Cleveland Precinct Planning Proposal

Interim Heritage Report

FINAL REPORT

Prepared for DFP Planning on behalf of Newquest Property

7 October 2020

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Document information

Report to:	DFP Planning on behalf of Newquest Property
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Biosis project no.:	33235
File name:	33235.Cleveland.Interim.FIN01.20201007

Citation: Biosis (2020). Cleveland Precinct Planning Proposal Interim Heritage Report. Report for DFP Planning on behalf of Newquest Property M Smith. Biosis Pty Ltd. Wollongong, NSW. 33235

Document control

Version	Internal reviewer	Date issued
Draft version 01	Taryn Gooley	02/06/2020
Final version 01	Mathew Smith	07/10/2020

Acknowledgements

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

- Michael Braithwaite (Newquest Property)
- Natasha Bartley (DFP Planning Pty Ltd)

Biosis staff involved in this project were:

- Anne Murray –GIS mapping

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Glossary

ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
CHMP	Cultural Heritage Management Plan
Consultation requirements	*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*
Due diligence code	*Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*
EP&A Act	*Environmental Planning and Assessment Act 1979*
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environment Plan
LGA	Local Government Area
NNTT	National Native Title Tribunal
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
Study area	The study area incorporates Lot 1 and 2 DP 730326, Lot 200 DP 803810, Lot 59 DP 1125379, Lot 1 DP 156208, Lot 1 DP 532391, Lot 312 DP 1188000, Lot 202 and 203 DP 1175709, and Lot 210 DP 1057565 (Northern Precinct) and Lot 1 DP194419, Lot A DP156466 and Lot 313 DP1188000 (Southern Precinct).
The Code	The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*

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Summary

Biosis Pty Ltd (Biosis) has been commissioned by Newquest property to prepare an Interim Heritage Report to accompany a planning proposal for an updated neighbourhood plan submission for the Cleveland Road Precinct residential development (the study area). The neighbourhood plan proposes to combine previous individual precinct plans for the North and South developments and update the proposed development. The proposed development will involve the subdivision and residential development of the study area, including associated works such as landscaping, installation of services, and construction of roads and amenities which will have potential to impact on heritage sites.

Biosis has previously undertaken several heritage assessments for the North and South precincts. Biosis completed an Aboriginal Due Diligence Assessment (ADDA) and Historical Heritage Assessment (HHA) for the South precinct which identified five Aboriginal sites registered on the Aboriginal Heritage Information Management System (AHIMS), four new areas of potential archaeological deposit (PAD) and one historical heritage item listed on the Wollongong Local Environmental Plan (LEP) as a locally significant item.

Biosis is also currently completing an Aboriginal Cultural Heritage Assessment (ACHA) of the North precinct area including consultation with the Aboriginal community in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a) *(*consultation requirements). Background research and an archaeological survey for this assessment identified a total of 13 AHIMS sites within the North precinct, as well as four areas of PAD and two new isolated artefact sites. Biosis has also undertaken test excavations for two areas of PAD identified by the survey which were originally planned to be impacted by the North precinct development.

The purpose of this Interim Heritage Report is to provide Newquest a comprehensive report detailing the results of the assessments currently underway and previously completed for the North and South precincts. This report outlines the Aboriginal and historical constraints known to exist within the study area, and the recommendations provided in the ADDA and HHA completed for the South precinct, and the ACHA currently underway for the North precinct. Table 1below outlines the Aboriginal and historical heritage sites present within the study area and the associated mitigation measures recommended as part of the previous assessments conducted by Biosis for the North and South precincts.

Table 1 Heritage sites within the study area and associated mitigation measures

Site ID	Name	Condition	Site Type	Impacts proposed	Recommendations
52-5-0622	Cleveland Road AFT-7	Valid	Artefact	No	Avoid impacts
52-5-0623	Cleveland Road AFT-8	Valid	Artefact	No	Avoid impacts
52-5-0619	Cleveland Road AFT-6	Valid	Artefact	No	Avoid impacts
52-2-3831	Cleveland Road FT 1	Valid	Aboriginal Ceremony and Dreaming	No	Avoid impacts
52-2-3832	Cleveland Road FT 2	Valid	Aboriginal Ceremony and	No	Outside of study area. Avoid

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			Dreaming		impacts
52-2-3815	Riverpark Way AFT-1	Valid	Artefact	No	Avoid impacts
52-2-1688	WD1-1;	Valid	Artefact	No	Avoid impacts
52-5-0877	Mullet Creek Artefact Scatter 1	Valid	Artefact	No	Avoid impacts
52-5-0507	WDRA_AX_02	Valid	Artefact	No	Avoid impacts
52-5-0508	WDRA_AX_03	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-2-3285	WDRA_AX_22	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-5-0496	WDRA_AX_23	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-5-0497	WDRA_AX_24	Valid	Artefact	Yes	This site was previously tested by by AMBS (2006a) and assessed with low scientific significance, it is recommended

					that an AHIP is obtained prior to impact
52-5-0498	WDRA_AX_25	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-2-3765	Cleveland Road PAD 5	Not a valid site	N/A	No	This site was tested by BIosis (2011a) and was determined not to be a valid site.
52-5-0585	Cleveland Road PAD 3	Not a valid site	N/A	No	This site was tested by BIosis (2011a) and was determined not to be a valid site.
52-5-0586	Cleveland Road PAD-4	Destroyed	Artefact	No	This site was tested by BIosis (2011a) and has been destroyed through an AHIP.
52-5-0583	Cleveland Road PAD 1	Valid	Artefact	No	Avoid impacts
52-5-0584	Cleveland Road PAD 2	Valid	Artefact	No	Avoid impacts
52-5-095	CR PAD 1	Valid	Artefact	Yes	This site was been tested by Biosis (In prep) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-2-4582	CR PAD 2	Valid	Artefact	Yes	This site was been tested by Biosis (In prep) and

					assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
N/A	CR PAD 3	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required.
N/A	CR PAD 4	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
52-5-0952	CR IF1	Valid	Artefact	Yes	This site was identified by Biosis (In prep) as an isolated surface artefact of low scientific significance. It is recommended that it is collected under an AHIP
52-5-0951	CR IF2	Valid	Artefact	Yes	This site was identified by Biosis (In prep) as an isolated surface artefact of low scientific significance. It is recommended that it is collected under an AHIP
5950	Cleveland House	Valid	Historical item and areas of potential	Yes	Avoid impacts if possible. Further assessment if impacts cannot be avoided

The following recommendations were made as part of the assessments conducted by Biosis for the North and South precincts:

North Precinct recommendations

Recommendation 1: Application for an Aboriginal Heritage Impact Permit (AHIP)

It is recommended that an AHIP application is made to impact sites AHIMS 52-5-0496/WDRA_AX_23 AHIMS 52-5-0497/WDRA_AX_24, AHIMS52-5-0498/WDRA_AX_25 and AHIMS 52-2-3285 AHIMS 52-5-0953/CR PAD 1, AHIMS 52-2-4582/CR PAD2, AHIMS 52-5-0952/CR IF1, AHIMS 52-5-0951/CR IF2 which cannot be avoided by the proposed development works. It is recommended that this AHIP be for a timeframe of 15 years.

For information about AHIPs and their preparation, see below.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places or cause land to be disturbed for the purposes of discovering an Aboriginal object. Heritage NSW issues AHIPs under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the Heritage NSW. Once the application is lodged processing time can take between 8-12 weeks. It should be noted that there will be an application fee levied by Heritage NSW for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 2: Surface collection of AHIMS 52-5-0952/CR IF1 and AHIMS 52-5-0951/CR IF2

It is recommended that surface artefacts at sites AHIMS 52-5-0952/CR IF and, AHIMS 52-5-0951/CR IF2 are collected as part of a surface salvage program in accordance with the proposed AHIP application prior to the commencement of works.

Recommendation 3: Further investigation of CR PAD 4 and CR PAD 3 is required

Access to CR PAD 3 and CR PAD 4 was not available at the time of this assessment and test excavations could not be undertaken in this area. It is recommended that test excavations of these sites are undertaken by an experienced archaeologist prior to submission of an AHIP to ascertain if these sites needs to be included in an AHIP before impacts can occur.

Recommendation 4: Avoidance of sites AHIMS 52-2-3815/Riverpark Way AFT-1, AHISM 52-2-1688/WD1, 52-2-3831/Cleveland Road FT 2, AHIMS 52-2-3832/Cleveland Road FT 2, AHIMS 52-5-0619/Cleveland Road AFT-6, and AHIMS 52-0584/Cleveland Road PAD 3

AHIMS 52-2-3815/Riverpark Way AFT-1, AHIMS 52-2-1688/ WD1, AHIMS 52-2-3831/Cleveland Road FT 1, AHIMS 52-2-3832/Cleveland Road FT 2, AHIMS 52-0584/ Cleveland Road PAD 3, AHIMS 52-5-0619/Cleveland Road AFT-6 are located outside of the proposed development footprint and it is recommended that impacts to these sites are avoided.

Recommendation 5: Development of a Cultural Heritage Management Plan (CHMP)

It is recommended that a CHMP be developed in consultation with the Registered Aboriginal Parties (RAPs) and Heritage NSW prior to the commencement of works. The CHMP will outline Aboriginal site management requirements including the management of identified sites, unexpected finds, and further works required prior to development.

Management options – previously identified sites

The CHMP should provide provisions to ensure that the identified sites located outside of the development area are not unintentionally impacted during works. This should include provision for exclusion fencing and development of suitable no go buffers if required.

Stop works provision – previously unidentified sites or objects

The CHMP should include a stop work provision for any potential heritage sites identified during construction which are not previously identified as part of the assessment or the CHMP.

All Aboriginal places and objects are protected under the NPW Act. This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during construction. If construction proceeds, work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under a CHMP. Heritage NSW and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Historical archaeological sites are protected under the relics provisions (s139 – 146) of the NSW *Heritage Act 1977* (Heritage Act). Should any historical archaeological sites be identified during any phase of the proposed development, all works must cease in the vicinity of the find and the project archaeologist and Heritage NSW notified. Should the archaeological nature of the find be confirmed the Heritage Branch of the NSW Department of Planning, will require notification.

Stop works provision – Discovery of Aboriginal Ancestral Remains

The CHMP should also include a provision for the 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 Newquest Property must:

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

Heritage training and induction

The CHMP should develop a training and heritage induction for all employees, contractors and associated subcontractors working on site. The induction training should address elements related to:

- Relevant legislation.
- CHMP conditions.
- Location of identified heritage sites.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.
- Procedure to follow in the event of discovery of human remains during construction works.
- Penalties and non-compliance.

Long term care and control agreement

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As part of the CHMP, a long term care agreement of artefacts should be developed for all Aboriginal artefacts identified during the test excavations and salvage works. This should be undertaken in consultation with the RAPs.

Recommendation 6: 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. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 7: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of the Draft North Precinct ACHA report to the Aboriginal stakeholders and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project.

South Precinct recommendations

Aboriginal heritage

Recommendation 1: Further archaeological assessment is required in areas of high archaeological potential CRS PAD2, CRS PAD3 and CRS PAD4

If impacts to areas mapped as having archaeological potential are proposed then further archaeological and cultural heritage assessment will be required. This will take the form of an ACHA Report, Archaeological Report and test excavations in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010) (the Code) and consultation guidelines.

Recommendation 2: Archaeological survey of Lot 1 DP 741423 and Lot 1 DP1126171 is required

Lot 1 DP 741423 and Lot 1 DP1126171 were not assessed as part of previous Biosis assessments and will need to undergo an archaeological survey to determine if any Aboriginal or historical sites are present within these areas that may be impacted.

Recommendation 3: Application for an AHIP to impacts sites AHIMS 52-5-0583/Cleveland Road PAD 1 and AHIMS 52-2-0508/WDRA_AX_03

The proposed works will impact AHIMS sites; AHIMS 52-5-0583/Cleveland Road PAD 1 and AHIMS 52-2-0508/WDRA_AX_03. Impacts to these sites cannot be avoided by the proposed works. These sites have been the focus of two test excavation programs (AMBS 2006b, Biosis 2011a) which have increased our current understanding of Aboriginal occupation in the region ensuring that any scientific and cultural information obtained can be accessed and used by future generations.

It is recommended that the client apply to Heritage NSW for an AHIP to impact on AHIMS 52-5-0583/Cleveland Road PAD 1and AHIMS 52-2-0508/WDRA_AX_03 which are currently protected under the NPW Act. The AHIP should be an area wide AHIP covering the entire study area.

Recommendation4: Avoid impacts to AHIMS 52-5-0622/Cleveland Road AFT-7, AHIMS 52-5-0623/Cleveland Road AFT-8, AHIMS 52-5-0507/WDRA_AX_02 and AHIMS 52-5-0877/Mullet Creek Artefact scatter 1, CRS PAD 1

The proposed works will not impact on AHIMS 52-5-0622/Cleveland Road AFT-7, AHIMS 52-5-0623/Cleveland Road AFT-8, AHIMS 52-5-0507/WDRA_AX_02 and AHIMS 52-5-0877/Mullet Creek Artefact scatter 1, CRS PAD 1. It is recommended that impacts to these sites are avoided to preserve them for future generations.

Recommendation 5: No further archaeological assessment is required in areas of low archaeological potential

No further archaeological work is required in areas identified as having low archaeological potential except in the event that unexpected Aboriginal sites, objects or human remains are unearthed during development.

Recommendation 6: 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's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
3. Not recommence work at that location unless authorised in writing by Heritage NSW.

Historical heritage

Recommendation 1: Avoid areas marked high and moderate archaeological potential if possible

The current development plans are shown to result in impacts to Cleveland House and areas of historical potential associated with it. It is recommended that impacts to the Cleveland House curtilage and areas identified as containing high and moderate archaeological potential be avoided as they are likely to contain archaeological deposits.

Recommendation 2: Retaining of visual barriers if possible

It is recommended that the existing vegetation that currently lines the unnamed creek and surrounds the Cleveland Homestead should be retained. This vegetation creates a visual barrier between the heritage values in Lot 1 DP 194419 and the future development as part of the significance of the homestead complex includes its rural setting.

Recommendation 3: Preparation of a Heritage Management Plan

It is recommended that a Heritage Management Plan is prepared for the Cleveland Homestead if impacts can be avoided. The homestead has been left unmanaged for an extensive period of time resulting in the deterioration of this locally valuable resource. The CHMP should outline recommended structural repairs prepared by a qualified heritage architect, future use for the homestead including any future subdivisions and recommended lot size, height restrictions and buffer plantings.

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Recommendation 4: Preparation of an updated Historical Heritage Assessment (HHA) and Statement of Heritage Impacts (SoHI) and updated recommendations if impacts cannot be avoided.

The HHA and Statement of Heritage Impacts (SoHI) originally prepared by Biosis for the Cleveland Homestead were assessed under a previous neighborhood plan which did not show any physical impacts to the listed item by proposed works. The currently proposed plan has the potential to impact on Cleveland House and the areas of archaeological potential and therefore recommendations 1 and 2 may not be feasible. An updated HHA and SoHI should be prepared to determine what suitable heritage controls are required if impacts cannot be avoided.

Recommendation 5: Archaeological investigation required prior to works for areas of potential if impacts cannot be avoided.

It has been determined that some parts of the study area have a moderate or high potential for the survival of archaeological resources of local significance. In NSW, archaeological sites of State or local significance are considered "relics", which are protected by the *Heritage Act 1977*. In NSW, impacts to relics are only permitted with a section 140 approval (excavation permit). Given the potential for local significant archaeological remains to be present within the study area a section 140 approval is required.

An application should be made to the Heritage Council for a section 140 approval (excavation permit) supported by an updated SoHI. An archaeological research design and methodology will also need to be prepared to support the application.

It is likely that archaeological works will consist of monitoring during demolition works (i.e. removal of floor surfaces, foundations etc.) and any additional ground disturbance works within the study area until an archaeologically sterile layer is encountered. Deeper archaeological excavation may be required depending on the nature of remains encountered. The works described must be supervised by and guided by an appropriately qualified archaeologist to ensure that any archaeological remains are identified and recorded. Should substantial archaeological remains be identified it may be necessary to undertake archaeological excavation using open area techniques.

Recommendation 6: Archival recording if impacts cannot be avoided

Prior to any impacts to the study area, a detailed archival recording should be undertaken to document Cleveland House and its relationship with the wider setting of the heritage item. Archival recordings should be undertaken in accordance with the *NSW Heritage Office documents How to Prepare Archival Records of Heritage Items* (Heritage Office 1998) and *Photographic Recording Of Heritage Items Using Film or Digital Capture* (Heritage Office 2006).

Recommendation 7: Discovery of unanticipated heritage items

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. The Heritage Council will require notification if the find is assessed as a relic. Relics are historical archaeological resources of local or State significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification.

