an artefact scatter of two artefacts, located along the southern bank of a drainage line, on an eroded vehicle track within the E3 Environmental management land zone. The site covers an area of 1 metre by 1 metre. PADs were recorded within the vicinity of this site. Hamm also recommended that a 30 metre conservation buffer zone be implemented to protect the site from future disturbance.

This site has been unable to be located by Biosis' survey efforts. It is hypothesised that the site has been destroyed by recreational activities within the study area or has been covered by regrowth vegetation.

## 6.2 Aboriginal sites identified by Biosis' 2018 assessment

A total of three sites were located during the survey effort undertaken by Biosis' in 2018, and a further three were identified during test excavations (Figure 13). A detailed description of these sites in provided within Biosis' 2018 ACHA and AR (Appendix 2).

### 6.2.1 RTRD02 (AHIMS 38-4-1989) (Stage 2 area)

RTRD02 is an artefact scatter of more than 10 artefacts of silcrete, chert and mudstone situated within a highly disturbed context in an E3 zone. Artefacts within this site are found upon and in close proximity to soil mounds within the site extent. This site is located approximately 20 metres south of the southern branch of the diverging drainage line located within the study area. The site covers an area of approximately 30 metres by 40 metres.

### 6.2.2 RTRD03 (AHIMS 38-4-1976) (Stage 2 area)

RTRD03 is an artefact scatter and PAD site consisting of more than 30 artefacts of silcrete, chert and mudstone situated on an access track which transverses a footslope landform within an E3 zone. Artefacts within this site are found upon and eroding out of the access track. Undisturbed areas within the same landform and adjacent to the access track have the potential to contain subsurface deposits. The site covers an area of approximately 170 metres by 180 metres.

### 6.2.3 RTRD11 (AHIMS 38-4-1983) (Stage 2 area)

RTRD11 is an artefact scatter of 3 artefacts of silcrete and mudstone located within a disturbed simple slope landform on an access track along the southern boundary of the study area. This site is located approximately 180 metres east of the northern branch of the diverging drainage line located within the study area. The site covers an area of approximately 1 metre by 1 metre. This site is within a heavily disturbed context and may be part of an eroded soil heap.

### 6.2.4 RTRD12 (AHIMS 38-4-1982) (Stage 2 area)

RTRD012 consists of a low density subsurface artefact scatter consisting of 19 artefacts. These artefacts were of poor quality silcrete material consisting of angular fragments. The site consists of two adjoining 50 centimetre by 50 centimetre test pits, located within Transect 12. Both test pits were excavated to a depth of

200 millimetres. Fourteen artefacts were recovered from Test pit 3, and five were recovered from Test pit 3a. A majority of the artefacts from Test pit 3 were from Spit 1 (0-100 millimetres). All artefacts from Test Pit 3a were from Spit 2 (100-200 millimetres), suggesting the soils have been disturbed by some bioturbation.

### 6.2.5 RTRD13 (AHIMS 38-4-1981) (Stage 2 area)

RTRD013 consists of a low density subsurface artefact scatter consisting of 2 artefacts. These artefacts were of poor quality silcrete material and consisted of a complete flake and a broken flake. The site consists of one 50 centimetre by 50 centimetre test pit, located within Transect 12. Test pit 1 was excavated to a depth of 200 millimetres. The artefacts came from Spit 1 (0-50 millimetres).

### 6.2.6 RTRD14 (AHIMS 38-4-1977) (Stage 2 area)

RTRD012 consists of a subsurface deposit consisting of an isolated silcrete core. This artefact was of a fine white silcrete and was not consistent with artefacts recovered from site RTRD12, and RTRD13.The site consists of Test pit 3, a single 50 centimetre by 50 centimetre test pit, located within Transect 13. The test pit was excavated to a depth of 200 millimetres. The core was recovered from Spit 1 (0-100 millimetres).

## 6.3 Aboriginal sites identified by Biosis' 2020 assessment

A total of three sites were located during the supplementary survey undertaken by Biosis in 2020 (Figure 13).

### 6.3.1 RTRD15 (AHIMS 38-4-2069) (Stage 1 area)

#### Site location

RTRD15 is situated approximately 637 metres south of Raymond Terrace Road, Thornton, and within 100 metres of the southern branch of the diverging drainage line located within the southern portion of the study area (Table 13 and Figure 13). This site is not located within the current study area.

**Table 13 Grid reference site RTRD015 (GDA94/MGA56) (approximate centre point of site)**

| Easting (mE) | Northing (mN) |
|---|---|
| 373010 | 6373468 |

#### Site environment

RTRD15 is located within an exposure in the Stage 1 development area. The site extent has been disturbed and eroded by erosional activities within the study area. The weathering of soils and disturbance within the site extent has exposed the site as a result of the clearance of vegetation and land use. The size of the artefact suggests that it is unlikely to be *in-situ* and may have washed down from further up the gentle slope landform in which it is situated. The site is in a poor condition.

#### Site description

The site consists of an isolated multidirectional mudstone core measuring 35 millimetres in length and 40 millimetres in width, and 25 millimetres in thickness.


**Photo 11 Detailed photograph of RTRD15, showing showing isolated mudstone core**

### 6.3.2 RTRD16 (AHIMS 38-4-2070) (Stage 2 area)

#### Site location

RTRD16 is situated approximately 805 metres south of Raymond Terrace Road, Thornton, and within 65 metres of the northern branch of the diverging drainage line located within the southern portion of the study area (Table 14 and Figure 13).

**Table 14 Grid reference site RTRD016 (GDA94/MGA56) (approximate centre point of site)**

| Easting (mE) | Northing (mN) |
|---|---|
| 372833 | 6373307 |

#### Site environment

RTRD16 is located within an exposure along an access track in the Stage 2 development area. The site extent has been disturbed and eroded by recent recreational activities within the study area. The weathering of soils and disturbance within the site extent has exposed the site as a result of the clearance of vegetation. The size of the artefact suggests that the artefact may be *in-situ* and is unlikely to have been washed down from further up the gentle slope landform in which it is situated. The site is in a poor condition.

#### Site description

The site consists of an isolated heat treated silcrete core/core fragment measuring approximately 100 millimetres in length and 60 millimetres in width. Complete measurements were unable to be taken as the artefact was embedded within the grounds surface and could not be removed.

**Photo 12 North facing view of RTRD16, showing high level of GSV and exposure on access track**

### 6.3.3 RTRD17 (AHIMS 38-4-2071) (Stage 2 area)

#### Site location

RTRD17 is situated approximately 815 metres south of Raymond Terrace Road, Thornton, and within 86 metres of the northern branch of the diverging drainage line located within the southern portion of the study area (Table 15 and Figure 13).

**Table 15 Grid reference site RTRD017 (GDA94/MGA56) (approximate centre point of site)**

| Easting (mE) | Northing (mN) |
|---|---|
| 372785 | 6373290 |

#### Site environment

RTRD17 is located within an exposure along an access track in the Stage 2 development area. The site extent has been disturbed and eroded by recent recreational activities within the study area. The weathering of soils and disturbance within the site extent has exposed the site as a result of the clearance of vegetation. The size of the artefact suggests that the artefact may be *in-situ* and is unlikely to have been washed down from further up the gentle slope landform in which it is situated. The site is in a poor condition.

#### Site description

The site consists of an isolated heat treated silcrete core/core fragment measuring approximately 63 millimetres in length and 64 millimetres in width. Compete measurements were unable to be taken as the artefact was embedded within the grounds surface and could not be removed.

**Photo 13 South facing view of location of RTRD17, showing high level of GSV and exposure on access track**

## 6.4 Discussion of results

As discussed above, a review of the landscape context of the study area and the results of archaeological assessments within the local region has determined that Aboriginal people would have likely utilised the study area for resource gathering and intermittent occupation prior to European settlement.