1 Introduction

1.1 Project background

Biosis has been commissioned by Newquest property to prepare an Interim Heritage Report to accompany a planning proposal for an updated neighbourhood plan submission for the Cleveland Road precinct residential development. The project will involve the subdivision and residential development of the study area, including associated works such as landscaping, construction of roads and amenities.

An ADDA accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010b) and a HHA in line with *Assessing Heritage Significance, Assessing Significance for Historical Archaeological Sites and "Relics"* (NSW Heritage Branch, Department of Planning 2009) has been previously undertaken by Biosis in 2018 (Biosis 2018a) for the Southern Precinct in order to inform responsibilities with regards to Aboriginal cultural heritage and historical heritage in the area. In addition to the basic tasks required for these assessments, an extended background review, as well as an archaeological survey in accordance with the Code was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity and to assess existing sites within the area.

Biosis is also currently undertaking an ACHA for the Northern Precinct under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act). It is currently being undertaken in accordance with the Code and the consultation requirements.

1.2 Location of the study area

The study area is located within the Wollongong LGA, Parish of Kembla, County of Camden. The study area incorporates Lot 1 and 2 DP 730326, Lot 200 and 201 DP 803810, Lot 1 DP 741423, Lot 1 DP 112617, Lot 59 DP 1125379, Lot 1 DP 156208, Lot 1 DP 532391, Lot 312 DP 1188000 (Northern Precinct) and Lot 1 DP194419, Lot A DP156466 and Lots 310, 312, and 313 DP 1188000, Lot 100 DP 1086479, Lot 1 DP 999485 and Lot 401 and 402 DP 1254873 (Southern Precinct).

1.3 Planning approvals

The planning proposal will be assessed against Part 3 of the *Environmental Planning and Assessment Act 1979* NSW (EP&A Act). Other relevant legislation and planning instruments that will inform the assessment include:

- NPW Act.
- *National Parks and Wildlife Amendment Act 2010* (NSW).
- *Wollongong Local Environmental Plan 2011* (LEP).

1.4 Scope of the assessment

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

- Provide background research previously completed in order to recognise any identifiable trends in site distribution and location, including an up to date search of AHIMS.
- Outline sites identified during the previously completed surveys in compliance with the guidelines endorsed by Heritage NSW.

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- Outline currently known levels of archaeological and cultural significance of the study area.
- Outline recommendations proposed to mitigate and manage any Aboriginal cultural or historical heritage values identified within the study area.

1.5 Aboriginal consultation

No Aboriginal community consultation has been undertaken as part of this Interim Heritage Report. Aboriginal community consultation was not undertaken as part of the ADDA completed for the South precinct. Biosis is currently undertaking Aboriginal community consultation in line with the consultation requirements as part of the ACHA for the North precinct. Details relating to Aboriginal community consultation undertaken as part of the ACHA for the North precinct are provided below.

Further consultation in line with the consultation requirements will be undertaken for the South precinct.

1.5.1 North precinct

The Aboriginal community is currently being consulted regarding the heritage management of the North Precinct as part of the Cleveland Road North Precinct ACHA. Consultation has been undertaken as per the process outlined in the consultation requirements.

The appropriate government bodies were notified and advertisements placed in the Illawarra Mercury newspaper (1 November 2019). A search conducted by the Office of the Registrar, *Aboriginal Land Rights Act 1983* listed no Aboriginal Owners with land within the study area. A search conducted by the National Native Title Tribunal (NNTT) listed the South Coast People Registered Native Title Claim over the study area; however the study area is located in freehold land which extinguishes Native Title. A list of Aboriginal stakeholders for the Illawarra Region was also supplied by Heritage NSW.

Aboriginal groups identified by government bodies were sent a letter inviting them to register their interest in a process of community consultation to provide assistance in determining the significance of Aboriginal object(s) and/or places in the vicinity of the study area. These letters were sent on 19 November 2019 with the end of registration date the 3 December 2019. In response to the letters and public notice, a total of 11 groups registered their interest in the project. A full list of RAPs who registered for consultation for the Northern precinct ACHA is provided in Table 2 below.

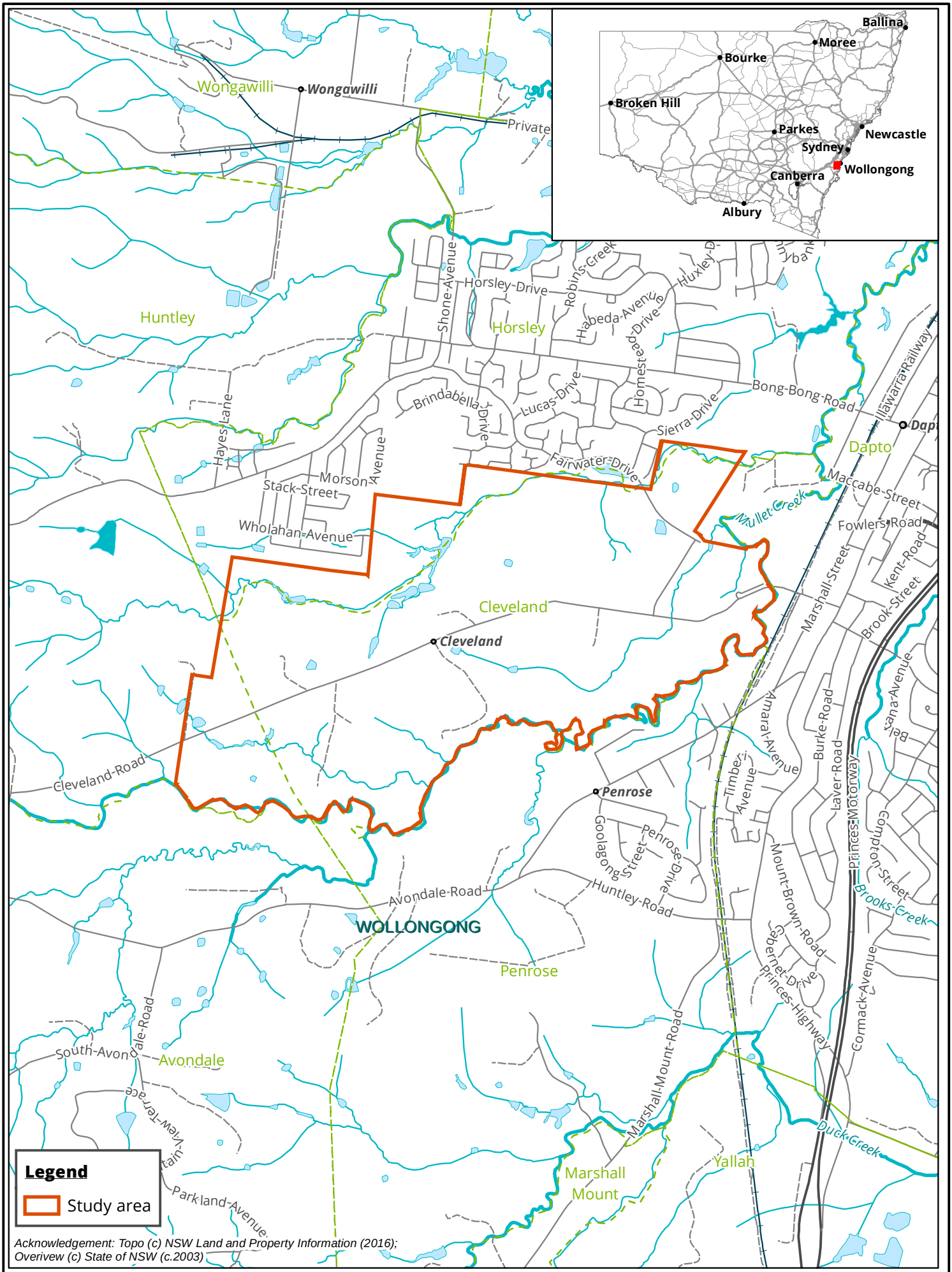
Table 2 Registered Aboriginal Parties

N.	Organisation
1	Leanne Tungai
2	Illawarra Local Aboriginal Land Council
3	Guunamaa Dreamin Sites and Surveying
4	James Davies
5	Tungai Tonghi
6	Woronora Plateau Gundungara Elders Council
7	South Coast NSW Aboriginal Elders Incorporated
8	Duncan Falk Consultancy
9	Goobah Development Pty Ltd (Murrin Clan/Peoples)

N.	Organisation
10	Barraby
11	Yurrandaali

Upon registration, the RAPs were invited to provide their knowledge on the study area and on the proposal information supplied in the Cleveland Road North methodology as part of stages 2 and 3 of the consultation requirements. The project information and methodology was sent to all RAPs on 4 December 2019. As per the consultation requirements RAPs were given 28 days to provide comments on the methodology. The responses identified the study area as an area of high cultural significance, due to the widespread use of the Mullet Creek region by Aboriginal people in the past and the presence of Aboriginal sites in the area.

Stage 4 of the consultation requirements is currently pending. A copy of the draft ACHA will be provided to RAPs with a minimum of 28 days for comment.



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

Figure 1 Location of the study area

Biosis Pty Ltd

Albury, Ballarat, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 33235
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location:P:\33200s\33235\Mapping\

0 200 400 600 800 1,000 N

Metres

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

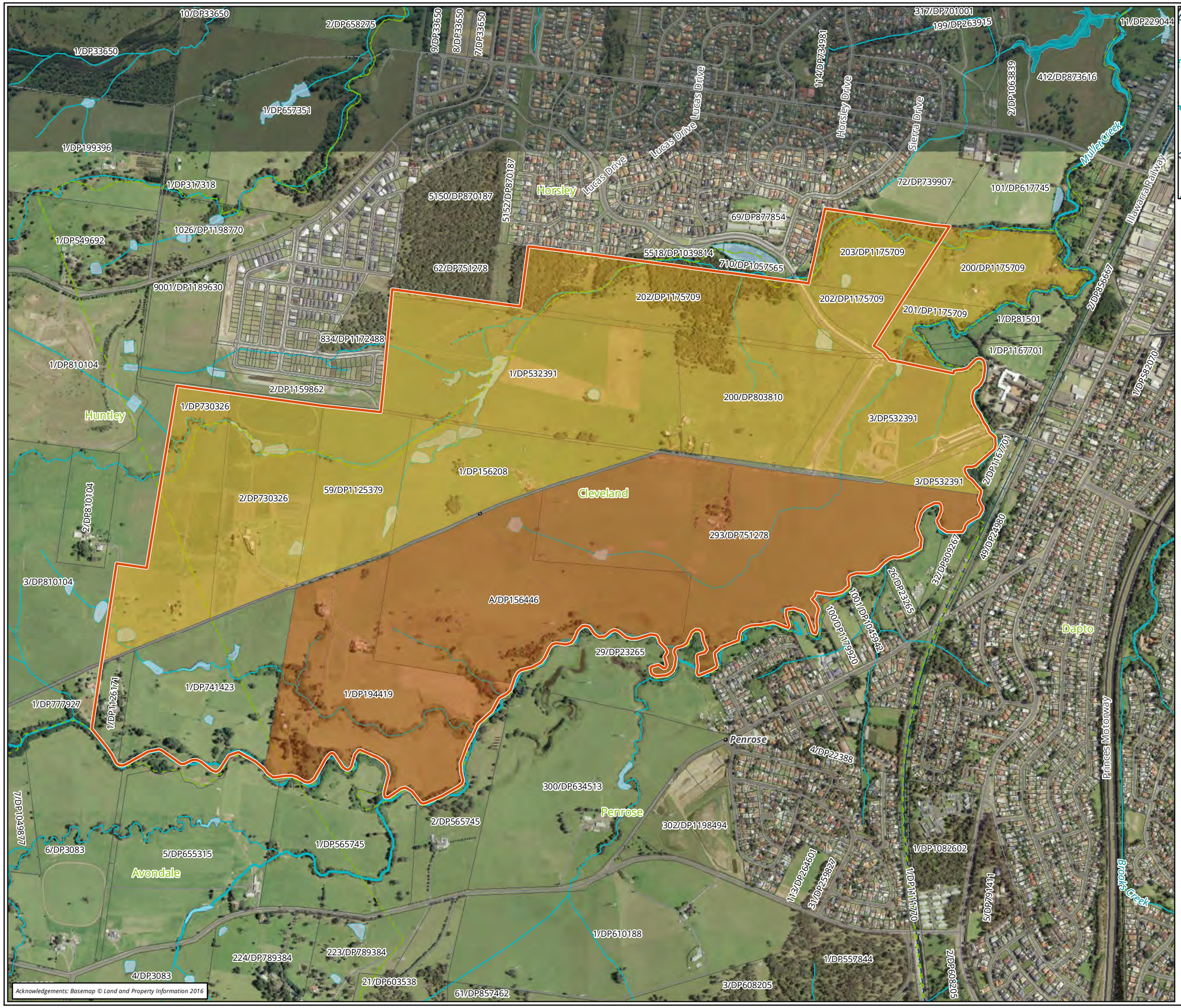


Figure 2 Location of the study area

Matter: 33235,
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F2_StudyArea.mxd

2 Desktop assessment

The following information has been synthesised to develop some Aboriginal site predictive statements for the study area and identify known Aboriginal sites and/or places recorded in the study area. This desktop assessment has been prepared in accordance with requirements 1 to 4 of the Code.

2.1 Geology, Hydrology, soils and landforms

The study area consists of low lying, mostly cleared, alluvial lowland and floodplain adjacent to Mullet Creek and its tributaries, and an undulating midland valley. The study area is situated within a rural landscape with irregular stands of forest vegetation surrounding homesteads, along drainage lines and upon low knolls.

The geology of the study area consists primarily of quaternary aged alluvial floodplain deposits comprising quartz fluvial sands, clays and silts. Red brown and grey lithic sandstone is also present in the study area.

There are a number of hydrological features within the study area. They are primarily in the form of small creeks and streams. One unnamed third order creek line runs through the study area from west to east. This creek line drains into the fourth order stream Mullet Creek which traverse the eastern and southern boundary of the study area. There is also a second order creek line which runs north to south off of the northern boundary line. This creek line drains into the same fourth order stream on the eastern boundary of the study area. These creek lines would have provided useful resources for Aboriginal people in the region and could contain evidence of Aboriginal occupation as a result.

Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. They are defined by a combination of soils, topography, vegetation and weathering conditions. Soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure. There are three soil landscapes within the study area; the Fairy Meadow, Shellharbour, and Albion Park soil landscapes (Hazelton & Tille 1990) . The Fairy Meadow soil landscape is associated with the alluvial plains, floodplains, valley flats, swamp landscapes and terraces below the Illawarra Escarpment. Soils present within the Fairy Meadow soil landscape consist of friable alluvial loams and siliceous sands on the upper flood plains with dark brown sands and heavy clays on the lower alluvial flats. The dominant soil materials of the Fairy Meadow soil landscape are outlined in Table 3. The limitation of this type of soil landscape is the flood prone nature of the low wet bearing, highly permeable soils, with high seasonable water table (Hazelton & Tille 1990, pp. 100).

The total depth of Fairy Meadow soil landscape within upper floodplains and terraces is less than 100 centimetres. Soil depth within valley flats is less than 150 centimetres and overlies Quaternary sediments. The Fairy Meadow soil landscape is a swamp landscape that is characterised by soils that are at least seasonally wet, with water tables frequently close to the surface (Hazelton & Tille 1990, pp. 100). Parent soil material includes large amounts of accumulated decayed organic matter. Since they accumulate parent soils and deposit transported soils, swamp soil landscapes would preserve archaeological material; although their susceptibility to flooding and water inundation suggests there is a lower likelihood that they were intensively occupied.

Table 3 Fairy Meadow soil landscape characteristics (Hazelton & Tille 1990, pp. 100).

Soil Material	Description
Fairy Meadow 1 (fa1)	Brownish black loose sandy loam, fa1 is associated with upper floodplains and terraces; typically forms a topsoil up to 20 centimetres thick.

Soil Material	Description
Fairy Meadow 2 (fa2)	Brown sand, fa2 overlies fa1 on upper floodplains, and forms topsoil on valley flats; depths vary, but fa2 is generally up to 40 centimetres thick.
Fairy Meadow 3 (fa3)	Yellowish brown clay that underlies fa2 for a depth of up to 50 centimetres in valley flats.
Fairy Meadow 4 (fa4)	Olive brown clay that underlies fa3 for a depth of up to 80 centimetres in valley flats; it sits above Quaternary sediments.

The Shellharbour soil landscape is associated with rolling low hills with long sideslopes and broad drainage plains which occur on Budgong sandstone on the coastal plain. It is described as a deep prairie soil which occur on crests and supper slopes with brown krasnozems which occur on midslopes, red podzolic soils and prairie soils occur on lower slopes and drainage plains. The dominant soil materials of the Shellharbour soil landscape are outlined in Table 4. The limitation of this soil landscape is the mass movement nature of shallow soils, water erosion hazard, sodicity, hard setting, low permeability, low wet bearing strength with a high shrink swell. The mass movement of shallow soils is not likely to preserve *in situ* archaeological material frequently in the top soil layer; however, archaeological material could be preserved in the layers below, albeit in mixed soil contexts.

Table 4 Shellharbour soil landscape characteristics (Hazelton & Tille 1990, pp. 58)

Soil Material	Description
Shellharbour 1 (sh1)	Friable brownish black sandy loam 2-5 millimetre crumb peds.
Shellharbour 2 (sh2)	Hard setting organic rich black light clay, moderately pedal, 5-10 millimetre platy peds.
Shellharbour 3 (sh3)	Mottled dull reddish brown, sandy clay with characteristic stone line.
Shellharbour 4 (sh4)	Brown strongly pedal heavy clay 20-50 millimetre sub angular to columnar peds
Shellharbour 5 (sh5)	Very sticky, strongly pedal dull reddish brown sandy clay loam to sandy clay at depth.

The Albion Park soil landscape is associated with short steep upper slopes that grade into long gentle footslopes. These occur on the Berry Formation on the Coastal Plain. The Berry Formation is comprised of mid grey to dark grey siltstone, mudstone and fine sandstone with localized outcrops of Budgong Sandstone (red brown and grey lithic volcanic sandstone) on mid to upper slopes. Localised outcrops of Bumbo Latite occasionally occur on crests. Reliefs range from 60-100 metres and drainage lines are incised on upper slopes that grade into broad drainage plains on lower slopes (Hazelton 1992, pp. 40). Soils present within the Albion park soil landscape consist of friable sandy clay loam and clays (Table 5).The Albion Park landscape is an erosional landscape and is unlikely to preserve Aboriginal sites *in situ* due to processes of erosional soil movement. The formation of this landscape through erosional processes combined with the generally sloped nature of landforms within are likely to have removed artefacts and artefact bearing soils.

Table 5 Albion Park soil landscape characteristics (Hazelton 1992, pp. 41)

Soil Material	Description
Albion Park 1 (ap1)	Friable brownish black sandy clay loam (topsoil), rough faced porous fabric, with <2 millimetre peds.
Albion Park 2 (ap2)	Hardsetting weakly pedal dark brown loam (topsoil), rough faced porous fabric, with <2 millimetre peds.

Soil Material	Description
Albion Park 3 (ap3)	Mottled moderately pedal greyish brown light clay (subsoil), moderately pedal, 50-100 millimetre angular blocky peds, with rough faced, porous fabric.
Albion Park 4 (ap4)	Weakly pedal bright yellowish brown sandy loam (subsoil), rough faced porous fabric, with <2 millimetre peds.
Albion Park 5 (ap5)	Mottled moderately pedal yellow orange heavy clay (subsoil), moderately pedal, 20-50 millimetre sub-angular blocky peds, with rough faced, porous fabric.

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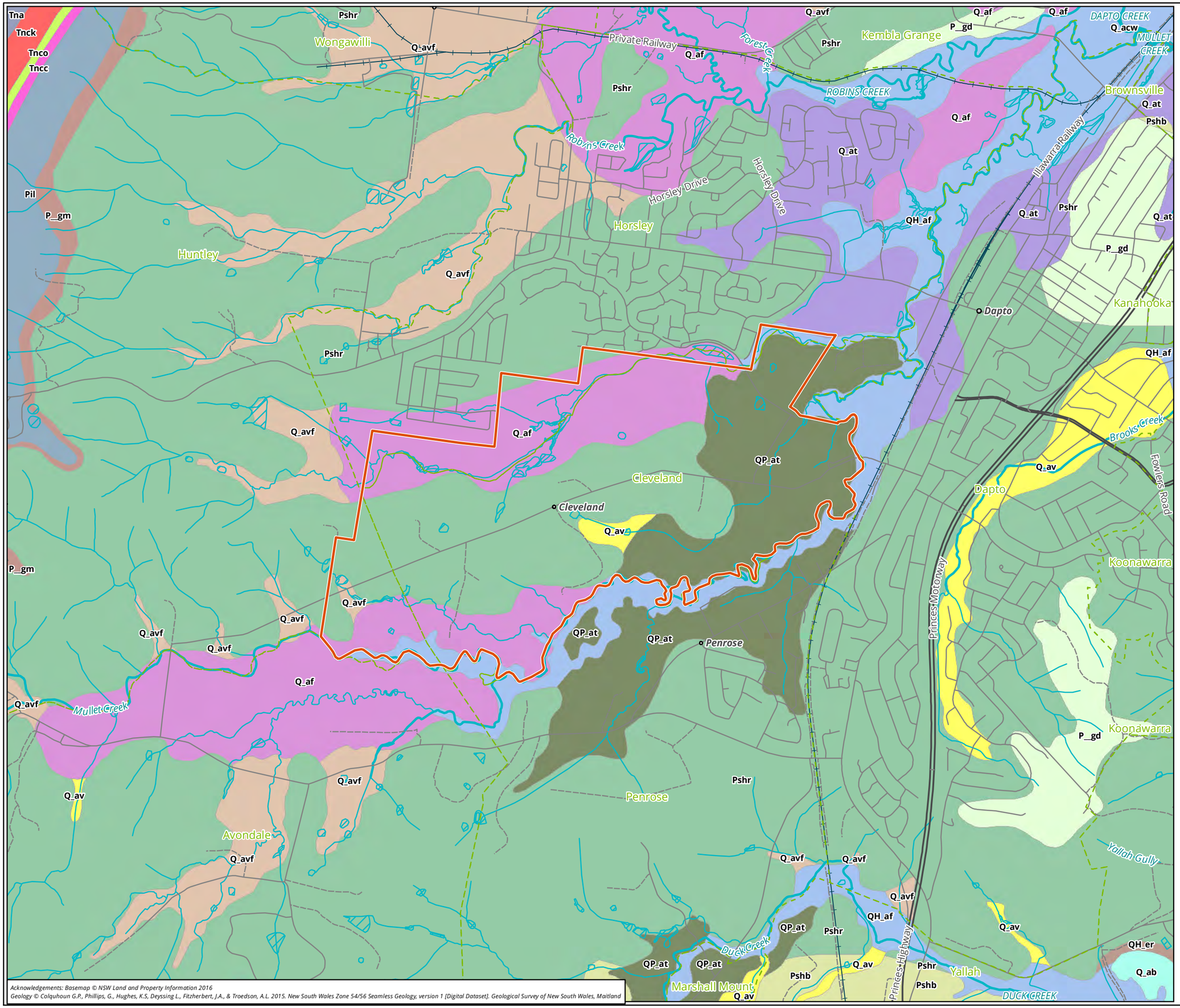

Legend

Study area

Geological Units

- P__ga - Cambewarra Latite Member
- P__gd - Dapto Latite Member
- P__gm - Minnamurra Latite Member
- Pil - Illawarra Coal Measures
- Pshb - Berry Siltstone
- Pshr - Broughton Formation
- Q_ab - Alluvial backswamp deposits
- Q_acw - Alluvial channel deposits-
- Q_af - Alluvial floodplain deposits
- Q_ap - Alluvial palaeochannel deposits
- Q_at - Alluvial terrace deposits
- Q_av - Alluvial valley deposits
- Q_avf - Alluvial fan deposits
- QH_af - Alluvial floodplain deposits
- QH_er - Estuarine shoreline ridge and dune
- QP_at - Alluvial terrace deposits
- Tna - Narrabeen Group
- Tncc - Coal Cliff Sandstone
- Tnck - Kangaloon Sandstone
- Tnco - Wombarra Claystone

Figure 3 Geological units within the vicinity of the study area

0 200 400 600 800

Metres

N

Scale: 1:20,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

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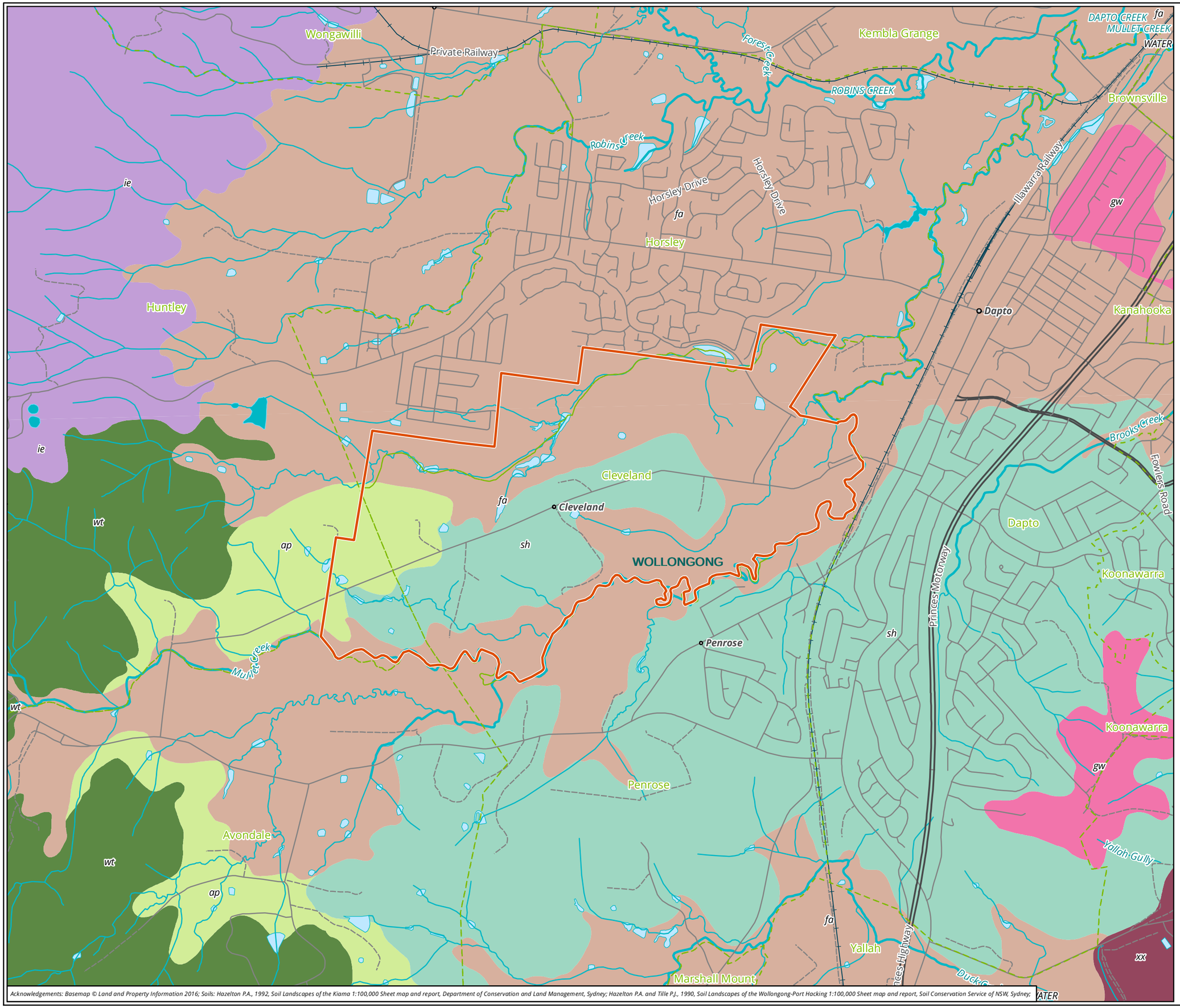
Matter: 33235,
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F3_Geology.mxd

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



Legend

Study area

Soil Landscape units

- ap - ALBION PARK
- fa - FAIRY MEADOW
- gw - GWYNNEVILLE
- ie - ILLAWARRA ESCARPMENT
- sh - SHELLHARBOUR
- wt - WATTAMOLLA ROAD
- xx - DISTURBED TERRAIN

Figure 4 Soil landscapes within the vicinity of the study area

0 200 400 600 800

Metres

N

Scale: 1:20,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 33235
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F4_Soils.mxd

Acknowledgements: Basemap © Land and Property Information 2016; Soils: Hazelton P.A., 1992, Soil Landscapes of the Kiama 1:100,000 Sheet map and report, Department of Conservation and Land Management, Sydney; Hazelton P.A. and Tille P.J., 1990, Soil Landscapes of the Wollongong-Port Hacking 1:100,000 Sheet map and report, Soil Conservation Service of NSW, Sydney;

2.2 Flora and fauna resources

The margins of the Wollongong Plains are characterised by mixed warm temperate and subtropical rainforest complexes on rich shale soils and alluvium under the Illawarra Escarpment, interspersed with patches of lowland forest and woodland communities. The study area is located within areas that have been cleared or retain pockets of disturbed native vegetation, with intact remnant vegetation situated along the creek line corridors.

The Wollongong Plains generally provides a number of resources used by Aboriginal inhabitants. Lithic resources would have been accessible in the outcrops of siltstone, shale and tuffaceous sandstones of the Berry Siltstone formation, while coastal rock platforms provided areas where tools might be ground and sharpened and art might be engraved. Quartz would have been available locally and dispensed through trading with other groups (Donlon & Sefton 1988, pp. 23). Igneous raw materials would have come from the south of the study area in areas like Gerringong, due to its volcanic nature (Donlon & Sefton 1988, pp. 55). Angular cobbles and pebbles of fossilised wood have also been recorded near the study area in the bed of Robins Creek (Sefton 1990, pp. 4), which is located north of the current study area.

Aerial imagery and vegetation mapping undertaken by the National parks and Wildlife Service (NPWS 2002) shows that the study area has been cleared of native vegetation; however, native vegetation communities in the vicinity of the study area and around Lake Illawarra would have been comparable to vegetation found in the study area prior to clearing. These vegetation communities include (NPWS 2002):

- Lowland Woollybutt – Melaleuca Forest located on flat low-lying Shoalhaven Group sediments at elevations between 10 and 35 metres above sea level. It is characterised by the presence of Woolybutt (*Eucalyptus longifolia*), Stringybark (*Eucalyptus globoidea, Eucalyptus eugenioides*), and Honey Myrtle (*Melaleuca decora).*

The bark from Stringybark and red gum species was used as rope and string to make nets, fishing lines, as well as to construct shelters and canoes (Stewart & Percival 1997). Trees in the acacia family also provided useful resources as the seeds from certain acacia species could be eaten and the bark tannin used for fishing (Stewart & Percival 1997, pp. 8).

Terrestrial and avian resources were used for food, but they also provided a significant contribution to the social and ceremonial aspects of Aboriginal life through their use as ritual implements or even simply through fashioning as personal adornments (Attenbrow 2002, pp. 107). Mammals such as kangaroos, possums and wombats were used as a food source and also for tool making. Bones and teeth were used as points or barbs for hunting spears and fishing spears, while tail sinews are known to have been used as a fastening cord (Attenbrow 2002, pp. 99). Aquatic species such as freshwater crayfish would have been easily accessible in larger waterways (Rosen 1995). Aquatic vertebrates, fish and eels, would also have been present within larger creeks and waterways. Fishing spears were described as being barbed with fish teeth as wells a fish bones (Attenbrow 2002, pp. 117).

There are a number of historical records from the nineteenth century observations of Aboriginal people in the Illawarra that refer to activities around Mullet Creek.

Alexander Harris who visited the Illawarra between 1828 and 1838 published his autobiographical work *Settlers and Convicts* in 1847 where he noted usage of Cabbage Trees *Livistona australis* as footbridge over the Mullet Creek (Organ 1990, pp. 163):

> *The Mullet Creek where we passed it must have been nearly five and thirty feet wide; and the bridge was one of those slender cabbage trees grown on the bank and flung by some bushman or black across the creek with his axe, either with a view to using it as a*

> *bridge or for the sake of the interior part of the head, which is very similar when dressed to cabbage, and is a favourite article of food with many…*

A local settler at Lake Illawarra, John Brown, noted extensive Aboriginal exploitation of the Mullet Creek area in 1888, observing a great number of Aboriginal canoes on Mullet Creek (Organ 1990, pp. 348):

> *…He (Mr George Brown) has always taken a deep and active interest in the lake and its islands, and also in Mullet Creek, down which he had made his first trip in a boat in 1837, blackfellow canoes then being the order of the day…*

From these ethnographic resources it can be seen that the study area was likely utilised by Aboriginal people for both travel and exploitation of resources making it highly likely that Aboriginal sites will be located in close proximity to Mullet Creek.