Background research suggests that transitory occupation sites consisting of low density artefact sites are regionally considered to commonly occur in areas where resources are readily available, in association with wetlands, and open forest within the proximity of watercourses (Hamm 2003, Hamm 2004, South East Archaeology 2006). Previous studies also suggest that stone artefact sites, consisting of artefact scatters or isolated finds have the potential to be found in association with lower order drainage lines like those found within the study area as lower density artefact sites, with artefact density having the potential to increase in areas where the slope gradient is less than 5 degrees (Dean-Jones 1990, Navin & Officer 1994).

The study area has undergone a number of prior assessments which have resulted in the identification of a total of 11 previously recorded Aboriginal sites, consisting of isolated finds and low to moderate density artefact scatters. The proliferation of these sites and an analysis of their scientific nature and position within the local landscape suggests that the study area has been continuously used for resource gathering and intermittent occupation (Hamm 2004, Biosis 2018). Aboriginal sites previously identified by Hamm (2004) and Biosis (2018) within the study area have all been recorded within 200 metres of a first order watercourse within the study area, on gentle slopes or well drained footslope topographies where resources would have been readily available.

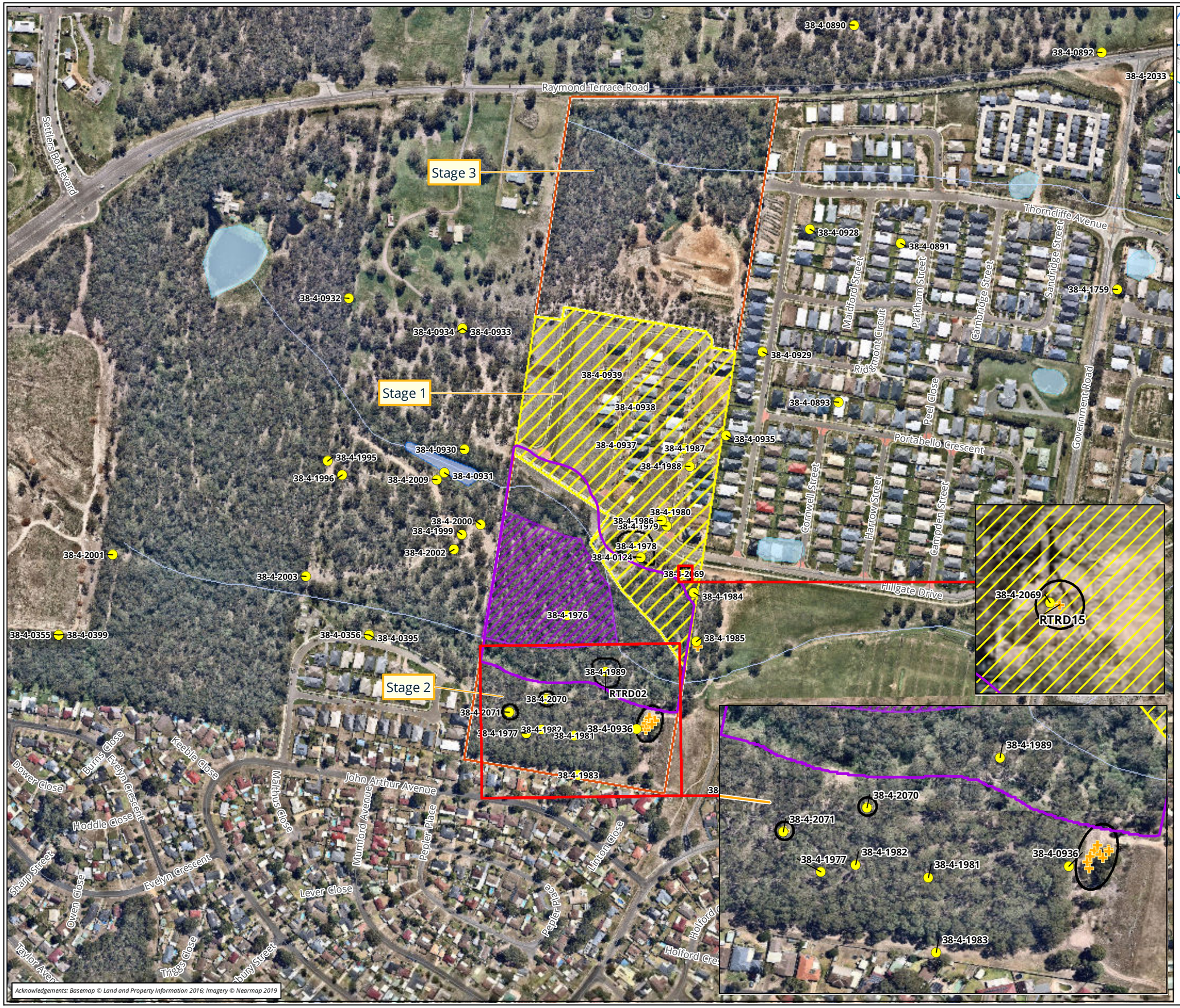
Furthermore, the study area is in a highly disturbed context with high levels of erosion and disturbance noted by Hamm (2004), McCardle (2010), and Biosis (2018). These high levels of disturbance and erosion have aided surveyors in the identification of artefacts upon the grounds surface, suggesting that increased erosion and disturbance within the study area may result in the identification of more Aboriginal artefact sites of a similar nature.

The archaeological survey completed by Biosis in 2018 resulted in the identification of a total of 11 previously unrecorded Aboriginal sites, of which three are located within the current study area (AHIMS 38-4-1989, 38-4-1976, and 38-4-1983). Sites were located upon access tracks and areas of exposure that had been disturbed by recreational and quarrying activities within the study area. The results of the survey effort indicated that undisturbed areas nearby Aboriginal sites identified within the study area had moderate to high potential to contain archaeological deposits (Figure 9).

Test excavations conducted within areas of moderate to high potential by Biosis in 2018 determined that there is low potential for subsurface deposits within the Stage 2 and 3 impact area. RTRD03 (AHIMS 38-4-1976) was not tested as part of Biosis' assessment as it is within an E3 zone that will not be directly impacted by the proposed development. Artefacts within RTRD03 (AHIMS 38-4-1976) were found upon and eroding out of an access track upon a footslope lying between the junction of the two first order drainage line located within the southern portion of the study area. Undisturbed areas within the same landform and adjacent to the access track have the potential to contain subsurface deposits.

Biosis' 2018 test excavation program identified three low density subsurface deposits within the Stage 2 impact area which represented poor quality silcrete artefact assemblages, which were not consistent with surface artefacts identified (Biosis 2018). This may be due to high levels of disturbance from quarrying, recreational activities and erosion (flooding) within the study area that have heavily disturbed sub-surface deposits resulting in their displacement and redeposition across the site (McCardle Cultural Heritage 2010, Biosis 2018).

Biosis' 2020 supplementary survey of the study area supports Hamm (2004) and Biosis' (2018) interpretation of Aboriginal land use and occupation, with a further three isolated artefact sites (RTRD15 AHIMS 38-4-2069, RTRD16 AHIMS 38-4-2070, and RTRD17 AHIMS 38-4-2071) being identified within areas which have undergone high levels of disturbance and exposure. Each of these sites are located within 100 metres of a first order water source in the southern portion of the study area where lower levels of disturbance have occurred. Raw material sources identified are consistent with those previously identified within the study area, which included silcrete and mudstone. Evidence of heat treatment upon the two cores identified within RTRD16 AHIMS 38-4-2070, and RTRD17 AHIMS 38-4-2071 can also be considered consistent with previous artefact analysis results completed by Biosis in 2018. Biosis' 2018 artefact analysis recorded a high number of cores and evidence of heat treatment (Biosis 2018, p.201). According to Odell this indicates that the area was likely utilized by Aboriginal people as a fauna and flora resource processing area (Odell et al. 2004, pp.126–127).