3 Aboriginal context

3.1 Ethnohistory and contact history

It is generally accepted that Aboriginal peoples have inhabited Australia for the last 50,000 years (Allen & O'Connell 2003). Despite a proliferation of known Indigenous sites there is considerable ongoing debate about the nature, territory and range of pre-contact Indigenous language groups in the Illawarra region. These debates have arisen largely due to the lack of ethnographic and linguistic information recorded at the time of European contact. By the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Indigenous people in the late 19th century; pre-European Indigenous groups had been broken up and reconfigured by European settlement activity. The following information relating to Indigenous people in the Illawarra is based on such early detailed records.

The Illawarra region is the traditional land of the Wodi Wodi, a group of people who spoke a variant of the Dharawal language (Wesson & New South Wales Government Office of Environment and Heritage 2009). The area occupied by this group extended from Botany Bay down the coast to around Nowra. To the north of the Wodi Wodi, the Darug are identified as the traditional owners, to the west are the Gundanguura, and in the south are the Thoorga (Tindale 1974).

The areas inhabited by each of these groups are considered to be indicative only and would have changed through time and may have been dependent on certain circumstances (i.e. availability and distribution of resources). Interactions between different types of social groupings would have varied with seasons and resource availability.

Traditional stories tell of the arrival of the Wodi Wodi to Lake Illawarra, bringing with them the *Dharawa*l or cabbage tree palm from which their language is named (Wesson & New South Wales Government Office of Environment and Heritage 2009, pp. 5). Analysis of middens in the region has provided dates of occupation dating back 6000 to 7000 years on the coast and at Lake Illawarra, and it is accepted that Aboriginal occupation of the south coast dates to around 20,000 years ago (AMBS 2008, pp. 33).

The first recorded contact between Aboriginal and European peoples occurred in 1770, when Captain Cook sailed down the east coast of Australia in the Endeavour and observed cook fires and Aboriginal people carrying canoes along the coast (Organ 1990, pp. 2). The next recorded contact occurred in 1796, when Flinders and Bass travelled along the coast in the Tom Thumb (Organ 1990, pp. 8). (Organ 1993, pp. 49), followed by an expedition from Jervis Bay by George William Evans, in which the expedition met several groups of Aboriginal people on the way through the Wollongong area in 1812.

An article in the South Coast Times from 31 January 1957 by A. Armstrong includes a reference about Dapto and Charley Hooka (Organ 1990, pp. 385):

> *The name "Dapto" derived from the Aboriginal name of "Dabpeto" meaning "plenty water" and the land on which the township of Dapto arose was owned by an Aboriginal chief, Charley Hooka... He was popular amongst the chiefs of the Illawarra tribes and owned a large area of land in the district and also a large portion of Lake Illawarra.*

In November 1970 W.G.McDonald published an article from 25 July 1893 by John Brown on King Hooka and the Hooka Islands of Lake Illawarra that refer to the Aboriginal name for Dapto (Organ 1990, pp. 354–355). It was understood that the word "high water" does not relate to flood waters but to the many streams of beautiful fresh water that flow through that portion of the district. Chief Hooka was regarded as the great chief amongst other Aboriginal people as his land was abundant with fish and large quantity of game of any

sort (Organ 1990, pp. 384). He was thought be killed and laid to rest on "the opposite side of Hooka Creek on a hillock of sand" (Organ 1990, pp. 375), approximately 5.5 kilometres north-east of the current study area.

3.2 Regional context

A number of Aboriginal cultural heritage investigations have been conducted for the Illawarra region. Models for predicting the location and type of Aboriginal sites with a general applicability to the Lake Illawarra region and thus relevant to the project area have also been formulated, some as a part of these investigations and others from cultural heritage investigations for relatively large developments. A growing number of archaeological surveys have been conducted between the hinterland and the coast as a result of increased development activities, including the present study area and its immediate surrounds.

Sefton (1980) undertook an archaeological survey of proposed transmission line routes in the West Dapto-Yallah Area of the City of Wollongong, approximately 7 kilometres from the current study area. Two archaeological sites were identified during this survey. Registered site, AHIMS 52-5-0123/Yallah Site 1, consisted of one isolated artefact that was located on the northern bank of a tributary of Duck Creek, made from fossilised wood. AHIMS 52-5-0122/Yallah Site 2 was located within 150 metres of Lake Illawarra on a lower slope and is a sparse scatter of seven artefacts made from chert, jasper and rhyolite. The site was located on a gradual slope, and has been previously disturbed by quarrying, erosion and underground services (Sefton 1980, pp. 10). Both sites are within close proximity to reliable, permanent sources of water on flat elevated grounds.

Sefton's (1984) study formed part of the Local Environmental Study prior to Stage 1 of the West Dapto Release Area (WDRA) development in Horsley, north of the study area. A copy of the Sefton's report could not be obtained, however AMBS summarised Sefton's results in their 2006 report (AMBS 2006a).

The following key elements constitute Sefton's site predictive model for the WDRA:

- Archaeological sites at Bass Point provide evidence of Pleistocene occupation, and there is no evidence to suggest West Dapto could not have been occupied at this time.
- It is possible that stratified occupational deposit could be located in the Pleistocene sediments of the flood plains at West Dapto. Stratified occupational deposit of Holocene age is also likely (and more possible) to occur in the floodplain sediments.
- Ethnohistorical records suggest two major zones of exploitation: (1) the coastal zone, including the shoreline, off shore islands and Lake Illawarra; and (2) the inland zone, including undulating tablelands. Groups who used both areas were small, mobile, and associated with a locality, but also ranged over larger areas. On this basis, it could be expected that the West Dapto area could have been exploited from both east and west directions, in addition to tracks along ridgelines.
- The Lake Illawarra shoreline presents restricted areas for campsites relative to the concentrated resources. Midden sites may not represent base camps (occupation sites) but instead preferred sites for resource exploitation. These preferred sites are expected to occur within two kilometers of the Lake Illawarra shoreline, and would have been established around the lake shore.
- The resources of West Dapto (flora, fauna, available water) would have made the locality attractive to occupation and exploitation. However, resources would have been scattered and at low density in comparison to Lake Illawarra, and the locality was probably not economically self-contained. Base camps would not have been suitable for exploitation of these resources.
- Stone materials are not sourced within the area, with the exception of latite cobbles and occasional quartz pebbles. Consequently, stone would have been conserved at camp sites.

- Tracks connecting the coast to the interior would be expected through the West Dapto area, due to its geographic location between the two. Aboriginal tracks are usually along ridges, and consequently, sites could be expected in the saddles of ridges.
- Along the eastern coastal plain and the foothills of the escarpment to the west, sites are likely to occur on ridgelines or on dry level land within 100 metres of a creek line.
- In the foothills of the Escarpment to the west, sites may also occur further away from water on saddles of the Marshall Mount spur and on level areas of smaller ridgelines along the escarpment slopes and foothills.
- Extractive sites will also be located in West Dapto. These would occur as scarred trees, isolated large cores, tools of latite or small isolated stone artefacts. These sites may occur in all landform contexts, although scarred trees could only be identified in areas where trees have not been fired or cleared.
- It is not expected that latite quarry sites will occur at West Dapto. Although edge ground tools have been located in adjacent areas on the shores of Lake Illawarra, although those tools have been prepared from pebbles or cobbles and not from quarried materials (AMBS 2006a, pp. 87–88).

The following four areas were identified in WDRA as having high archaeological potential:

- All level areas of the Western foothills zone and the Coastal Plain within 100 metres of a creek located on:
  - Quaternary deposited flood plains.
  - Budgong Sandstone
  - Berry Siltstone.
- Saddles on the ridges of Marshall Point spur.
- Level areas in the Forest Creek Valley in the Escarpment Protection Zone.
- Level areas of the escarpment slopes on the topographic benches and bluffs.

Three main categories of sites being of potential significance were also identified:

- **Stratified occupational deposits**: may occur in the flood plain deposits of West Dapto, these deposits would have significant research potential and would be rare. Such a site may contain stone artefacts, food refuse and charcoal, which could be dated to establish a chronology of occupation of West Dapto. This would be significant to the public and be of educational significance. If the site were of Pleistocene age, it would be of major heritage significance to the Australian people, such as that identified at Bass Point.
- **Surface camp sites:** these unstratified deposits are likely to contain stone artefacts, and possibly, remnants of shell and charcoal. Bone is unlikely to have survived. These sites may provide information on settlement patterns, economic exploitation and stone tool manufacture and maintenance. These sites have research potential, but it is also predicted that they will be the most common site type at West Dapto.
- **Scarred trees:** although the identification of scarred trees is recognized to be problematic, any found in West Dapto will be of research potential (i.e. study of individual tree scars, relationship with other site types). Scarred trees are rare in the North Illawarra as in most areas, mature native trees have been burnt, and the rarity of scarred trees increases their significance (AMBS 2006a, pp. 90).

Koettig (1992) conducted an assessment of Aboriginal sites for the electrification of the Dapto to Kiama railway line. Landforms surveyed included the low lying coastal plain and foothills. Due to the levels of previous disturbance during the construction of the railway it was considered that any possible archaeological sites would have been destroyed. No sites were located during the survey. Since the railway crosses areas

that are deemed as having high archaeological sensitivity, such as dunes, old terraces, areas close to water sources that have not been affected by the recent development, archaeological material could still remain. Any new development outside the boundary of the railway easement was assessed as having archaeological sensitivity (Koettig 1992, pp. 4).

Australian Museum Business Services (AMBS) (2006a) completed an Aboriginal Heritage Management Plan for the West Dapto Release Area (WDRA). This large scale study was commissioned by Wollongong City Council and encompasses the study area. From the initial survey program, a total of 24 archaeological sites; 13 open camp sites, 6 isolated finds, 5 scarred trees were located within the boundaries of the WDRA study area. These were positioned on all landforms including creek lines (6), alluvial flats (3), spanning creek lines and alluvial flats (3), hillslopes (8) and spur crests (4). A second stage of assessment, which included a portion of the current study area, was subsurface testing of an area of 100 square metres (100, 1 metre by 1 metre test pits) undertaken across all representative landforms of the Mullet, Duck and Marshall Mount Creeks catchment area. A third stage of testing was carried out at Darkes Road Town Centre and Bong Bong Road Town Centre.

A total of 425 artefacts were recovered from the following landscape contexts:

- Hillslopes (158, of which 146 were from one test pit).
- Alluvial flats – Pleistocene and Holocene terraces more than 10 metres away from stream channels (118 artefacts).
- Streams – edges of Pleistocene and Holocene terraces within 10 metres of stream channels (86 artefacts).
- Spur crests (63 artefacts).

Three hundred and fifty three of the artefacts were recovered from less than 20 centimetres of deposit. A range of raw materials were represented including, chert, quartz, quartzite, silcrete, silicified tuff and fine-grained siliceous. Artefact types included broken flakes, flakes, flaked pieces and cores. The range of raw materials and artefact types is considered characteristic of the region.

AMBS concluded that from known site patterning it is likely that additional archaeological sites may occur throughout all landforms of the WDRA, although at varying site and artefact densities, and subsequently all parts of the study area are considered to have some archaeological potential. In general, the highest artefact density was encountered along hillslopes, second-order streams, followed by the first order streams, third order streams, alluvial flats, fourth order streams and then spur crests. Although artefact numbers recovered from individual test pits was low, high artefact recovery across all the landforms illustrate that the use of WDRA area was widespread, but not intensive. It was concluded that low density artefact scatters would be relatively common within the entire WDRA area (AMBS 2006a, pp. 245).

The report recommended further investigation and management of those areas considered to have higher archaeological potential, including a number of spur crests within the Mullet Creek corridor, the benched foot slopes within the Escarpment foothills adjacent to creek lines and the lower tributaries of major creeks (AMBS 2006a, pp. 266). These landforms would have provided camping sites, functioned as travel routes or provided a range of resources.

Areas of cultural value highlighted by the Aboriginal stakeholders throughout the development of the report are closely related to the archaeological record and the natural environment (AMBS 2006a, pp. VIII). All archaeological sites were identified as having cultural values, with the connection between cultural and natural values being emphasised. Large scatters and scarred trees were considered of higher significance, as were those sites retained within a natural setting. Conservation of important archaeological sites and natural

areas such as creek lines and vegetated areas was a common theme identified among the Aboriginal stakeholder comments.

As part of the WDRA, AMBS commissioned Philip Hughes to complete a geomorphology / archaeological testing program prior to the commencement of the larger sub-surface investigation program. Hughes excavated a series of test pits using a combination of hand excavation and a backhoe within various landforms identified by AMBS (2006a). The geomorphic testing revealed that while all landforms had the potential to contain artefact-bearing deposits, archaeological evidence for Aboriginal occupation and use of the Pleistocene terraces would be restricted to the Holocene period (AMBS 2006a, pp. 176). Artefact bearing deposits across all landforms comprise soft to firm soils and sediment. The depth of deposits varies across landforms, with the shallowest sediments occurring on ridges and hill slopes, and the deepest sediments occurring on Holocene terraces. 'Richer' archaeological deposits could be expected within Holocene terraces, but they would be disturbed by floods and perhaps buried in deeper alluvium (AMBS 2006a, pp. 177). Artefacts were retrieved from alluvial flats at a maximum depth of 60 to 70 centimetres.

Biosis (2011b) completed Aboriginal heritage assessment and impact management study for the proposed water and wastewater servicing of the West Dapto Urban Release Area (WDURA) and Adjacent Growth Areas in 2011. The survey identified three new Aboriginal archaeological sites: AHIMS 52-2-3813/NRE Wongawilli AFT-1, / AHIMS 52-2-3814/ Smiths Lane AFT-2 and AHIMS 52-2-3815/Riverpark Way AFT-3. All of the sites were located in a disturbed context and the potential for further sub-surface deposits was assessed as low (Biosis 2011b, pp. 156–158). Areas of low, moderate and high PAD were identified across the assessed area. These were defined based on the levels of disturbance, sensitive landforms, survey results and the likelihood for intact archaeological deposits. Overall, a small number of high and moderate areas of potential were identified, mainly on ridge crests, creek spurs and on flat grounds near the confluence of creeks (Biosis 2011b, pp. 173). Further archaeological assessment was recommended for areas mapped as having high archaeological potential. Sections of these areas are within the study area. Areas as having high archaeological potential were identified between Reid and Mullet Creeks, and within 150 metres of Reid Creek.

GML (2015) were commissioned by Stockland to complete a land review on the heritage context of all Stockland owned lands in the Dapto area. This assessment included extensive background review, Aboriginal consultation, and some field survey to characterise the area. This assessment led to the revision of previous predictive models and the formulation of a number of predictive statements relating to the local area (2015, pp. 150–151). These statements have been summarised below:

- The area contains a number of alluvial terraces bordering the main creeks in the area. Suitable soil landscapes in these areas have high potential to contain subsurface archaeological deposits.
- The foothill landforms contain numerous palaeochannels showing a long history of the landscape being reworked. Predictive modelling should not rely on current creek location, but should consider the location of these palaeochannels.
- Sites identified in the middle reaches of Robins and Duck Creeks show a link to the extent of flood levels and Lake Illawarra water rises, showing that middens may occur up to 2.5 kilometres from the lake.
- The foot hills of the escarpment are the closest landforms with appropriate areas suitable for intensive Aboriginal activities. Alluvial terraces in this area with slopes of less than 3% are likely to have moderate to high potential.
- Sites on alluvial soils which have been excavated appear to occur in stratified deposits, and such sites should be excavated by stratigraphy to recover spatial data.

- Gravel beds are likely to have been used as sources for the extraction of raw stone materials. Investigations should aim to identify the sources of gravel beds and stone material.
- Within the foothills, the nature and extent of archaeological sites on the alluvial landscapes needs to be better understood. Archaeological sites may be connected with specific landscape locations, such as the upper outer bends of larger creeks, and may only extend away from the bend for 10 metres. Conversely, archaeological sites may be found on sheltered alluvial landforms on flat terraces nestled between the creek bends. The extent and results from archaeological testing, at the regional level, is currently insufficient to describe fine resolution archaeological patterning. The investigation and resolution of such models needs to be developed, so as to inform regional development and thus allow the conservation of key landforms and their Aboriginal sites.
- Archaeological evidence recovered from excavations on the coastal plain has been mainly limited to stone artefacts.
- Based on the sandstone bedrock of the region, creek beds may show evidence of grinding.

Those landforms associated with Aboriginal walking tracks may contain the greatest variety of archaeological evidence, with the potential for material brought up from the coast and down from the plateau.

3.2.1 Local overview

A number of Aboriginal cultural heritage investigations have been conducted within the local area (within approximately 5 kilometres of the project area). Most of these investigations were undertaken as part of development applications and included surface and sub-surface investigations. These investigations are summarised below.

Navin Officer (1994) was commissioned by Camp Scott and Furphy to undertake an archaeological survey of the proposed Illawarra water quality project installation at Kembla Grange, approximately 5 kilometres north-east of the current study area. The survey was a targeted survey of creek banks and flats, areas of exposure around an existing dam, and flat ground on the southern part of their study area. These areas had higher degree of ground surface visibility and were considered as being favoured by Aboriginal people for occupation activities. Footslopes, creek banks, creek flats and plains were all aggrading landforms due to colluvial deposition and mass soil movement and deposition of sediments by water. The steep slopes on the spurs and in the north were sampled (Navin Officer 1994, pp. 7). During this survey there were no new Aboriginal sites identified. It was argued that archaeological potential in the proposed works area was low due to the results of previous testing in the similar landforms (Navin Officer 1994).

Navin Officer (2002) conducted an Indigenous heritage assessment for the Smiths Lane, Wongawilli rezoning application. The assessed area is located to the immediate north of Wongawilli Road, approximately 2.7 kilometres north of the current study area. It is within the east-facing slopes of the Illawarra Range and the topography consisted of moderate to low gradient, roughly northwest-southeast oriented, descending spur lines meeting the fluvial corridor and associated valley floor of the Mullet Creek catchment area. Navin Officer noted that the possible paucity of sites in this region could be attributed to lack of ground surface visibility hindering site detection as well as the likelihood that these areas represented a relatively less economically attractive area than the adjacent coastal and estuarine margins (Navin Officer 2002, pp. 9). No Aboriginal sites were identified. However several areas of limited PAD were noted. These included the main northern spur line and small locally elevated areas adjacent to the main (northern) creek line.

Biosis (2007) was engaged by TCG Planning on behalf of Huntley Heritage Pty Ltd to undertake Aboriginal archaeological assessment for the proposed rezoning and development of a parcel of land previously known as the Huntley Colliery site. The area consisted of 420 hectares of land located to the south of West Dapto; it encompasses an area between Duck and Mullet Creeks in the foothills of the Escarpment and is characterised by highly and gently inclined slopes with broad benches in the west, and low level relief with gentle slopes and

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alluvial plains at the east. The archaeological survey identified two new Aboriginal archaeological sites. Avondale 1 is a small density artefact scatter located on an exposure on a cattle track at the base of a ridgeline, approximately 20 metres from the confluence of Mullet Creek and one of its tributaries. Avondale 2 is an artefact scatter located on an exposed track close to a natural spring that feeds into a pool of a tributary creek to Mullet Creek. A number of other areas that have moderate archaeological sensitivity were identified. These include:

- Ridgeline crests and broad flat benches - levelled natural topography used for easy access to the Escarpment and good views.
- Areas along tributary systems and alluvial plains – raised areas of land adjacent to water confluences used for repeated occupation.
- Illawarra Plateau – shelters and sandstone platforms used for camping and ceremonial purposes.

Areas along and on top of the Illawarra Escarpment were assessed by local Aboriginal communities as having high cultural significance. It was accentuated that not only material, but also spiritual and cultural connections to the land need to be considered (Biosis 2007, pp. 61). Further archaeological test excavations were recommended for areas mapped as having moderate sensitivity, and a permit to impact two new Aboriginal sites be obtained (Biosis 2007, pp. 67–68).

Archaeological and Heritage Management Solutions (AHMS) (2010) completed Aboriginal and historical archaeological and cultural heritage assessment for the proposed Stockland residential subdivision of land at Bong Bong Road in West Dapto. The proposed subdivision area is located within the spur crest running east-west along Bong Bong Road with sloping grounds towards the Reid Creek to the south and the Robins Creek tributary to the north. Soils present are swampy alluvial deposits. Site prediction modelling from previous studies, particularly previous test excavations undertaken by AMBS in 2006, indicated that alluvial flats in association with lower order streams would contain low density open camp sites that represent short term and transitory occupation (AHMS 2010, pp. 44–45). One previously recorded Aboriginal archaeological site was located within the assessed area, AHIMS 52-2-3277/WDRA_AX_47.

During the archaeological survey one artefact scatter was identified, AHIMS 52-2-3779/WDSY1 and one PAD, AHIMS 52-2-3778/WDY2. AHIMS 52-2-3779/WDSY1 was located on a terrace between two arms of Robins Creek within an area that was identified as having archaeological potential by AMBS in 2006. A total of ten artefacts were recorded within two areas of exposure. Artefacts consisted of flakes made of silcrete, fine grained siliceous material, chert, chalcedony and banded chert (AHMS 2010, pp. 57). WDY2 was identified within a small triangular terrace of a tributary creek to Robins Creek. The terrace is about 20 to 30 metres from the creek and is 1.5 to 2 metres above the level of the creek and most likely is not prone to flooding. AHIMS 52-2-3277/WDRA_AX_47 was tested by AMBS in 2006 and three artefacts (silcrete and chert flakes) were recovered from three 1 metre by 1 metre test pits across approximately 50 square metres on a flat adjacent to Robins Creek tributary.

Site AHIMS 52-2-3779/WDY1 was assessed as having moderate archaeological potential. Recommendations were made to undertake further archaeological assessments if any impacts are proposed to any of the three registered Aboriginal sites.

Biosis (2011a) was commissioned by Wollongong City Council to undertake a program of sub-surface testing for the proposed Fairwater Drive extension to Cleveland Road, which included part of the current study area. Five PADs were registered within the proposed works areas that were subject to archaeological test excavations:

- AHIMS 52-5-0583/Cleveland Road PAD-1 is located on a minor rise to the south of Cleveland Road, within the study area and 200 metres from Mullet Creek. Five test pits were excavated on both sides

of the small drainage channel. No artefacts were recovered and likelihood for sub-surface deposits to be present was considered low.

- AHIMS 52-5-0584/Cleveland Road PAD-2 is located within alluvial flats 10 metres of the western bank of Mullet Creek. Eight test pits were excavated to the sterile clay layer located at approximately 30 centimetres. Seven artefacts were recovered from four test pits that consist of flakes, a core and debitage made from silcrete, chert and mudstone. The site was assessed as having low scientific and moderate cultural significance.
- AHIMS 52-5-3765/Cleveland Road PAD-3 is located within alluvial flats 200 metres from Mullet Creek on the western side of the drainage line. Four test pits were excavated and no Aboriginal cultural material was identified. Results indicated that AHIMS 52-5-3765 Cleveland Road PAD-3 has undergone partial subsurface disturbance due to the previous residential construction and assumed demolition (Biosis 2011a, pp. 32).
- AHIMS 52-5-0586/Cleveland Road PAD-4 is located within alluvial flats 200 metres from Mullet Creek to the east of the small drainage line. Five test pits were excavated with one artefact recovered, a hammerstone made of andesite. Due to the lack of additional cultural material in other excavated test pits, It was considered that the artefact was an isolated find, and that no further sub-surface deposits are present across the entire PAD area or associated landform (Biosis 2011a, pp. 34). The site was assessed as having low scientific and moderate cultural significance.
- AHIMS 52-5-3765/Cleveland Road PAD-5 is located within alluvial flats 50 metres south of Reid Creek. Three test pits were excavated with no Aboriginal cultural material recovered.

In addition to the five registered PADs, the program of archaeological test excavations also focused on the banks of Mullet Creek and its tributaries. Mullet Creek catchment area has been previously identified as being highly archaeologically sensitive by AMBS (2006a). The results of the additional testing identified:

- AHIMS 52-5-0619/Cleveland Road AFT-6 is located within alluvial flats 10 metres south of Mullet Creek. A total of eight test pits were excavated with six artefacts recovered from three test pits located on the eastern side of the small drain. Artefacts consisted of flakes and debitage made from silcrete, chert and mudstone. The site was assessed as having moderate scientific and high cultural significance.
- AHIMS 52-5-0622/Cleveland Road AFT-7 is located within alluvial flats 15 metres from Mullet Creek. Seven test pits were excavated with eight artefacts recovered from four pits, consisting of chert, chalcedony, siltstone and silcrete flakes, a core and debitage pieces. The site was assessed as having low to moderate scientific and high cultural significance.
- AHIMS 52-5-0623/Cleveland Road AFT-8 is located between sites AHIMS 52-5-0583/Cleveland Road PAD-1 and AHIMS 52-5-0622/Cleveland Road AFT-7, within alluvial flats between 50 and 100 metres from Mullet Creek. Three test pits were excavated with one chert flake recovered. The site was assessed as having low to moderate scientific and high cultural significance.

Results of the test excavations revealed that creek and drainage lines had greater number of artefacts than those on the open floodplain (Biosis 2011a, pp. 46). Recovery of at least one artefact in 71.4% of the tested sites demonstrated that the area was broadly used by Aboriginal people in the past with occupation focusing along Mullet Creek corridor (Biosis 2011a, pp. 61); however all deposits were low in density suggesting the study area was not extensively used. Cultural material recovered from all the tested sites are common within the region and had a very limited research potential. Following the outcomes of test excavations, areas of high, moderate and low Aboriginal archaeological sensitivity were mapped. Areas associated with major creek lines with minimal disturbance were mapped as having high archaeological sensitivity where Aboriginal sites can be expected to be high density artefact scatters. Those areas are associated with Mullet Creek banks. Areas that have moderate archaeological potential were identified around creeks and waterways with some,

but minor post contact disturbances, where artefacts may vary in density but would be concentrated in small areas (Biosis 2011a, pp. 58). Further archaeological test excavations were recommended for areas having high and moderate archaeological sensitivity.

Based on the outcomes of the consultation with local Aboriginal community, areas of high cultural sensitivity were also identified. Mullet Creek, as a recognised focal point with many Aboriginal archaeological sites present along its path, holds a very strong association for the local Aboriginal people and their ancestors who extensively utilised the area. A fig tree that was located to the north-west of the assessed area was recorded on AHIMS register as AHIMS 52-5-3831/Cleveland Road FT1; it holds a high cultural and spiritual significance, with significant potential for it to be a Women's Site (Biosis 2011a, pp. 61).

AHMS (2012) was commissioned by Stockland to undertake ACHA for the proposed residential subdivision within two parcels of land, referred to as 'McPhail Lands', north of Bong Bong Road in West Dapto. The assessment followed up from the one completed in 2010 with the revision of the proposed subdivision. Two registered Aboriginal sites were located in the assessed area: AHMS 52-2-3779/WDSY1 and AHIMS 52-2-3778/WDSY2. Additional survey was undertaken for both sites, and test excavations of site WDSY1. The location of site WDSY1 was tested as well as the associated and the surrounding landforms including the second terrace to its west and the spur line. A total of 546 artefacts were recovered from 75 test pits. Most artefacts were located within the western part of the eastern terrace and it was determined that the site extended to the spur crest (AHMS 2012, pp. 98). Division of the test excavation results according to AMBS landform definitions illustrate that the highest density of artefacts occur within alluvial flats, followed by hillslope and then spur lines. Results of test excavations completed by AHMS indicate that the particular areas within the WDRA were subject to higher intensity or long-term occupation and/or use, and indicate focussed occupation and/or use within favoured landforms (AHMS 2012, pp. 101). Site AHMS 52-2-3779/WDSY1 was assessed as having high archaeological significance due to its rarity in the area, high number of artefacts and its research potential for obtaining a maximum age for the deposit using the underlying fluvial deposits (AHMS 2012, pp. 103). Salvage was recommended for site AHMS 52-2-3779/WDSY1 prior to ground disturbance works associated with the proposed development.

Biosis (2015a) undertook an ACHA of the Fowlers Road Extension, located adjacent to and within the current study area. As part of this assessment Biosis undertook a field survey of the study area and identified one previously known site AHIMS 52-5-3831/Cleveland Road FT1 which contained high cultural value as a potential 'womans place', however, they did not identify any new sites or areas of potential as part of the field survey. It was determined that the alluvial flats making up the majority of the study area were unlikely to preserve sites due to their susceptibility to flood events and disturbances. Following the field survey, a program of test excavation was undertaken across the entire extent of the road extension study area to determine the validity of AMBS 2006 predictive modelling. Biosis excavated a total of 116 test pits across the alluvial flat landform and identified two artefacts from a single test pit located within 50 metres from a creek line. Biosis suggested that the alluvial flat was not conducive to occupation as a result, likely due to its susceptibility to flooding.

Biosis (2016) was commissioned by MMJ Real Estate to undertake an Aboriginal heritage assessment for 20 Iredell Road and 51 Hayes Lane. This assessment was undertaken in support of a Neighborhood Master Plan for the two properties, but only 20 Iredell Road was surveyed. The area is located approximately 1 kilometre north-east of the current study area. The assessment identified two previously recorded sites (AHIMS 52-2-3283/WDRA_AX_2 and AHIMS 52-2-3284/WDRA_AX_21) as well as four additional sites located within 300 metres of Robins Creek. The assessment identified areas of potential for sub-surface archaeological deposits associated with alluvial flats and areas of moderate potential along ridgelines and hillslopes associated with Robins Creek. The assessment concluded that flat, levelled ground above flood level, as well as extensive views towards the Escarpment, would have made the place ideal for long-term occupation. Swampy soils across the alluvial flats were noted as aggrading, indicating that any archaeological material would have been buried and retained. Recent land use activities in the area would not have resulted in removal or

displacement of soil layers, other than the very surface soils. A subsequent survey at Hayes Lane, identified area of PAD associated with a ridgeline crest and creek terrace. Test excavations undertaken within the Hayes Lane land parcel to characterise areas of PAD identified a low density artefact assemblage on the ridgeline landform. No artefacts were identified across the creek terraces and it was determined that there susceptibility to flooding and waterlogging likely removed artefact deposits or made them less suitable areas for occupation (Biosis Pty Ltd 2018).

3.2.2 Identified Aboriginal archaeological sites

An extensive search of the AHIMS database was conducted on 25 May 2020 (Client service ID: 507898). The search identified 114 Aboriginal archaeological sites within a six kilometre search area, centred on the study area (Table 6). A total of 18 of these registered sites are located *within* the study area and an additional eight within 200 metres of the study area (Figure 5 and Table 7). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied upon where notable discrepancies occurred in site locations between the two.

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 127 results presented here, compared to the 114 sites identified in AHIMS.

Table 6 Breakdown of AHIMS site types within six kilometres of study area

Site type	Occurrences	Frequency (%)
Artefact	81	63.8
PAD	36	28.3
Modified Tree (Carved or Scarred)	5	3.9
Aboriginal Ceremony and Dreaming	3	2.4
Art (Pigment or Engraved)	1	0.8
Shell	1	0.8
Total	127	100

A simple analysis of the Aboriginal cultural heritage sites registered within 6 square kilometres of the study area indicates that the dominant site type consists of artefacts, representing 63.8% (n=81), with PAD sites following at 28.3% (n=36). Modified Tree (Carved or Scarred) sites made up 3.9% (n=5) of sites and Aboriginal Ceremony and Dreaming were represented 2.4% (n=3) of AHIMS results. Shell and Art (Pigment or Engraved) site types each represented 0.8 % (n=1 each) of recorded site types.