**Legend**

- Study area
- Stage 1
- AHIMS records
- Artefact
- E3 zone
- PAD - no-go-zone



**NOT TO BE MADE PUBLIC**

**Figure 13 Aboriginal sites identified within the study area**

0 30 60 90 120 150

Metres

N

Scale: 1:4,500 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

biosis

Matter: 37375,
Date: 11 May 2022,
Checked by: AV, Drawn by: AM, Last edited by: amackegard
Location: P:\37300s\37375\Mapping\37375_F4_AboriginalSites.mxd

# 7 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.

## 7.1 Introduction to the assessment process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS 2013). 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 ICOMOS 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 Commonwealth Department of the Environment and Energy, Heritage NSW, NSW Department of Planning, Industry and Environment. 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 ICOMOS 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.

## 7.2 Archaeological (scientific significance) values

Archaeological significance (also called scientific significance, as per the ICOMOS 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), 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 ICOMOS 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. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded.

Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded. Table 16 and Table 17 outline the site content and site condition rating used for archaeological sites.

**Table 16 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. |

| Rating | Description |
|---|---|
| 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 17 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 and 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 takes into account 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 18 outlines the site representativeness ratings used for archaeological sites.

**Table 18 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 19.

**Table 19 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 within the study area. The results are in Table 20 and Table 21.

### 7.2.1 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 20 below.

**Table 20 Scientific significance assessment of archaeological sites recorded within study area**

| Site Name | Site Content | Site Condition | Representativeness | Scientific Significance |
|---|---|---|---|---|
| **Stage 1 area** | | | | |
| **RTRD15 (AHIMS 38-4-2069)** | 1 | 1 | 1 | 3 - Low |
| **Stage 2 area** | | | | |
| **RTRD02 (AHIMS 38-4-1989)** | 1 | 1 | 1 | 3 – Low |
| **RTRD03 (AHIMS 38-4-1976)** | 2 | 2 | 1 | 5 – Moderate |
| **RTRD11** | 1 | 1 | 1 | 3 - Low |

| Site Name | Site Content | Site Condition | Representativeness | Scientific Significance |
|---|---|---|---|---|
| **(AHIMS 38-4-1983)** | | | | |
| **RTRD12 (AHIMS 38-4-1982)** | 1 | 1 | 1 | 3 – Low |
| **RTRD13 (AHIMS 38-4-1981)** | 1 | 1 | 1 | 3 - Low |
| **RTRD14 (AHIMS 38-4-1977)** | 1 | 1 | 1 | 3 - Low |
| **Thornton North Site 6 - Lot 20 (AHIMS38-4-0936)** | 2 | 1 | 1 | 4 - Moderate |
| **Thornton North Site 7 - Lot 20 (AHIMS38-4-0937)** | 1 | 2 | 1 | 4 - Moderate |
| **Thornton North Site 8 - Lot 20 (AHIMS38-4-0938)** | 1 | 2 | 1 | 4 – Moderate |
| **Thornton North Site 9 - Lot 20 (AHIMS38-4-0939)** | 1 | 2 | 1 | 4 - Moderate |
| **RTRD16 (AHIMS 38-4-2070)** | 1 | 1 | 1 | 3 - Low |
| **RTRD17 (AHIMS 38-4-2071)** | 1 | 1 | 1 | 3 - Low |
| **Stage 3 area** | | | | |
| **Thornton North Site 1 - Lot 20 (AHIMS 38-4-0927)** | 0 | 0 | 1 | 1 - Low |

**Table 21 Statements of scientific significance for archaeological sites recorded within study area**

| Site Name | Statement of Significance |
|---|---|
| **Stage 1 area** | |
| **RTRD15 (AHIMS 38-4-2069)** | RTRD15 consists of an isolated mudstone core located on a gentle slope within a disturbed context. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **Stage 2 area** | |

| Site Name | Statement of Significance |
|---|---|
| **RTRD02 (AHIMS 38-4-1989)** | RTRD02 consists of a low density artefact scatter. The site is in a poor condition within a highly disturbed context and is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **RTRD03 (AHIMS 38-4-1976)** | RTRD03 consists of a moderate density artefact scatter and PAD. The site is in a fair condition within a partially disturbed context. The site extent has the potential to contain intact archaeological deposits in areas where soil deposits have not been disturbed. Test excavations have not been undertaken within this area of PAD. The site is a common site type within the area. The significance of this site has been assessed as moderate. |
| **RTRD11 (AHIMS 38-4-1983)** | RTRD11consists of a low density artefact scatter. The site is in a poor condition within a highly disturbed context and is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **RTRD12 (AHIMS 38-4-1982)** | RTRD12 consists of a low density sub-surface artefact deposit located on a gentle slope. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. The site has low research potential. The significance of this site has been assessed as low. |
| **RTRD13 (AHIMS 38-4-1981)** | RTRD13 consists of a low density sub-surface artefact deposit located on a gentle slope. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **RTRD14 (AHIMS 38-4-1977)** | RTRD14 consists of a sub-surface artefact deposit consisting of an isolated silcrete core located on a gentle slope. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **Thornton North Site 6 - Lot 20 (AHIMS 38-4-0936)** | This site was previously recorded by Hamm in 2004, and consisted of an artefact scatter of 40 artefacts, located upon a vehicle track within the southern portion of the study area. The site is situated within an area of 80.5 metres by 15.5 metres within a simple slope landform. The site was located by Biosis in 2020. The site is in poor condition and has been heavily disturbed. This site is a commonly occurring site type within the area. Test excavations adjacent to this site did not identify any subsurface archaeological deposits. The site has low research potential. The significance of this site has been assessed as moderate. |
| **Thornton North Site 7 - Lot 20 (AHIMS 38-4-0937)** | This site was previously recorded by Hamm in 2004, and consisted of an isolated find, located along the southern bank of a drainage line upon an access track. The site is situated within an area of 1 square metre. This site was not relocated during this assessment and has been previously recorded in a poor condition. The site is considered a common site type within the region. The significance of this item has been assessed as moderate due to the potential for archaeological sites to be located within the same landform. Test excavations have not been undertaken within the vicinity of this site. |
| **Thornton North Site 8 - Lot 20 (AHIMS 38-4-0938)** | This site was previously recorded by Hamm in 2004, and consisted of an artefact scatter of two artefacts, located upon an ants nest upon an eroded vehicle track overlooking a drainage line within the southern portion of the study area. The site is situated within an area of 7 metres by 2 metres within a simple slope landform. This site was not relocated during this assessment. The site was in a poor condition at the time it was recorded. The significance of this item has been |

| Site Name | Statement of Significance |
|---|---|
| | assessed as moderate due to the potential for archaeological sites to be located within the same landform. Test excavations have not been undertaken within the vicinity of this site. |
| **Thornton North Site 9 - Lot 20 (AHIMS 38-4-0939)** | This site was previously recorded by Hamm in 2004, and consisted of an artefact scatter of two artefacts, located along the southern bank of a drainage line, upon an eroded vehicle track within the southern portion of the study area. The site is situated within an area of 1 metre squared. This site was not relocated during this assessment. The site was in a poor condition at the time it was recorded. The significance of this item has been assessed as moderate due to the potential for archaeological sites to be located within the same landform. Test excavations have not been undertaken within the vicinity of this site. |
| **RTRD16 (AHIMS 38-4-2070)** | RTRD16 consists of an isolated heat treated silcrete core located on a gentle slope within a disturbed context. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **RTRD17 (AHIMS 38-4-2071)** | RTRD17 consists of an isolated heat treated silcrete core located on a gentle slope within a disturbed context. This site type occurs frequently in the region. This site demonstrates sporadic occupation of the slope landforms present within the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |
| **Stage 3 area** | |
| **Thornton North Site 1 - Lot 20 (AHIMS 38-4-0927)** | This site was previously recorded by Hamm in 2004, and consisted of an artefacts scatter of six artefacts, located upon the edge/crest adjacent to the large quarry within the northern portion of the study area. The site is situated within an area of 20 metres by 30 metres upon an access track. This site was not relocated during this assessment, and was likely destroyed by continued disturbance within this section of the study area. This site is a commonly occurring site type within the area. The site has low research potential. The significance of this site has been assessed as low. |

# 8 Impact assessment

As previously discussed above, Thornton Brentwood have previously undertaken Stage 1 and 3 of the proposed residential subdivision of 530 Raymond Terrace Road, Thornton, NSW, and are now planning to undertake the residential subdivision of the Stage 2 of the proposed study area.

The proposed works for Stage 2 will include the subdivision of further 28 lots for residential development, a drainage reserve and a neighbourhood park.

Potential impacts to Aboriginal heritage values within the study area will include but not be limited to:

- Weed management.
- Revegetation.
- Filling in of quarry through bulk earthworks.
- Ground disturbance through earthworks for the construction of a drainage reserves.
- Construction of residential utilities including roads and services.
- Construction of residential buildings.
- Construction of a childcare facility.
- Development of neighbourhood parks that will also require further earthworks.

## 8.1 Predicted physical impacts

The proposed works have the potential to harm seven Aboriginal sites identified within the study area resulting in total loss of value (Figure 14).

### 8.1.1 Total loss of value

AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) cannot be avoided by the proposed works and are likely to undergo direct impacts through bulk earth works, machinery and vehicle movement and site preparation works. Impacts to these sites will therefore be direct with a total loss of value to all sites.

Future development of the Park Reserve located north of the southern portion of the study area following the completion of Stage 2 and 3 of the proposed development will also result in impacts to RTRD15 (AHIMS 38-4-2069). It is recommended that any AHIMS sites located within the Park Reserve be salvaged via community collection under AHIP #C0004256.

AHIMS 38-4-1989 was previously assessed in 2018 by Biosis and is currently covered by AHIP #C0004256, obtained in 2019. The future management of AHIMS 38-4-1989 should be undertaken in accordance with the conditions of AHIP #C0004256. AHIP #4762 was issued to allow harm to AHIMS 38-4-0927.

### 8.1.2 No harm

AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 area currently protected under the Maitland LEP (2011) as part of an environmental management zone (E3) which will not be impacted by the development. However, the management of the E3 zone will need to be undertaken in a manner that will not impact upon surface artefacts and sub-surface deposits within this area. Management and mitigation measures have been

provided below to ensure the protection of Aboriginal sites which will not be harmed by the proposed development (refer to Section 8.2).

A summary of impacts is provided below in Table 22.

**Table 22 Summary of potential archaeological impacts**

| AHIMS site no. | Site name | Significance | Degree of harm | Consequence of harm |
|---|---|---|---|---|
| **Stage 1 area** | | | | |
| **AHIMS 38-4-2069** | RTRD15 | Low | No Harm | Total loss of value – covered by AHIP #C0004256 |
| **Stage 2 area** | | | | |
| **AHIMS 38-4-1989** | RTRD02 | Low | Total | Total loss of value – covered by AHIP #C0004256 |
| **AHIMS 38-4-1976** | RTRD03 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-1983** | RTRD11 | Low | Total | Total loss of value |
| **AHIMS 38-4-1982** | RTRD12 | Low | Total | Total loss of value |
| **AHIMS 38-4-1981** | RTRD13 | Low | Total | Total loss of value |
| **AHIMS 38-4-1977** | RTRD14 | Low | Total | Total loss of value |
| **AHIMS 38-4-0936** | Thornton North Site 6 - Lot 20 | Low | Total | Total loss of value |
| **AHIMS 38-4-0937** | Thornton North Site 7 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-0938** | Thornton North Site 8 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-0939** | Thornton North Site 9 - Lot 20 | Moderate | No Harm | No Harm |
| **AHIMS 38-4-2070** | RTRD16 | Low | Total | Total loss of value |
| **AHIMS 38-4-2071** | RTRD17 | Low | Total | Total loss of value |
| **Stage 3 area** | | | | |
| **AHIMS 38-4-0927** | Thornton North Site 1 - Lot 20 | Low | Total | Total loss of value – covered by AHIP #4762 |

## 8.2 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' (Marquis-Kyle & Walker 1994, p.13). 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 impacts to Aboriginal sites through design of the development is the primary mitigation and management strategy, and should be implemented where practicable.

As noted above the proposed works associated with Stage 2 and 3, and the development of the Park Reserve are unable to avoid impacts to ten Aboriginal sites within the study area. However, four Aboriginal sites will not be impacted by the proposed works. It is not feasible for the proposed works to completely avoid impacts to these sites; therefore, the following mitigation measures, which consider the principles of ESD and intergenerational equity in their design, are proposed.

### 8.2.1 Apply for an area wide AHIP to impact AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) within Stage 2

Biosis recommends that an area wide AHIP be obtained for Stage 2 of the proposed works which includes AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071). The AHIP should allow for direct impacts to occur through community collection and development works. The AHIP should be obtained prior to works proceeding. **The AHIP should be for a term of 10 years.** An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places. Heritage NSW issues AHIPs under Part 6 of the NPW Act.

### 8.2.2 Cultural Heritage Awareness Training provided to all contractors prior to works commencing within Stage 2 impact area

This assessment has determined that the remainder of the Stage 2 impact area contains low potential and does not require further archaeological assessment. Consultation with RAPs on the future management of this portion of the site resulted in Cultural Heritage Awareness Training being recommended for all contractors prior to works commencing within Stage 2 impact area, by a suitably qualified Cultural Sites Officer.

### 8.2.3 Management of AHIMS 38-4-7989 and RTRD15 (AHIMS 38-4-2069) under AHIP #C0004256

AHIMS 38-4-1989 and RTRD15 (AHIMS 38-4-2069) should be managed and salvaged via community collection in accordance with AHIP #C0004256 prior to the proposed works within the Stage 2 impact area and the Park Reserve being undertaken.

### 8.2.4 No further archaeological investigation (test or salvage excavation) of AHIMS sites 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) or within areas of low archaeological potential

No further archaeological test or salvage excavations will be required for AHIMS 38-4-1989, 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071). AHIMS 38-4-1989, 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) have been assessed as possessing low archaeological significance. These sites are low density artefact sites within highly disturbed contexts. The artefacts recovered during test excavations have been catalogued and analysed which has contributed to our knowledge and understanding of the nature and extent of these sites.

Further archaeological test or salvage excavations within areas of low archaeological potential located within the study area will not be required, as test excavations have determined that these areas contain low potential for the identification of further sites.

Test excavations undertaken within the study area have increased our current understanding of Aboriginal occupation in the study area, ensuring that any scientific and cultural information obtained can be accessed and used by future generations. Further archaeological testing of these sites is not recommended.

### 8.2.5 Community Collection

AHIMS sites 38-4-0936, 38-4-1983, and RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) should be salvaged through community collection under an AHIP and in consultation with RAPs. An area wide AHIP should also allow for community collection within the Stage 2 impact area to occur. This ensures that the most information possible is obtained from the sites prior to their destruction. Following collection of surface artefacts, an analysis of the complete artefact assemblage identified will be undertaken to provide further information about the potential uses of the site by Aboriginal people. This not only increases current understanding of the site but increases our knowledge of Aboriginal occupation in the wider Maitland region and ensures that any scientific and cultural information that we obtain can be accessed and used by future generations.

### 8.2.6 Long term care agreement

The establishment of a long term care agreement in consultation with RAPs should be developed in order to ensure the artefacts are adequately cared for. Several management options are possible depending on the wishes of RAPs. Artefacts recovered from the test excavations and community collection can be given back to the Aboriginal community through a long term care agreement where they can then be used to teach subsequent generations about Aboriginal culture or can be reburied in a culturally appropriate place. This approach considers the principles of ESD and intergenerational equity and more importantly ensures that recovered artefacts are managed according to the wishes of RAPs.

As the proposed development is required to be undertaken in stages Biosis recommends that the reburial of the artefacts in an appropriate location within the subject land be undertaken at the completion of all development works to avoid disturbance to the reburial site. Biosis proposes that the AHIP allows for the temporary storage of artefacts recovered during the subsequent community collection works at the following temporary storage location, along with artefacts recovered by Biosis in 2018 and Eco Logical in 2019 (Biosis 2018, Eco Logical 2019):

- A secure location in the Biosis Newcastle Office, Suite 8, 27 Annie Street, Wickham, NSW.