Table 7 AHIMS sites identified within the study area

AHIMS	Name	Condition	Site Type
52-5-0622	Cleveland Road AFT-7	Valid	Artefact
52-5-0623	Cleveland Road AFT-8	Valid	Artefact

52-5-0619	Cleveland Road AFT-6	Valid	Artefact
52-2-3831	Cleveland Road FT 1	Valid	Aboriginal Ceremony and Dreaming
52-2-3815	Riverpark Way AFT-1	Valid	Artefact
52-2-1688	WD1-1;	Valid	Artefact
52-5-0877	Mullet Creek Artefact Scatter 1	Valid	Artefact
52-5-0507	WDRA_AX_02	Valid	Artefact
52-5-0508	WDRA_AX_03	Valid	Artefact
52-2-3285	WDRA_AX_22	Valid	Artefact
52-5-0496	WDRA_AX_23	Valid	Artefact
52-5-0497	WDRA_AX_24	Valid	Artefact
52-5-0498	WDRA_AX_25	Valid	Artefact
52-2-3765	Cleveland Road PAD 5	Valid	Artefact
52-5-0585	Cleveland Road PAD 3	Not a valid site	N/A
52-5-0586	Cleveland Road PAD-4	Destroyed	Artefact
52-5-0583	Cleveland Road PAD 1	Valid	Artefact
52-5-0584	Cleveland Road PAD 2	Valid	Artefact

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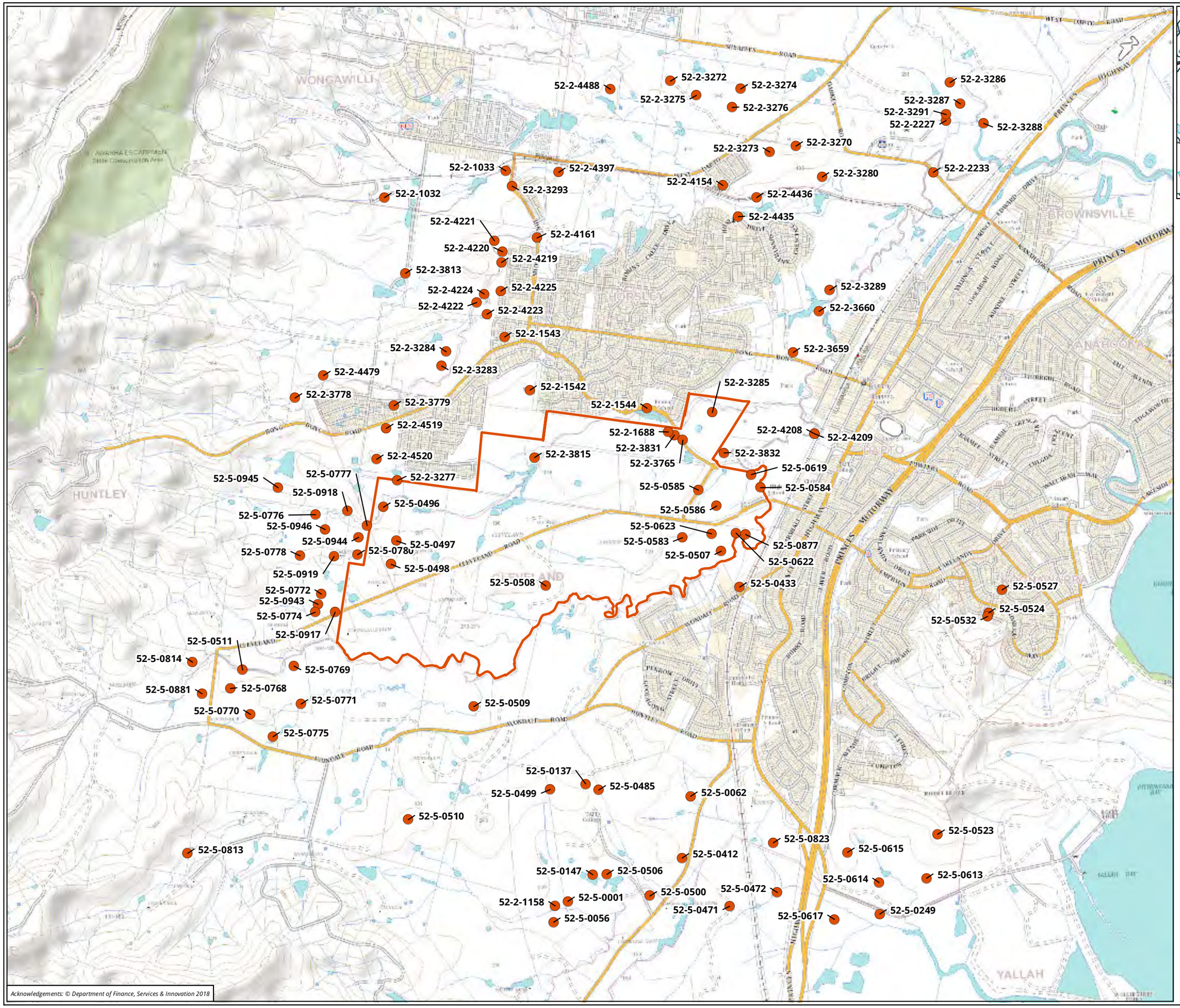

Legend

- Study area
- AHIMS record

Figure 5 AHIMS sites in the vicinity of the study area

0 200 400 600 800 1,000

Metres

N

Scale: 1:25,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 33235,
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F5_AHIMS.mxd

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Acknowledgements: © Department of Finance, Services & Innovation 2018

3.2.3 Predictive statements

A series of statements have 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 statements are based on:

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

Table 8 below indicates the site types most likely to be encountered across the present study area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 8 Aboriginal site prediction statements

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	High: Stone artefact sites have been previously recorded in the region across a wide range of landforms including alluvial flats, and also within the study area; they have the high potential to be present within the study area.
Potential archaeological deposits (PADs)	Potential sub surface deposits of cultural material.	High: PADs have been previously recorded in the region, and within the study area across a wide range of landforms including alluvial flats. They have the potential to be present in undisturbed landforms including alluvial flats.
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. The lack of permanent water sources suggests a low potential they will occur in the study area.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area and the geology of the study area suggests there is low potential they will occur.
Modified trees	Trees with cultural modifications	Low: A small number of mature native trees have survived within the study area due to extensive vegetation clearing from the 1800's onwards for

Site type	Site description	Potential
		pastoralism.
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.
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 Historical context – Cleveland House

There is little known about the construction and occupation of Cleveland House (Plate 1). At the time of the house listing by the National Trust, there was practically no information on its history available, however research from Mr Edgar Beale provided information on the homestead. An excerpt from Mr Edgar Beale's research is as follows;

"Cleveland" stands on a grant of 600 acres (Portion 59, Parish of Kembla) made in 1833 to George William Paul, a Sydney merchant who disposed of his land even before the grant was issued. A series of subdivisions and conveyances followed in fairly rapid succession. In February 1841 Maurice Fitzgerald bought 300 acres for 150 pounds; in May of the same year he sold 145 acres for 800 pounds; which suggests that the house was built in the interval" (McDonald 1976).

Plate 1 Cleveland Homestead (Source: Wollongong City Council Image 10859)

Furthermore, Beale stated in his research that the new owner was Hercules Watt who had held it only until November 1841. Watt then sold it off to Cornelius Wholohan who then mortgaged off the property to Thomas Jessett. It was then in 1843, in the depth of the depression, of the "hungry forties" that Wholohan died. Jessett then took advantage of his power and exercised his right of sale, however he sold it for a suspiciously low price. The buyer then sold it back to Jessett before the end of the year, who then worked the property for several years. Thomas Jessett was highly successful, winning prizes at local shows for produce, poultry, cows and pigs (McDonald 1976). Thomas Jessett's cattle were amongst the good herds in the 1840's and he was among the aristocracy of the early dairying endeavours. He had managed to acquire the best types of dairy cattle (Cousins 1948).

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However, these successes were to come to an end when Wholohans son Thomas, the heir to the estate bought an equity suit to redeem the mortgage and after protracted proceedings, in 1853 Jessett was ousted from his seemingly ill-gotten estate. Thomas Wholohan didn't hold onto the property for long, he promptly sold it to William Speer, who in turn sold it to William Howe in 1856. William Howe only held the property for two years before he died. The property was then let to a succession of tenants. In 1888 the property was sold in a reportedly poor condition to the Madden family who held it until 1912. The price of the property had dropped over thirty-two years from 3500 pounds to 2610 pounds (McDonald 1976).

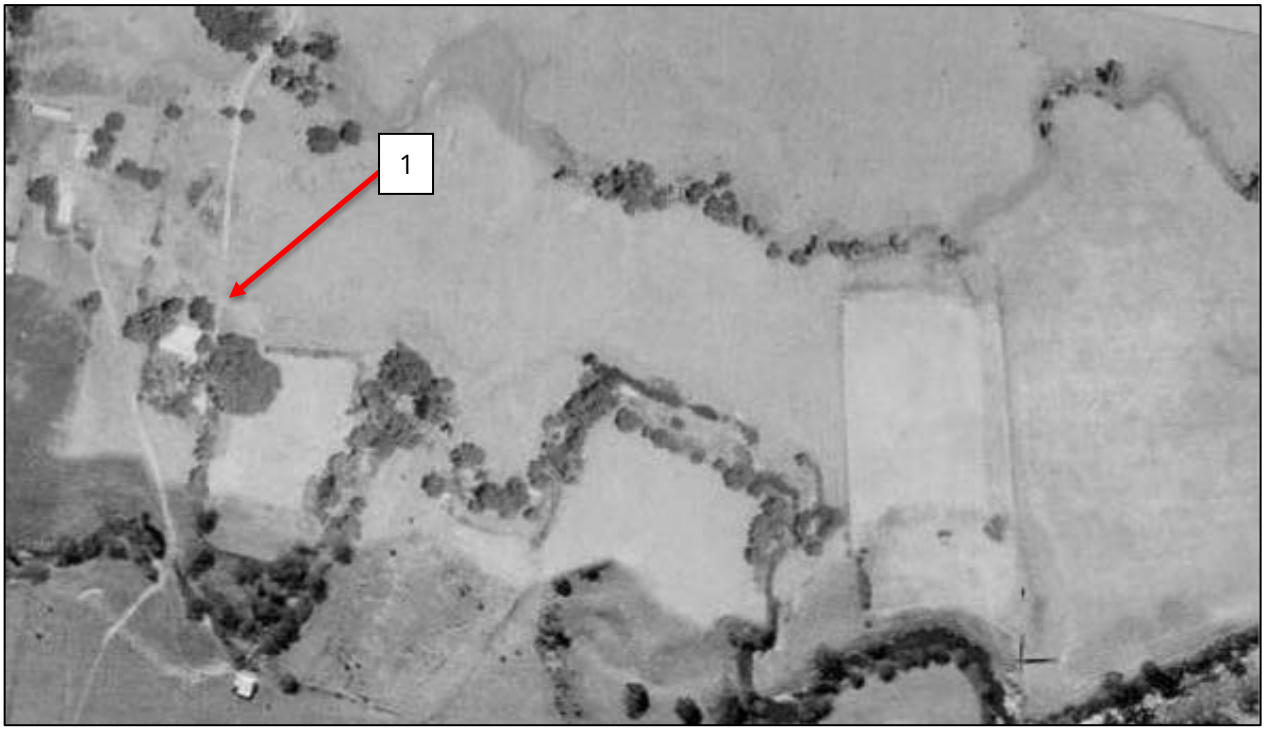

Plate 2 **1948-51 aerial image of Lot 1 DP194419 with Cleveland Homestead [1] (Source: Wollongong City Council)**

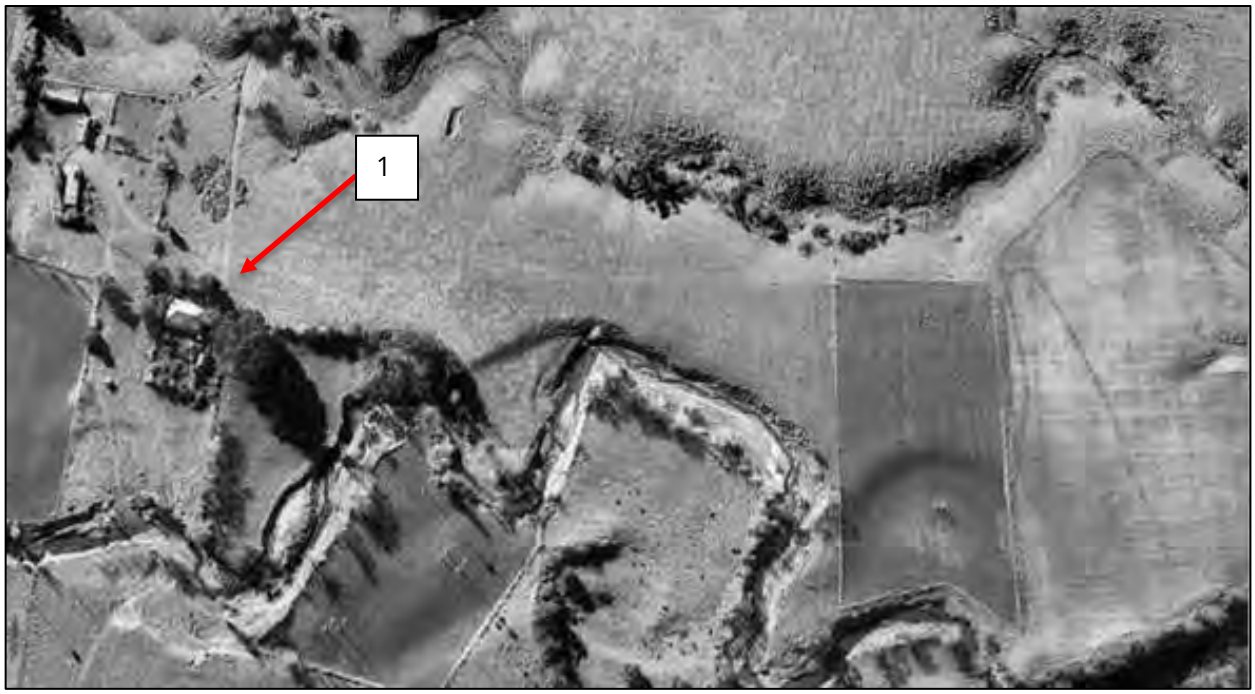

Plate 3 1961 areial image of Cleveland Homestead [1] (Source: Wollongong City Council)

The 1948 and 1961 aerials of the Cleveland property shows that the land continued to be used for agricultural and pastoral activities. However, it is unknown who the occupants of the property were at this time or who took over the estate after the Madden Family in 1912 (Plate 2 and Plate 3).

Beale described the house in 1976 as possessing 'architectural interest, charm and atmosphere, has unfortunately suffered so much from the ravages of time, and of earth tremors in recent years, as to make its future extremely doubtful' (McDonald 1976).

The last known occupant of the Cleveland Homestead was W.D Dunster. Dunster sold the Cleveland Homestead and surrounds to the Dapto Pastoral Company, however he lived at the property until his death in 1976. Since then the house has been empty (Ali 1980). The Cleveland Homestead currently stands entirely covered in vegetation and has fallen into disrepair.

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5 Archaeological investigations

5.1 Archaeological Surveys

A number of archaeological surveys of the study area have been undertaken as part of the Cleveland road development (Figure 6). A summary of the archaeological surveys undertaken for the North and South precincts by Biosis have been summarised below. For further detail on the survey results please refer to Biosis (Biosis 2018b, Biosis In prep).

The principle aims of these surveys were to:

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

5.1.1 Survey methods

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

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

Where possible, the identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, 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 and the Map Grid of Australia (94) coordinate system.

5.1.2 North Precinct

An Aboriginal archaeological survey of the North Precinct covering Lot 1 and 2 DP 730326, Lot 200 and 201 DP 803810, Lot 1 DP 741423, Lot 1 DP 112617, Lot 59 DP 1125379, Lot 1 DP 156208, Lot 1 DP 532391 and Lot 312 DP 1188000 was undertaken on 9 and 12 October 2018.

The archaeological survey was undertaken by Biosis archaeologist Samantha Keats and consisted of a pedestrian survey that targeted areas of mature vegetation and exposure across all landforms in the study

area which were within the impact footprint. The survey was restricted to the southern portions of the study area as land access to the northern most portions of the study area was not able to be organised, while ground surface visibility and exposures were both low at approximately 5% each due to extensive grass coverage.

A number of disturbances were identified within the study area attributed to farming practices, such as cattle grazing and associated paddock fences and artificial dams. It was also noted that drainage lines throughout the study area had also been modified.

A widespread study of the Dapto area undertaken by AMBS (2006a), and encompassing the study area, indicated that sites would be found in all landforms with densities of sites in the following order from highest to lowest: hillslopes, second order streams, first order streams, third order streams, alluvial flats, fourth order streams, and finally spur crests. This model was revised by a heritage land review undertaken by GML Heritage in 2015 (GML Heritage 2015) who identified that alluvial terraces with slopes of less than 3% are the most likely locations for Aboriginal sites. The areas of archaeological potential identified during the survey are consistent with the results of GML Heritage (2015) and AMBS (2006a), being located on alluvial terraces and hillslopes in close proximity to a third order creek line, and possess potential to contain intact sub-surface archaeological deposits.

The archaeological survey identified four areas of PAD on terraces, elevated micro rises and hillslopes within in close proximity (<100 metres) to a creekline. One previously unrecorded isolated artefact site (CR IF1) was located on the western boundary of the study area, next to the creek line. This site consisted of a single basalt complete flake, with flaked platform, and retouched termination. A second previously unrecorded isolated artefact site (CR-IF2) consisting of a complete silcrete flake that had been broken into three fragments by cattle trampling was located on the southern side of the unnamed creek line.

5.1.3 Southern Precinct

An Aboriginal and historical archaeological survey of the Southern Precinct covering Lot 1 DP194419, Lot A DP156466 and Lot 313 DP1188000 was undertaken on 11 May 2018.

The archaeological survey was undertaken by Biosis archaeologist Amy Butcher and consisted of a pedestrian survey that targeted areas of mature vegetation and exposure across all landforms in the study area. The ground surface visibility and exposures were both low at approximately 5% each due to extensive grass coverage.

The study area had also undergone vegetation clearance over the entire extent which would have resulted in impacts to artefact bearing topsoils. Other minor disturbances were observed within the study area including disturbances associated with existing houses and sheds, and several powerlines running through the study area. A dam was also observed in the western portion of the study area which would have caused moderate disturbance to the ground surface at that location.