Once the proposed works have been completed, Biosis proposes that the cultural material be managed in line with the reburial methodology outlined in the ACHA amendment document supplied to Heritage NSW on 19 November 2018 (see Appendix 3). A summary of the proposed reburial methodology is detailed below:

- The Aboriginal artefacts identified during the test excavations, and any Aboriginal artefacts salvaged under an approved AHIP, should be reburied within the E3 conservation zone in the study area.
- The artefacts should be reburied at a depth of greater than 400 millimetres in order to mitigate against any future erosional processes.
- The artefacts should be reburied in a culturally appropriate matter (i.e wrapped in bark) if allowable.
- An AHIMS site recording form should be lodged for the reburied artefacts.

### 8.2.7 Management of archaeological sites within the E3 zone

AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 within the E3 zone should be permanently fenced in order to prevent any unintentional impacts to the integrity of the sites over the lifespan of the proposed three stage development. The clearing of invasive flora species within the E3 zone will also need to be undertaken via spot spraying and steam cutting within the E3 zone to avoid any disturbance to subsurface soil deposits. Bush regeneration will also employ brush matting to avoid any disturbance to sites identified within the E3 zone. This management strategy will be included within the AHIP recommendations and no-go-zones will be established for each stage of the development.

### 8.2.8 Fencing of archaeological sites outside of the study area

Prior to any works taking place, the Stage 2 boundary should be clearly fenced in order to prevent any unintentional impacts to AHIMS sites located outside of the study area which will not be harmed by the proposed works. Fencing must remain in place over the lifespan of the proposed development.


**Legend**

- Study area
- AHIP #C0004256
- Stage 1
- E3 zone
- PAD - no-go-zone
- Site extent
- AHIMS records
- Artefact

**Figure 14 Impact Assessment**

0 30 60 90 120 150

Metres

Scale: 1:4,000 @ A3

*Coordinate System: GDA 1994 MGA Zone 56*

N

Matter: 33608,
Date: 26 April 2021,
Checked by: AV, Drawn by: SSK, Last edited by: lharley
Location: P:\33600s\33608\Mapping\33608_F14_Impact.mxd

# 9 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 Australia ICOMOS Burra Charter.
  - The Code.

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

### Recommendation 1: Application for an AHIP to harm AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) within Stage 2 area

Biosis recommends that an application for an area wide AHIP for the stage 2 area be obtained to impact AHIMS 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071). The AHIP should allow for direct impacts to occur through community collection and development works. The AHIP should be obtained prior to works proceeding. **The AHIP should be for a term of 10 years.** An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places. Heritage NSW issues AHIPs under Part 6 of the NPW Act.

### Recommendation 2: Cultural Heritage Awareness Training provided to all contractors prior to works commencing within Stage 2 impact area

Cultural Heritage Awareness Training should be provided to all contractors prior to works commencing within Stage 2 impact area, as recommended by RAPs.

### Recommendation 3: Salvage through community collection

AHIMS sites 38-4-0936, 38-4-1983, and RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) should be salvaged through community collection under an AHIP and in accordance with a Community Collection Methodology prior to the proposed works being undertaken.

### Recommendation 4: Management of AHIMS 38-4-1989 and RTRD15 (AHIMS 38-4-2069) under AHIP #C0004256

AHIMS 38-4-1989 and RTRD15 (AHIMS 38-4-2069) should be managed and salvaged via community collection in accordance with AHIP #C0004256 prior to the proposed works within the Stage 2 impact area and the Park Reserve being undertaken.

### Recommendation 5: Fencing of Stage 2 site boundaries and Aboriginal sites that will not be harmed

Prior to any works taking place, the Stage 2 boundary should be clearly fenced in order to prevent any unintentional impacts to AHIMS sites located outside of the study area which will not be harmed by the proposed works. Fencing must remain in place over the over the lifespan of the proposed development.

Biosis also recommends that the foot slope landform in which AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 are located should be securely fenced to ensure the proposed works do not impact on any areas of high archaeological potential identified within the no-go zone (Figure 14). Fencing must remain in place over the lifespan of the proposed development.

### Recommendation 6: Further archaeological works required if impacts cannot be avoided

It is recommended that test excavations be undertaken in consultation with the RAPs, if impact to AHIMS 38-4-1976, 38-4-0937, 38-4-0938, and 38-4-0939 cannot be avoided. Land management strategies related to the management of invasive flora species and bush regeneration within the E3 Zone, will need to be undertaken in a manner in which soil deposits will not be directly impacted within the E3 Zone.

### Recommendation 7: No further archaeological works

No further archaeological test or salvage excavations are required for AHIMS sites 38-4-1983, 38-4-1982, 38-4-1981, 38-4-1977 38-4-0927, and 38-4-0936, and sites RTRD16 (AHIMS 38-4-2070) and RTRD17 (AHIMS 38-4-2071) or any areas within the current development footprint apart from the sites proposed for community collection or management under an AHIP. Once community collection has been undertaken, works may proceed with caution in these areas in line with the approved AHIP, and Recommendations 8 to 11.

### Recommendation 8: Establishment of a long term care agreement

The establishment of a long term care agreement in consultation with RAPs should be developed in order to ensure the artefacts are adequately cared for. Several management options are possible depending on the wishes of RAPs. Artefacts recovered from the test excavations and community collection salvage may be returned to the Aboriginal community through a long term care agreement where they can then be used to teach subsequent generations about Aboriginal culture or can be reburied in a culturally appropriate place. This approach considers the principles of Ecologically Sustainable Development (ESD) and intergenerational equity and more importantly ensures that recovered artefacts are managed according to the wishes of RAPs.

### Recommendation 9: Discovery of unanticipated Aboriginal objects

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to disturb an Aboriginal site without a consent permit issued by Heritage NSW. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and RAPs.

### Recommendation 10: Discovery of unanticipated Historical relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the Heritage Act. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. Heritage NSW will require notification if the find is assessed as a relic.

### Recommendation 11: Stop works provision – Discovery of Aboriginal ancestral remains

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

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

2. Notify the NSW Police and Heritage NSW Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by Heritage NSW.

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# 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 : 33608 AV

Client Service ID : 529575

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-2001 | Lot 131 Site 6 Thornton | GDA | 56 | 372274 | 6373493 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2003 | Lot 131 Site 8 Thornton | GDA | 56 | 372523 | 6373465 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-1995 | Lot 131 Site 1 Thornton | GDA | 56 | 372551 | 6373614 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-1996 | Lot 131 Site 3 Thornton | GDA | 56 | 372570 | 6373596 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2009 | Lot 131 Site 9 Thornton | GDA | 56 | 372692 | 6373590 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2002 | Lot 131 Site 7 Thornton | GDA | 56 | 372714 | 6373500 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-1999 | Lot 131 Site 4 Thornton | GDA | 56 | 372724 | 6373519 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2000 | Lot 131 Site 5 | GDA | 56 | 372748 | 6373532 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-1977 | RTRD14 | GDA | 56 | 372807 | 6373263 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1982 | RTRD12 | GDA | 56 | 372827 | 6373268 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1976 | RTRD03 | GDA | 56 | 372860 | 6373415 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1981 | RTRD13 | GDA | 56 | 372869 | 6373260 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1983 | RTRD11 | GDA | 56 | 372874 | 6373209 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1989 | RTRD02 | GDA | 56 | 372909 | 6373342 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1978 | RTRD01 | GDA | 56 | 372949 | 6373504 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1986 | RTRD08 | GDA | 56 | 372982 | 6373537 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1979 | RTRD04 | GDA | 56 | 372988 | 6373530 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 33608 AV

Client Service ID : 529575

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-1980 | RTRD05 | GDA | 56 | 372993 | 6373548 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1987 | RTRD07 | GDA | 56 | 373011 | 6373630 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1988 | RTRD06 | GDA | 56 | 373018 | 6373607 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1984 | RTRD10 | GDA | 56 | 373023 | 6373444 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1985 | RTRD09 | GDA | 56 | 373026 | 6373381 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1755 | VALAIRE LAND 2/A | GDA | 56 | 373522 | 6373438 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1759 | RPS Thornton AS1 | GDA | 56 | 373569 | 6373835 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton | | | | | **Permits** | | |
| 38-4-1758 | VALAIRE LAND 5/A | GDA | 56 | 373571 | 6373318 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-2033 | Raymond Terrace Road IF | GDA | 56 | 373643 | 6374110 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,Mrs.Amanda Crick | | | | | **Permits** | | |
| 38-4-2032 | Raymond Terrace Road IF1 | GDA | 56 | 373702 | 6374134 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,Mrs.Amanda Crick | | | | | **Permits** | | |
| 38-4-1756 | VALAIRE LAND 2/B | GDA | 56 | 373722 | 6373618 | Open site | Valid | Artefact : -, Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** | **Recorders** | South East Archaeology | | | | | **Permits** | 3899 | |
| 38-4-1754 | VALAIRE LAND 1/A | GDA | 56 | 373723 | 6373735 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1757 | VALAIRE LAND 4/A | GDA | 56 | 373727 | 6373345 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1643 | Lot 2 Govt Road Thornton | GDA | 56 | 373775 | 6374010 | Open site | Partially Destroyed | Artefact : -, Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3725 | |
| 38-4-1966 | Valaire Land 6/A | GDA | 56 | 373812 | 6373466 | Open site | Destroyed | Artefact : 1, Potential Archaeological Deposit (PAD) : 1 | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie,South East Archaeology | | | | | **Permits** | | |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 33608 AV

Client Service ID : 529575

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-1760 | RPS Thornton AS2 | GDA | 56 | 373823 | 6373858 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton | | | | | **Permits** | | |
| 38-4-2031 | Raymond Terrace Road IF2 | GDA | 56 | 373825 | 6374148 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,Mrs.Amanda Crick | | | | | **Permits** | | |
| 38-4-1789 | RPS JN 2 | GDA | 56 | 373940 | 6374242 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | 4157 | |
| 38-4-1788 | RPS JN 1 | GDA | 56 | 373954 | 6374267 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | 4157 | |
| 38-4-1956 | RPS JN 4 IF | GDA | 56 | 374186 | 6374579 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | | |
| 38-4-1955 | RPS JN 6 AS | GDA | 56 | 374233 | 6374254 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | | |
| 38-4-0978 | Thornton North PAD 1 | AGD | 56 | 371564 | 6374950 | Open site | Valid | Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** Searle | **Recorders** | Ms.Penny Mccardle | | | | | **Permits** | 2509 | |
| 38-4-0804 | Thornton North 9 - TN9 | AGD | 56 | 371580 | 6375000 | Open site | Valid | Artefact : - | | 100914 |
| | **Contact** T Russell | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 2113,2509,2880,2881,3341 | |
| 38-4-0625 | Thornton 3 (T3) | AGD | 56 | 371688 | 6373373 | Open site | Valid | Artefact : 1 | | |
| | **Contact** | **Recorders** | MCH - McCardle Cultural Heritage Pty Ltd | | | | | **Permits** | 2141 | |
| 38-4-0626 | Thornton Substation PAD1 | AGD | 56 | 371688 | 6373373 | Open site | Valid | Potential Archaeological Deposit (PAD) : 0 | | |
| | **Contact** | **Recorders** | MCH - McCardle Cultural Heritage Pty Ltd | | | | | **Permits** | 1389 | |
| 38-4-0884 | Thornton North 2 (TN2) | AGD | 56 | 371950 | 6375000 | Open site | Valid | Artefact : 1 | | 100914 |
| | **Contact** T Russell | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 2880,2881,3341 | |
| 38-4-0355 | T 1; (Duplicate of 38-4-0399) | AGD | 56 | 372100 | 6373200 | Open site | Destroyed | Artefact : - | Isolated Find | 103954 |
| | **Contact** | **Recorders** | Mary Dallas Consulting Archaeologists (MDCA),Noeleen Curran,Ms.Lucinda O'Conn | | | | | **Permits** | | |
| 38-4-0399 | T1;. | AGD | 56 | 372100 | 6373200 | Open site | Destroyed | Artefact : - | Isolated Find | 2880,103954 |
| | **Contact** | **Recorders** | Mary Dallas Consulting Archaeologists (MDCA),Noeleen Curran,Ms.Lucinda O'Conn | | | | | **Permits** | | |
| 38-4-0888 | Thornton Beechwood 6 | AGD | 56 | 372275 | 6374489 | Open site | Valid | Artefact : 2 | | 103380 |
| | **Contact** T Russell | **Recorders** | Mr.Peter Kuskie,Mr.Peter Kuskie | | | | | **Permits** | 2816,2817,3875 | |
| 38-4-0932 | Thornton North Site 2 Lot 1 | AGD | 56 | 372474 | 6373634 | Open site | Valid | Artefact : 2 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-0356 | T 2 Beresfield | AGD | 56 | 372500 | 6373200 | Open site | Destroyed | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | Noeleen Curran,Ms.Penny Mccardle | | | | | **Permits** | | |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-0395 | T2; Beresfield | AGD | 56 | 372500 | 6373200 | Open site | Destroyed | Artefact : - | Open Camp Site | 2880 |
| | **Contact** | **Recorders** | Noeleen Curran,Ms.Penny Mccardle | | | | | **Permits** | | |
| 38-4-0931 | Thornton North Site 1 Lot 1 | AGD | 56 | 372597 | 6373409 | Open site | Valid | Artefact : 3 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-0933 | Thornton North Site 3 Lot 1 | AGD | 56 | 372620 | 6373595 | Open site | Valid | Artefact : 2 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-0934 | Thornton North Site 4 - Lot 20 | AGD | 56 | 372620 | 6373595 | Open site | Valid | Artefact : 3 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4359 | |
| 38-4-0930 | Thornton North Site 4- Lot 1 | AGD | 56 | 372623 | 6373439 | Open site | Valid | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-0939 | Thornton North Site 9 - Lot 20 | AGD | 56 | 372800 | 6373535 | Open site | Valid | Artefact : 1 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0937 | Thornton North Site 7 - Lot 20 | AGD | 56 | 372818 | 6373445 | Open site | Valid | Artefact : 1 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0938 | Thornton North Site 8 - Lot 20 | AGD | 56 | 372843 | 6373494 | Open site | Valid | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0124 | Parkwood; | AGD | 56 | 372850 | 6373300 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-0125 | None Specified | AGD | 56 | 372900 | 6374200 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-0927 | Thornton North Site 1 - Lot 20 | AGD | 56 | 372943 | 6374863 | Open site | Valid | Artefact : 6 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0936 | Thornton North Site 6 - Lot 20 | AGD | 56 | 372958 | 6373278 | Open site | Valid | Artefact : 40 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0935 | Thornton North Site 5 - Lot 20 | AGD | 56 | 372960 | 6373457 | Open site | Destroyed | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4359 | |
| 38-4-0121 | None Specified | AGD | 56 | 373000 | 6373000 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-0929 | Thornton North Site 3 - Lot 20 | AGD | 56 | 373007 | 6373565 | Open site | Destroyed | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3745,4359 | |
| 38-4-0928 | Thornton North Site 2 - Lot 20 | AGD | 56 | 373068 | 6373723 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3745,4359 | |
| 38-4-0123 | None Specified | AGD | 56 | 373100 | 6374900 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-0893 | Thornton North 4 | AGD | 56 | 373105 | 6373500 | Open site | Destroyed | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819,3189 | |
| 38-4-0890 | Thornton North 1 | AGD | 56 | 373125 | 6373986 | Open site | Valid | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819 | |
| 38-4-0891 | Thornton North 3 | AGD | 56 | 373185 | 6373705 | Open site | Destroyed | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Navin Officer Heritage Consultants Pty Ltd | | | | | **Permits** | 2592,2819,3189,3745 | |
| 38-4-0349 | Thornton 5; | AGD | 56 | 373370 | 6372350 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0892 | Thornton North Site 2 | AGD | 56 | 373444 | 6373951 | Open site | Valid | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819 | |
| 38-4-0354 | Thornton 10; | AGD | 56 | 373470 | 6372400 | Open site | Valid | Artefact : - | Open Camp Site | 100924,102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0353 | Thornton 9; | AGD | 56 | 373650 | 6372980 | Open site | Valid | Artefact : - | Open Camp Site | 100924 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718 | |
| 38-4-0361 | Thornton 11; | AGD | 56 | 373700 | 6372300 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | | |
| 38-4-0365 | Thornton 11; | AGD | 56 | 373700 | 6372300 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0346 | Thornton 2; | AGD | 56 | 373750 | 6371900 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0352 | Thornton 8; | AGD | 56 | 373850 | 6372960 | Open site | Valid | Artefact : - | Isolated Find | 100924 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0749 | Thornton A 3 (TA3) | AGD | 56 | 374025 | 6374149 | Open site | Partially Destroyed | Artefact : 3 | | 100546 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3044,3103 | |
| 38-4-0350 | Thornton 6; | AGD | 56 | 374050 | 6372500 | Open site | Valid | Artefact : - | Open Camp Site | 100924,102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718 | |
| 38-4-0351 | Thornton 7; | AGD | 56 | 374105 | 6372889 | Open site | Partially Destroyed | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887,3044,3103 | |
| 38-4-0748 | Thornton A 1(TA1) | AGD | 56 | 374125 | 6373989 | Open site | Partially Destroyed | Artefact : 2 | | 100059,100546 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 2112,3044,3103 | |
| 38-4-0753 | Thornton A 20 (TA20) | AGD | 56 | 374195 | 6372829 | Open site | Partially Destroyed | Artefact : 1 | | 100546,102568 |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 33608 AV