During the survey two Aboriginal artefacts were identified on the banks of Mullet Creek. Three areas of high potential and one area of moderate potential were also identified. The two artefacts were located within an area of exposure along the banks of Mullet Creek in the south eastern portion of the study area. The artefact site was located immediately adjacent to AHIMS 52-5-0622/Cleveland Road AFT-7 where seven test pits were excavated by Biosis (2011a)with eight artefacts recovered from four test pits . Two areas of high archaeological potential were identified in relatively undisturbed areas on a midslope landform. These two areas were located adjacent to a neighboring site of moderate potential which presented four artefacts. The third area of high archaeological potential was located within a low flood risk zone on an alluvial terrace of Mullet Creek. The remainder of the study area was assessed with low potential due to sloped or flood prone characteristics which would result in disturbance of Aboriginal sites.

This survey also assessed the LEP listed heritage item Cleveland House (Item No. 5950). Cleveland homestead was located in the western portion of the study area and built c. 1840. It has significant local historical value as one of the oldest surviving rural homesteads in the West Dapto area. It is a good (representative in NSW and locally rare) example of Australian Colonial period architecture and representative of the NSW historical theme of settlement. Extensive deterioration and loss of significant original fabric have, to a degree, limited its ability to interpret its history to the general public. However the homestead and its immediate surrounds including the remnant garden and ornamental trees, outhouse and remnant parts of original outbuildings still maintain significance to the local community. The wider setting of the homestead is still reminiscent of the original setting of the rural farm and views to and from the homestead contribute to the significance of the heritage item.

The survey determined that the homestead had not undergone any landscaping or additional works and seemed to represent its original configuration with no additions; therefore the potential for archaeological deposits in the form of discrete features was assessed as high in the immediate vicinity of the house and moderate in the surrounding area and associated ancillary structures. The rest of the study area has been utilised for grazing and agricultural purposes. The likely historical features within these areas are most likely to be fence lines and post holes associated with the previous use of the site. These features would be ephemeral in deposition and scattered across the study area. The historical archaeological potential for the rest of the study area assessed by Biosis (2018a) was low.

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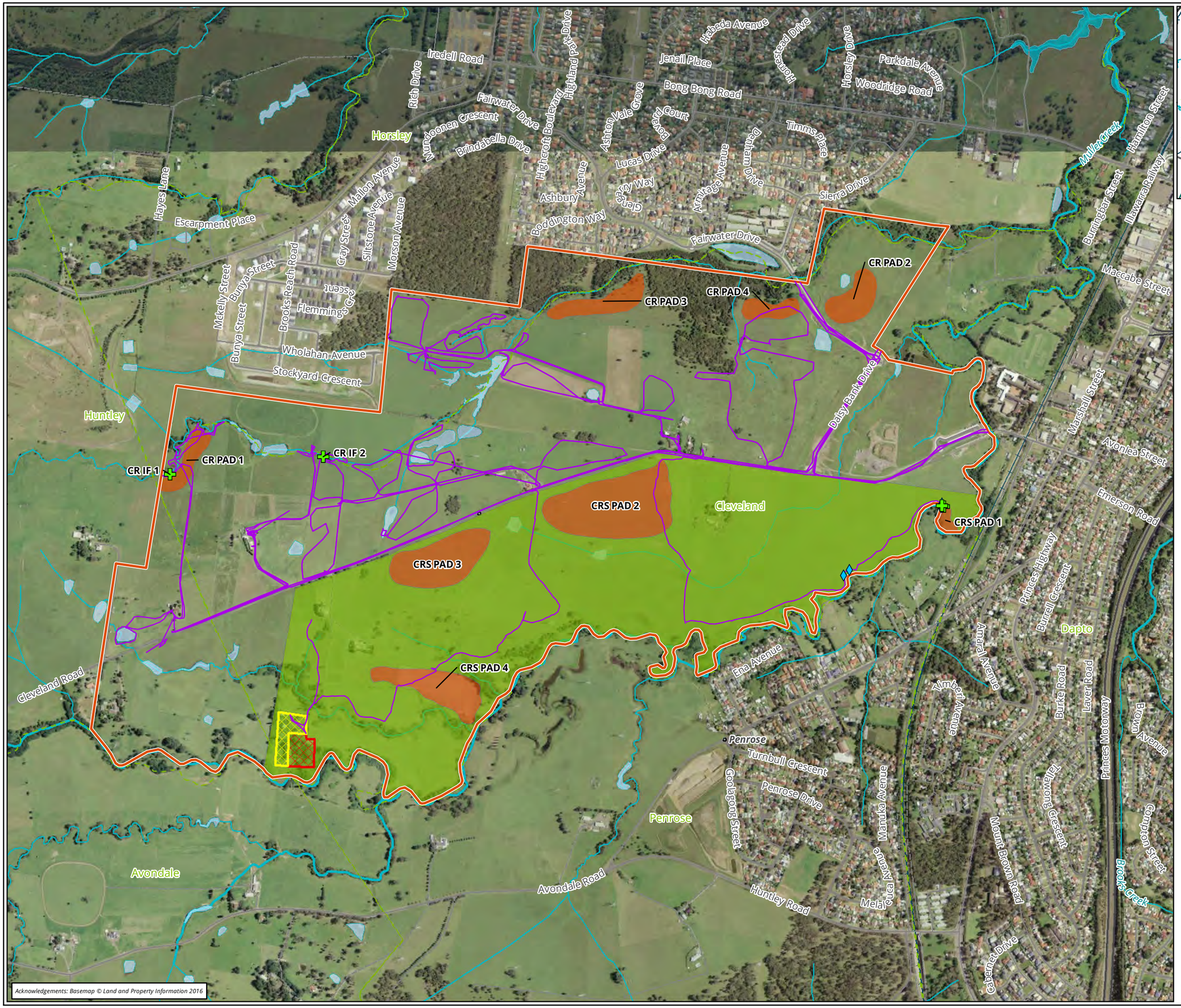

Legend

- Study area
- Aboriginal surface artefacts

Historical archaeological potential

- High
- Moderate

Aboriginal archaeological potential

- Archaeological potential
- Low potential

Survey effort

- Survey tracks
- Waypoints

Figure 6 Survey results

0 100 200 300 400 500

Metres

N

Scale: 1:12,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 33235,
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F6_SurveyResults.mxd

Acknowledgements: Basemap © Land and Property Information 2016

5.2 Archaeological test excavations

Following the results of the survey within the North Precinct a test excavation program was undertaken to characterise the extent, nature and archaeological (scientific) value of Aboriginal cultural heritage within identified Aboriginal sites and areas of AHIMS 52-5-0953/CR PAD1 and AHIMS 52-2-4582/CR PAD2. Test excavations were undertaken from 13 to 15 January 2020 and 19 to 21 January 2020 with a team of three Biosis archaeologists and three Aboriginal representatives. A summary of the results of the test excavations is provided below. For further details regarding the test excavations please refer to Biosis (In prep)

5.2.1 Test excavation objectives

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

- AHIMS 52-5-0953/CR PAD.
- AHIMS 52-2-4582/CR PAD2.

CR PAD 3 and CR PAD 4 were not targeted as part of the test excavations undertaken as part of the ACHA for the North precinct. CR PAD 3 was located outside of the development area and no impacts were proposed so it was left intact. CR PAD 4 was not excavated as the landowner did not permit access to the area during the test excavation period.

5.2.2 Test excavation methodology

Test excavations were conducted in accordance with requirement 16a of the Code with the following methodology:

- Test were conducted in 50 by 50 centimetre units.
- The test pits were excavated by hand (inclusive of trowels, spades and other hand tools) along transects at intervals of between 10 and 20 metres or other justifiable and regular spacing (being no smaller than five metres).
- The first test pit within each PAD area was excavated in five centimetre spits; the subsequent test pits conducted within the site or PAD area were then excavated in either 10 centimetre spits to the base of Aboriginal object-bearing units being the removal of the A-horizon soil deposit down to the sterile B-horizon.
- Test pits may be combined and excavated as necessary in 50 by 50 centimetre units for the purposes of further understanding site characteristics. Note that under the Code, the maximum area that can be excavated in any one continuous area is three metres squared (3 m^2).
- The Code dictated that the maximum surface area of all test excavation units must be no greater than 0.5% of the PAD or area being investigated.
- All excavated soil was dry sieved in 5 millimetre sieves.
- All cultural material will be collected, bagged and clearly labelled. They will be temporarily stored in the Biosis office for analysis (at 30 Wentworth Street Port Kembla NSW 2505).
- For each test pit that was excavated, the following documentation was taken:
  - Unique test pit identification number.
  - GPS coordinate of each test pit.
  - Munsell soil colour and texture.

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  - Amount and location of cultural material within the deposit.
  - Nature of disturbance where present.
  - Stratigraphy.
  - Archaeological features (if present).
  - Photographic records.
  - Spit records.
- Test excavation units were then backfilled as soon as practicable.
- An AHIMS Site Impact Recording form will be completed and submitted to the AHIMS Registrar for any sites impacted during test excavations.
- In the event that suspected human remains are identified works would immediately cease and the NSW Police and Heritage NSW be notified.
- Test excavations ceased when enough information had been recovered to adequately characterise the objects present with regard to their nature and significance.

5.2.3 Test excavation results

A total of 73 test pits were excavated within two areas of PAD. Excavation results for each PAD are shown in Table 9 and a detailed discussion of results is provided below.

Table 9 Test excavation results by PAD

PAD	Landform	PAD area (m^2)	Area tested (m^2)	PAD effectively tested (%)	No. of sites	No. of artefacts
CR PAD 1	Hill Slope	3600	2.75	0.08	1	9
CR PAD 1	Alluvial Flat	10900	6.75	0.06	1	1
CR PAD 2	Rise	5800	3.25	0.06	1	4
CR PAD 2	Alluvial Flat	15000	5.5	0.04	0	0

CR PAD 1

Test pits were excavated at 20 metre intervals in order to determine the extent and nature of potential sub surface deposits across the area of PAD 1. A total of 38 test pits were excavated within PAD 1 across 6 transects. This resulted in the identification of 10 artefacts in four test pits (Figure 7). All artefacts were located within a loam to loamy silt context at depths between 0 and 20 centimetres and were primarily located at the interface between hillslope and alluvial flat.

Transect 1

Transect 1 was excavated across a lower slope and creek terrace landform and consisted of four test pits. Soils along this transect consisted of a moderately compacted dark grey (7.5YR 4/1) to greyish brown (10 YR 5/2) loamy silt to clayey silt A horizon (Plate 4). This A horizon extended to approximately 200 millimetres at its deepest and 100 millimetres at its shallowest. Beneath context 1 was a highly compacted dark grey (7.5YR 4/1) to dark greyish brown (10 YR 4/2) silty clay to clay B horizon. This clayey context was very dry and as a result displayed wide cracks associated with shrinking and swelling of the clay. Test pit 4 was located closest to the creek and displayed a slightly different soil profile. It contained a second context between the loamy silt and the silty clay that consisted of a heavily compacted, dark greyish brown (10 YR 4/2) clayey silt with clay

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mottling that increased with depth until it transitioned in the silty clay to clay context 3. This second context extended between 200 and 250 millimetres.

Plate 4 Soil profile of PAD 1 Transect 1 Pit 2 showing cracking clay at base

Transect 2

Transect 2 was excavated across a lower slope and creek terrace landform and consisted of three test pits (Plate 5). Soils along this transect consisted of a moderately compacted pinkish grey (7.5YR 6/2) to grey (5YR 5/1) loamy silt A horizon. This A horizon extended to approximately 250 millimetres at its deepest and 130 millimetres at its shallowest. Beneath context 1 was a highly compacted grey (5YR 6/1) silty clay to clay B horizon. This clayey context was very dry and as a result displayed wide cracks associated with shrinking and swelling of the clay. Two stone artefacts were identified in pit 2 of this transect which was located at the transition between the hill slope and creek terrace landforms. These artefacts consisted of a chert medial flake fragment and a silcrete complete flake. Both artefacts were recovered from spit 2, between 100 and 200 millimetres. No artefacts were identified.

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Plate 5 Soil profile of PAD 1 Transect 2 Pit 2

Transect 3

Transect 3 was excavated across the creek terrace landform and consisted of eight test pits (Plate 6). This transect was placed closest to the creek, with an average distance between 10 and 20 metres. Soils along this transect generally consisted of a moderately compacted brown (10YR 4/3) to very dark greyish brown (10 YR 3/2) loamy silt A horizon. This A horizon extended to approximately 290 millimetres at its deepest and 150 millimetres at its shallowest. This was underlain by a highly compacted brown (7.5YR 4/3) to dark reddish grey (5YR 4/2) silty clay to clay B horizon. Several test pits within this transect also displayed a slightly different soil profile. Three test pits exhibited a second context located between the loamy silt context and silty clay context. This context consisted of a dark greyish brown (10YR 4/2) to dark brown (7.5YR 3/2) clayey silt that formed as a transitional layer. This layer typically extended to a depth of 350 to 440 millimetres.

The clayey context forming the B horizon in this transect was very dry and as a result displayed wide cracks associated with shrinking of the clay. No artefacts were identified.

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Plate 6 Soil profile in PAD 1 Transect 3 Pit 7

Transect 4

Transect 4 was excavated across a lower slope and creek terrace landform and consisted of eleven test pits (Plate 7). Soils along this transect consisted of a moderately compacted brown (7.5YR 5/4) to very dark greyish brown (10YR 3/2) loamy silt A horizon. This A horizon extended to approximately 290 millimetres at its deepest and 130 millimetres at its shallowest. Beneath context 1 was a highly compacted dark brown (7.5YR 3/2) to very dark greyish brown (10YR 3/2) silty clay to clay B horizon. This clayey context was very dry and as a result displayed wide cracks associated with shrinking and swelling of the clay throughout. Two stone artefacts were identified in pit 1 of this transect which was located at the transition between the hill slope and creek terrace landforms. These artefacts consisted of a silcrete distal flake fragment and a quartzite proximal flake fragment. Both artefacts were recovered from spit 2, between 100 and 200 millimetres.

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Plate 7 Soil profile of PAD 1, Transect 4 Pit 5

Transect 5

Transect 5 was excavated across a lower slope and creek terrace landform and consisted of ten test pits (Plate 8). Soils along this transect consisted of a moderately compacted brown (7.5YR 5/4) to very dark greyish brown (10YR 3/2) loamy silt A horizon. This A horizon extended to approximately 290 millimetres at its deepest and 130 millimetres at its shallowest. Beneath context 1 was a highly compacted dark brown (7.5YR 3/2) to very dark greyish brown (10YR 3/2) silty clay to clay B horizon. This clayey context was very dry and as a result displayed wide cracks associated with shrinking and swelling of the clay throughout. A total of six stone artefacts were identified in this transect. Five artefacts were located in pit 9 on the creek terrace landform. These artefacts consisted of two chert angular fragments, a chert proximal flake fragment, a chert complete flake, and a silcrete proximal flake fragment. Artefacts in Pit 2 were identified in spit 1 and spit 2. A single quartz distal flake fragment was also identified in spit 2 of pit 4, also located on the creek terrace landform.

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Plate 8 Soil profile in Transect 5 Pit 9, showing large clay shrink crack

Transect 6

Transect 6 was excavated across a lower slope and transitional zone between the slope and creek terrace landforms (Plate 9). A total of two test pits were excavated in this transect. Soils along this transect consisted of a moderately compacted light greyish brown (10YR 6/2) to greyish brown (10YR 5/2) loamy silt A horizon. This A horizon extended to approximately 200 millimetres on the lower slope and 80 millimetres on the transition zone. Context 2 consisted of a highly compacted light brownish grey (10YR 6/2) to brown (10YR 4/3) silty clay to clay B horizon. No artefacts were identified

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Plate 9 Soil profile in PAD 1, Transect 6 Pit 2

CR PAD 2

Test pits were excavated at 20 metre intervals in order to determine the extent and nature of potential sub surface deposits across the area of PAD 2. A total of 35 test pits were excavated within PAD 2 across five transects. This resulted in the identification of four artefacts identified across four test pits (Figure 7). All artefacts were located within a loam to loamy silt context at depths between 100 and 300 centimetres.

Transect 1

Transect 1 was excavated within a creek terrace landform and elevated rise on the terrace landform (Plate 10). A total of four test pits were excavated along this transect with three located on the terrace, and one pit located on the elevated rise. Soils along this transect consisted of a moderately compacted dark brown (10YR 3/2) loamy silt to silty loam A1 horizon. This A1 horizon extended to a depth of between 160 and 295 millimetres. Beneath context 1 was a moderately compacted dark brown (10YR 3/2) to strong brown (7.5YR 5/8) loamy silt A2 horizon. This loamy silt context contained ironstone gravels at its base, which made approximately 10% of the context composition. Context 2 ended at depths between 300 and 400 millimetres. Underlying context 2 was a highly compacted, dark yellowish brown (10YR 3/4) silty clay to clay B horizon.