Client Service ID : 529575

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| Contact | | Recorders | Mr.Peter Kuskie | | | | | Permits | 3044,3103 | |

**Report generated by AHIMS Web Service on 24/08/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512 - 374264, Northings : 6372111 - 6375162 with a Buffer of 50 meters. Additional Info : Archaeological assessment. Number of Aboriginal sites and Aboriginal objects found is 81**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 37375 AV

Client Service ID : 679571

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status ** | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-1982 | RTRD12 | GDA | 56 | 372827 | 6373268 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1978 | RTRD01 | GDA | 56 | 372949 | 6373504 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0929 | Thornton North Site 3 - Lot 20 | AGD | 56 | 373007 | 6373565 | Open site | Destroyed | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3745,4359 | |
| 38-4-0928 | Thornton North Site 2 - Lot 20 | AGD | 56 | 373068 | 6373723 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3745,4359 | |
| 38-4-0890 | Thornton North 1 | AGD | 56 | 373125 | 6373986 | Open site | Valid | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819 | |
| 38-4-1956 | RPS JN 4 IF | GDA | 56 | 374186 | 6374579 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | | |
| 38-4-1758 | VALAIRE LAND 5/A | GDA | 56 | 373571 | 6373318 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-0361 | Thornton 11; | AGD | 56 | 373700 | 6372300 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | | |
| 38-4-0352 | Thornton 8; | AGD | 56 | 373850 | 6372960 | Open site | Valid | Artefact : - | Isolated Find | 100924 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-2009 | Lot 131 Site 9 Thornton | GDA | 56 | 372692 | 6373590 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-0933 | Thornton North Site 3 Lot 1 | AGD | 56 | 372620 | 6373595 | Open site | Valid | Artefact : 2 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-1977 | RTRD14 | GDA | 56 | 372807 | 6373263 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1981 | RTRD13 | GDA | 56 | 372869 | 6373260 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1983 | RTRD11 | GDA | 56 | 372874 | 6373209 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1987 | RTRD07 | GDA | 56 | 373011 | 6373630 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1984 | RTRD10 | GDA | 56 | 373023 | 6373444 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0927 | Thornton North Site 1 - Lot 20 | AGD | 56 | 372943 | 6374863 | Open site | Valid | Artefact : 6 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4762 | |
| 38-4-1759 | RPS Thornton AS1 | GDA | 56 | 373569 | 6373835 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton | | | | | **Permits** | | |

**Report generated by AHIMS Web Service on 03/05/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512.0 - 374264.0, Northings : 6372111.0 - 6375162.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 79**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 37375 AV

Client Service ID : 679571

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status ** | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-1643 | Lot 2 Govt Road Thornton | GDA | 56 | 373775 | 6374010 | Open site | Partially Destroyed | Artefact : -, Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 3725 | |
| 38-4-0365 | Thornton 11; | AGD | 56 | 373700 | 6372300 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-0749 | Thornton A 3 (TA3) | AGD | 56 | 374025 | 6374149 | Open site | Partially Destroyed | Artefact : 3 | | 100546 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3044,3103 | |
| 38-4-2003 | Lot 131 Site 8 Thornton | GDA | 56 | 372523 | 6373465 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-0399 | T1;. | AGD | 56 | 372100 | 6373200 | Open site | Destroyed | Artefact : - | Isolated Find | 2880,103954 |
| | **Contact** | **Recorders** | Mary Dallas Consulting Archaeologists (MDCA),Noeleen Curran,Ms.Lucinda O'Conn | | | | | **Permits** | | |
| 38-4-0930 | Thornton North Site 4- Lot 1 | AGD | 56 | 372623 | 6373439 | Open site | Valid | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-2070 | RTRD16 | GDA | 56 | 372833 | 6373307 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1980 | RTRD05 | GDA | 56 | 372993 | 6373548 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0121 | None Specified | AGD | 56 | 373000 | 6373000 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-0353 | Thornton 9; | AGD | 56 | 373650 | 6372980 | Open site | Valid | Artefact : - | Open Camp Site | 100924 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718 | |
| 38-4-1966 | Valaire Land 6/A | GDA | 56 | 373812 | 6373466 | Open site | Destroyed | Artefact : 1, Potential Archaeological Deposit (PAD) : 1 | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie,South East Archaeology | | | | | **Permits** | | |
| 38-4-0932 | Thornton North Site 2 Lot 1 | AGD | 56 | 372474 | 6373634 | Open site | Valid | Artefact : 2 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-0978 | Thornton North PAD 1 | AGD | 56 | 371564 | 6374950 | Open site | Valid | Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** Searle | **Recorders** | Ms.Penny Mccardle | | | | | **Permits** | 2509 | |
| 38-4-0355 | T 1; (Duplicate of 38-4-0399) | AGD | 56 | 372100 | 6373200 | Open site | Destroyed | Artefact : - | Isolated Find | 103954 |
| | **Contact** | **Recorders** | Mary Dallas Consulting Archaeologists (MDCA),Noeleen Curran,Ms.Lucinda O'Conn | | | | | **Permits** | | |
| 38-4-0124 | Parkwood; | AGD | 56 | 372850 | 6373300 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-2069 | RTRD15 | GDA | 56 | 373010 | 6373468 | Open site | Valid | Artefact : - | | |

**Report generated by AHIMS Web Service on 03/05/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512.0 - 374264.0, Northings : 6372111.0 - 6375162.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 79**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 37375 AV

Client Service ID : 679571

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status ** | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-0892 | Thornton North Site 2 | AGD | 56 | 373444 | 6373951 | Open site | Valid | Artefact : 1 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819 | |
| 38-4-0354 | Thornton 10; | AGD | 56 | 373470 | 6372400 | Open site | Valid | Artefact : - | Open Camp Site | 100924,102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-1757 | VALAIRE LAND 4/A | GDA | 56 | 373727 | 6373345 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1789 | RPS JN 2 | GDA | 56 | 373940 | 6374242 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | 4157 | |
| 38-4-1788 | RPS JN 1 | GDA | 56 | 373954 | 6374267 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | 4157 | |
| 38-4-0888 | Thornton Beechwood 6 | AGD | 56 | 372275 | 6374489 | Open site | Valid | Artefact : 2 | | 103380 |
| | **Contact** T Russell | **Recorders** | Mr.Peter Kuskie,Mr.Peter Kuskie | | | | | **Permits** | 2816,2817,3875 | |
| 38-4-0356 | T 2 Beresfield | AGD | 56 | 372500 | 6373200 | Open site | Destroyed | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | Noeleen Curran,Ms.Penny Mccardle | | | | | **Permits** | | |
| 38-4-0626 | Thornton Substation PAD1 | AGD | 56 | 371688 | 6373373 | Open site | Valid | Potential Archaeological Deposit (PAD) : 0 | | |
| | **Contact** | **Recorders** | MCH - McCardle Cultural Heritage Pty Ltd | | | | | **Permits** | 1389 | |
| 38-4-1999 | Lot 131 Site 4 Thornton | GDA | 56 | 372724 | 6373519 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-1979 | RTRD04 | GDA | 56 | 372988 | 6373530 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0893 | Thornton North 4 | AGD | 56 | 373105 | 6373500 | Open site | Destroyed | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 2592,2819,3189 | |
| 38-4-0349 | Thornton 5; | AGD | 56 | 373370 | 6372350 | Open site | Valid | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887 | |
| 38-4-1755 | VALAIRE LAND 2/A | GDA | 56 | 373522 | 6373438 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1754 | VALAIRE LAND 1/A | GDA | 56 | 373723 | 6373735 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 3899 | |
| 38-4-1996 | Lot 131 Site 3 Thornton | GDA | 56 | 372570 | 6373596 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-0395 | T2; Beresfield | AGD | 56 | 372500 | 6373200 | Open site | Destroyed | Artefact : - | Open Camp Site | 2880 |
| | **Contact** | **Recorders** | Noeleen Curran,Ms.Penny Mccardle | | | | | **Permits** | | |
| 38-4-2001 | Lot 131 Site 6 Thornton | GDA | 56 | 372274 | 6373493 | Open site | Valid | Artefact : - | | |

**Report generated by AHIMS Web Service on 03/05/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512.0 - 374264.0, Northings : 6372111.0 - 6375162.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 79**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 37375 AV

Client Service ID : 679571

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status ** | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2002 | Lot 131 Site 7 Thornton | GDA | 56 | 372714 | 6373500 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-2071 | RTRD17 | GDA | 56 | 372785 | 6373290 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1989 | RTRD02 | GDA | 56 | 372909 | 6373342 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0125 | None Specified | AGD | 56 | 372900 | 6374200 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-1988 | RTRD06 | GDA | 56 | 373018 | 6373607 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-0123 | None Specified | AGD | 56 | 373100 | 6374900 | Open site | Valid | Artefact : - | Open Camp Site | |
| | **Contact** | **Recorders** | P Jones | | | | | **Permits** | | |
| 38-4-0350 | Thornton 6; | AGD | 56 | 374050 | 6372500 | Open site | Valid | Artefact : - | Open Camp Site | 100924,102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718 | |
| 38-4-0351 | Thornton 7; | AGD | 56 | 374105 | 6372889 | Open site | Partially Destroyed | Artefact : - | Open Camp Site | 102568 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 718,887,3044,3103 | |
| 38-4-1955 | RPS JN 6 AS | GDA | 56 | 374233 | 6374254 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton,RPS Australia East Pty Ltd - Hamilton,Ms.Jo N | | | | | **Permits** | | |
| 38-4-1756 | VALAIRE LAND 2/B | GDA | 56 | 373722 | 6373618 | Open site | Valid | Artefact : -, Potential Archaeological Deposit (PAD) : - | | |
| | **Contact** | **Recorders** | South East Archaeology | | | | | **Permits** | 3899 | |
| 38-4-0934 | Thornton North Site 4 - Lot 20 | AGD | 56 | 372620 | 6373595 | Open site | Valid | Artefact : 3 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4359 | |
| 38-4-1976 | RTRD03 | GDA | 56 | 372860 | 6373415 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-1986 | RTRD08 | GDA | 56 | 372982 | 6373537 | Open site | Destroyed | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | 4359 | |
| 38-4-1985 | RTRD09 | GDA | 56 | 373026 | 6373381 | Open site | Valid | Artefact : - | | 104167 |
| | **Contact** | **Recorders** | Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats | | | | | **Permits** | | |
| 38-4-0748 | Thornton A 1(TA1) | AGD | 56 | 374125 | 6373989 | Open site | Partially Destroyed | Artefact : 2 | | 100059,100546 |
| | **Contact** | **Recorders** | Mr.Peter Kuskie | | | | | **Permits** | 2112,3044,3103 | |
| 38-4-2033 | Raymond Terrace Road IF | GDA | 56 | 373643 | 6374110 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,Mrs.Amanda Crick | | | | | **Permits** | | |

**Report generated by AHIMS Web Service on 03/05/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512.0 - 374264.0, Northings : 6372111.0 - 6375162.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 79**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 37375 AV

Client Service ID : 679571

| SiteID | SiteName | Datum | Zone | Easting | Northing | Context | Site Status ** | SiteFeatures | SiteTypes | Reports |
|---|---|---|---|---|---|---|---|---|---|---|
| 38-4-2032 | Raymond Terrace Road IF1 | GDA | 56 | 373702 | 6374134 | Open site | Destroyed | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,RPS Australia East Pty Ltd - Newca | | | | | **Permits** | | |
| 38-4-2031 | Raymond Terrace Road IF2 | GDA | 56 | 373825 | 6374148 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - York Street Sydney ,Mrs.Amanda Crick | | | | | **Permits** | | |
| 38-4-1995 | Lot 131 Site 1 Thornton | GDA | 56 | 372551 | 6373614 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-0625 | Thornton 3 (T3) | AGD | 56 | 371688 | 6373373 | Open site | Valid | Artefact : 1 | | |
| | **Contact** | **Recorders** | MCH - McCardle Cultural Heritage Pty Ltd | | | | | **Permits** | 2141 | |
| 38-4-0931 | Thornton North Site 1 Lot 1 | AGD | 56 | 372597 | 6373409 | Open site | Valid | Artefact : 3 | | |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4531 | |
| 38-4-2000 | Lot 131 Site 5 | GDA | 56 | 372748 | 6373532 | Open site | Valid | Artefact : - | | |
| | **Contact** | **Recorders** | Mr.Giles Hamm | | | | | **Permits** | 4531 | |
| 38-4-0939 | Thornton North Site 9 - Lot 20 | AGD | 56 | 372800 | 6373535 | Open site | Valid | Artefact : 1 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0937 | Thornton North Site 7 - Lot 20 | AGD | 56 | 372818 | 6373445 | Open site | Valid | Artefact : 1 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0938 | Thornton North Site 8 - Lot 20 | AGD | 56 | 372843 | 6373494 | Open site | Valid | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | | |
| 38-4-0935 | Thornton North Site 5 - Lot 20 | AGD | 56 | 372960 | 6373457 | Open site | Destroyed | Artefact : 2 | | 104167 |
| | **Contact** T Russell | **Recorders** | Mr.Giles (dup ID#12832) Hamm | | | | | **Permits** | 4359 | |
| 38-4-0891 | Thornton North 3 | AGD | 56 | 373185 | 6373705 | Open site | Destroyed | Artefact : - | | |
| | **Contact** T Russell | **Recorders** | Navin Officer Heritage Consultants Pty Ltd | | | | | **Permits** | 2592,2819,3189,3745 | |
| 38-4-1760 | RPS Thornton AS2 | GDA | 56 | 373823 | 6373858 | Open site | Destroyed | Artefact : 1 | | |
| | **Contact** | **Recorders** | RPS Australia East Pty Ltd - Hamilton | | | | | **Permits** | | |

**** 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 03/05/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 371512.0 - 374264.0, Northings : 6372111.0 - 6375162.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 79**

# Appendix 2 Biosis 2018 ACHA and AR

# Appendix 3 Biosis 2018 amendment of ACHA following further Aboriginal community consultation