One chert core fragment was identified within spit 2 of Pit 4. This artefact was located in the loamy silt A horizon on the elevated rise.

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Plate 10 Soil profile in PAD 2, Transect 1 Pit 2 on alluvial flats

Transect 2

Transect 2 was excavated across a creek terrace landform and elevated rise on the terrace landform. A total of six test pits were excavated along this transect with four located on the terrace, and two pits located on the elevated rise (Plate 11).

Soils located along the creek terrace consisted of a moderately compacted dark brown (10YR 3/2) loamy silt to silty loam A1 horizon. This A1 horizon extended to a depth between 245 and 290 millimetres. Beneath context 1 was a moderately compacted dark brown (10YR 3/2) silty loam A2 horizon. This loamy silt context contained ironstone gravels at its base, which made approximately 10-20% of the context composition. Context 2 ended at depths between 290 and 300 millimetres. Underlying context 2 was a highly compacted, dark yellowish brown (10YR 3/4) silty clay to clay B horizon.

Soils across the elevated rise in transect 2 differed to those of the creek terrace landform. Context 1 consisted of a moderately compacted, dark brown (7.5YR 3/3) silty loam A1 horizon which extended to a depth up to 250 millimetres. Context 2 consisted of a strong brown (7.5YR 5/8) silty sand of moderate compaction. This context extended to a depth of 600 millimetres before ending on a silty clay, and formed the A2 horizon.

One chert complete flake was identified within spit 2 of Pit 7. This artefact was located in the loamy silt A horizon on the elevated rise.

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Plate 11 Representative soil profile of micro-rise landform in PAD 2, Transect 2 Pit 7

Transect 3

Transect 3 was excavated across a creek terrace landform and elevated rise on the terrace landform. A total of eight test pits were excavated along this transect with four located on the terrace, and four pits located on the elevated rise (Plate 12).

Soils located on the alluvial flat consisted of a moderately compacted dark brown (10YR 3/2) to grey (7.5YR 5/1) silt to silty loam A1 horizon. This A1 horizon extended to a depth between 250 and 300 millimetres. Beneath context 1 was a moderately compacted dark brown (10YR 3/2) silt to loamy silt A2 horizon. This loamy silt context contained up to 20% ironstone gravels at its base. Context 2 ended at depths between 330 and 600 millimetres. Underlying context 2 was a highly compacted, dark yellowish brown (10YR 3/4) silty clay to clay B horizon.

Soils across the elevated rise in transect 3 differed to those of the creek terrace landform. Context 1 consisted of a moderately compacted, brown (7.5YR 5/2) silty loam A1 horizon which extended to a depth up to 250 millimetres. Context 2 consisted of a strong brown (7.5YR 5/6) silty sand of moderate to high compaction. This context extended to depths greater than 600 millimetres before ending on a yellowish brown silty clay.

One silcrete medial flake fragment was identified within spit 3 of Pit 8. This artefact was located in the loamy silt A1 horizon on the elevated rise landform.

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Plate 12 Soil profile in PAD2, Transect 3 Pit 10

Transect 4

Transect 4 was excavated across a creek terrace landform and elevated rise on the terrace landform. A total of eight test pits were excavated along this transect with three located on the terrace, and five pits located on the elevated rise (Plate 13).

Soils located on the alluvial flat consisted of a moderately compacted dark brown (7.5YR 3/3) to grey (7.5YR 5/1) silt to silty loam A horizon. This A1 horizon extended to a depth between 250 and 300 millimetres. Beneath context 1 was a highly compacted dark brown (10YR 3/2) silty clay to clay B horizon.

Soils across the elevated rise in transect 4 differed to those of the creek terrace landform. Context 1 consisted of a moderately compacted, dark brown (7.5YR 3/3) silty loam A1 horizon which extended to a depth up to 250 millimetres. Context 2 consisted of yellowish brown (10YR 5/6) silty sand of moderate compaction. This context extended to depths up to 700 millimetres before transitioning to a silty clay B horizon.

One petrified wood complete flake was identified within spit 2 of Pit 7. This artefact was located in the loamy silt A1 horizon on the elevated rise landform.

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Plate 13 Soils in PAD 2, Transect 4 Pit 5

Transect 5

Transect 4 was excavated across the alluvial flat landform. A total of eight test pits were excavated along this transect (Plate 14).

Soils located on the alluvial flat consisted of a moderately compacted dark brown (7.5YR 3/3) to grey (7.5YR 5/1) loamy silt to silty loam A horizon. This A horizon extended to a depth between 250 and 400 millimetres. Beneath context 1 was a highly compacted strong brown (7.5YRYR 5/6) silty clay B horizon that transitioned to clay. One test pit, T5P2, exhibited soils similar to those seen on the elevated rise. This test pit contained a dark brown (7.5YR 3/3) silty loam to a depth of 240 millimetres before transitioning to a yellowish brown (10YR 5/6) silty sand extending beyond a metre.

No artefacts were identified within this transect.

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Plate 14 Soils in PAD 2, Transect 5 Pit 6

Figure 7 Test excavation results

Matter: 33235,
Date: 29 May 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: amurray
Location: P:\33200s\33235\Mapping\33235_F7_TestExResults.mxd

Discussion of results

The results of the test excavations conducted as part of the ACHA for the North precinct have provided information which is generally consistent with what has been found by previous assessments undertaken by AMBS (2006a), GML (2015) and Biosis (2011a) in the vicinity of the study area.

The wide spread AMBS study of the West Dapto Release Area (2006a), which encompasses the study area, suggested that all landforms within the study area were subject to some use by Aboriginal people in the past. They found that artefact densities indicated some landforms were subject to greater use than others, noting that:

- The majority of the test pits containing artefacts were located within alluvial flats, followed by hillslopes, then spur crests , then 3rd order, then 2nd order, then 4th and at last 1st order creek lines.
- The highest density of artefacts were present on 2nd order streams, followed by 1st order, then 3rd order streams, then alluvial flats, 4th order streams, spur crests and hill slopes.

The highest number of artefacts recovered by AMBS in the Mullet Creek catchment were from alluvial flats. Of the test pits excavated in this catchment, 62.5% of test pits were found to contain artefacts (AMBS 2006a, pp. 188). Artefact density for individual test pits was generally very low, however high recovery rates of artefacts throughout the West Dapto Release Area suggested that the use of the area was widespread rather than intensive (AMBS 2006a, pp. 266), with occupation being more intensive or repeated within close proximity to major creek lines and creek convergences where resources were readily accessible (AMBS 2006a, pp. 266).

The result of the most recent assessments in the Mullet Creek catchment display some discrepancies with the assessment undertaken by AMBS however. AMBS undertook large scale assessment of the area utilising a methodology that placed a weighted sample of test pits, calculated by dividing 100 test pits up by catchment size, on all landforms with an area. The results of this limited excavation program was then used to develop the AMBS predictive model used across the Dapto area. However, the results of AMBS's testing program differ to more recent assessments undertaken in the area. In particular, the number of test pits containing artefacts typically varies from what was found by AMBS. As indicated, AMBS had a rate of 62.5% of test pits containing at least one artefact. Comparing this to a host of assessments undertaken in the area, and which included more extensive and targeted test excavations, it is possible to see that recovery rates of artefacts per test pit excavated are generally much lower across a landform than what is represented by AMBS (2006a) (see Biosis 2011a, Biosis In prep, Artefact Heritage 2018, Biosis 2020, Kayandel Archaeological Services 2008, Biosis 2015a, Biosis 2007, AHMS 2012, Biosis Pty Ltd 2018, Biosis 2015b).

Biosis undertook excavations in 2011 to the immediate south-east of the study area, following the predictive modelling formulated by AMBS. These works revealed that out of 46 excavated test pits placed on alluvial flat and drainage depression landform, 13 had artefacts present. This results in 28% of test pits containing artefacts. This was significantly lower than was found by AMBS. The highest number of artefacts were recovered from 100 to 200 millimetres in depth (Biosis 2011a, pp. 51) and located within 50 metres of Mullet Creek (AHIMS 52-2-0619, 52-2-0622 and 52-2-0584) rather than the alluvial plain. However, similar to AMBS, artefact densities were generally very low and artefacts were typically represented by unretouched flakes with little to no cortex present. This result indicates that sites are likely to be focused along the Mullet Creek corridor (Biosis 2011a, pp. 61), with occupation decreasing further away from water and the resources present there. It is also likely that sites present in this corridor will consist of isolated or low density artefact scatters containing unretouched flakes and debitage which is representative of sporadic use of the area as a resource collection zone rather than an area of intensive occupation. Cultural material recovered from all the tested sites occurs commonly within the region and had very limited archaeological research potential.

In 2015, Biosis (2015a) undertook another program of test excavations adjacent to the study area. This program was located adjacent to the eastern boundary of the current study area and was located across the

mullet creek alluvial flats. A total of 116 test pits were excavated across the landform including up to the banks of Mullet Creek. Two artefacts were identified from a single test pit. This equated to only 0.86% of test pits on the alluvial flats containing artefacts. The two artefacts that were identified were located within 50 metres of Mullet Creek, similar to what was found by Biosis (2011a). These artefacts consisted of a chert broken (split) flake and one quartz complete flake that were identified between 100 and 300 millimetres in depth. Biosis did not undertake any lithic analysis due to the small size of the assemblage, however both the raw materials and artefact types they identified are consistent with previous assessments and the current assessment. The results of the Biosis (2015a) assessment further suggest that the study area was utilised as a resource collection zone, with artefacts present consisting of isolated or low density scatters of low archaeological potential.

All sites identified in the study area by the current assessment consist of low density and sporadically placed sites, with 18% of test pits containing an artefact. Sites were found to generally be located in close proximity to sources of water, similar to Biosis (2011a, Biosis 2015a). The largest site (CR PAD 1) identified by the current assessment was located within 50 metres of a tributary of Mullet Creek, while the second, less dense site (CR PAD 2) was located on a micro rise on the alluvial flats within 100 metres of a creek line. Artefacts making up sites were consistent with Biosis and AMBS, (Biosis 2011a, AMBS 2006a) with chert and silcrete forming the most common raw material types in all assessments. Similarly, cortex was low across all studies, and there was little variation in artefact types across the assessments with complete flake and flake fragments most common and no use wear evident on artefacts. Artefacts were also generally isolated to the top 3 spits which corresponded with silty to loamy A1 soil horizons.

The results of the current and previous assessments in the study area indicate that the area was utilised to some degree, although occupation in the area was not intensive. The creek and its surrounding alluvial plains offered a variety of resources that were utilised by Aboriginal people and the area was likely used as resource gathering zone rather than areas of intensive occupation. This is supported by the existence of sporadic low density artefact scatters in close proximity to Mullet Creek and within the study area (see Biosis 2011a, Biosis 2015a, AHMS 2010, Navin Officer 2002), consistent with Biosis, AHMS, and Navin Officer. The results of these assessments indicate that sub-surface deposits will consist of low density artefact scatters, which share common characteristics with existing identified sites and contain low scientific significance.

6 Heritage sites in neighbourhood planning area

6.1 Northern Precinct

6.1.1 CR PAD 1

CR PAD 1 consists of low density subsurface deposit located on at the junction of hillslope and alluvial flat landforms within 50 metres of a first order creek line. A total of 10 artefacts consisting of 2 complete flakes, 2 distal flake fragments, 2 angular fragments, 1 medial flake fragment and 3 proximal flake fragments were identified across four test pits excavated by Biosis (In prep). Artefacts consisted of chert, quartz, quartzite and silcrete raw materials and were identified in the top 200 mm of soil deposit. The common nature of the site and limited density and range of artefact types indicates low scientific significance.

6.1.2 CR PAD 2

CR PAD 2 consists of low density subsurface deposit located on a mini rise on the alluvial flat landforms within 100 metres of a first order creek line. A total of four artefacts consisting of 2 complete flakes, 1 medial flake fragment and 1 unidirectional core were identified across four test pits excavated by Biosis (In prep). Artefacts consisted of chert, petrified wood and silcrete raw materials and were identified between 100 and 300 millimetres of soil deposit. The common nature of the site and limited density and range of artefact types indicates low scientific significance.

6.1.3 CR PAD 3

CR PAD 3 consists of an area of PAD located on an alluvial flat landform within 50 metres of a creek line. The scientific significance of this site is currently unknown.

6.1.4 CR PAD 4

CR PAD 4 consists of an area of PAD located on an alluvial flat landform within 50 metres of a creek line. The scientific significance of this site is currently unknown.

6.1.5 CR IF1

CR IF1 was located on the western boundary of the study area, next to a first order creek line. This site consisted of a single basalt complete flake, with flaked platform and retouched termination. This site was in a disturbed context and is a common site type in the area. The site contains low scientific significance.

6.1.6 CR IF2

CR IF2 consisted of a complete silcrete flake that had been broken into three fragments by cattle trampling and was located on the southern side of a first order creek line. This site was in a disturbed context and is a common site type in the area. The site contains low scientific significance.

6.1.7 AHIMS 52-5-0496/WDRA_AX_23

WDRA_AX_23 consisted of three artefacts recovered from a 1 metre by 1 metre test pit excavated on a terrace adjacent to a first order creek line by AMBS (2006a). The artefacts consisted of two chert and one petrified wood flakes, one of which contained retouch and use wear. These artefacts were recovered from upper 20 centimetres of deposit. This site represents a common site type in the area and contains a low density deposit. The site has low scientific significance.

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6.1.8 AHIMS 52-5-0497/WDRA_AX_24

WDRA_AX_24 consisted of one quartz broken flake recovered from a 1 metre by 1 metre test pit excavated on a hillslope landform by AMBS (2006a). The artefact was recovered from between 10 and 20 centimetres in depth. AMBS (2006a) assigned this site with low archaeological potential. This site represents a common site type in the area and has a limited range of artefact types. The site contains low scientific significance.

6.1.9 AHIMS 52-5-0498/WDRA_AX_25

WDRA_AX_25 consisted of three chert artefacts and one petrified wood artefact recovered from two 1 metre by 1 metre test pits excavated as a part of a 40 square metre excavation program on a hill crest landform by AMBS (2006a). This site was assigned low archaeological potential by AMBS (2006a). The artefact was recovered from the upper 30 centimetres of soil and consisted of one complete flake and three broken flakes. This site represents a common site type in the area and has a limited range of artefact types. The site contains low scientific significance.

6.1.10 AHIMS 52-2-1688/WD1

Artefacts at AHIMS 52-2-1688/WD1 were recovered from the upper 26 centimetres of the soil profile and consisted of five artefacts made up of two silicified wood flaked pieces, one chert flaked piece, one quartz flake, and one unidentified metamorphic or sedimentary core excavated by Navin Officer (1993). Navin Officer stated that it was unlikely the artefacts were in situ, due to the extensive land use modifications of the topsoil from where artefacts were recovered (Navin Officer 1993, pp. 11). Given the dense grass cover, size of the test area and the limitations of subsurface testing, Navin Officer considered that there was a possibility that more artefacts were present both on the surface and subsurface in WD1. However, potential for archaeologically significant sites and/or undisturbed archaeological deposits was assessed to be minimal (Navin Officer 1993, pp. 12). A Consent to Destroy was issued by National Parks and Wildlife in 1993 in order to destroy the site, however, AHIMS currently lists this site as valid.

6.1.11 AHIMS 52-2-3831/Cleveland Road FT 1

Cleveland Road FT1 was identified by the Aboriginal community as a potential birthing tree during the Biosis (2011a) assessment of the Fairwater Drive extension to Cleveland Road. Aboriginal birthing trees are a rare site type in the region and there is potential that sub-surface deposits are present at the base of this tree, therefore the site contains high scientific significance.

6.1.12 AHIMS 52-2-3832/Cleveland Road FT 2

Cleveland Road FT2 was identified by the Aboriginal community as a potential birthing tree during the Biosis (2011a) assessment of the Fairwater Drive extension to Cleveland Road. Aboriginal birthing trees are a rare site type in the region and there is potential that sub-surface deposits are present at the base of this tree, therefore the site contains high scientific significance.

6.1.13 AHIMS 52-2-0619/Cleveland Road AFT-6

Cleveland Road AFT-6 was located within alluvial flats 10 metres from Mullet Creek. Eight test pits were excavated across this site and six artefacts were recovered from three of these pits by Biosis (2011a). Artefacts consisted of two flakes and four pieces of debitage and were made from silcrete, chert and mudstone. The site was assessed as having low significance as it is a common site type in the region and contained a limited range of artefact types.

6.1.14 AHIMS 52-5-0584/Cleveland Road PAD 2

Cleveland Road PAD 2 was located within alluvial flats 10 metres from the western bank of Mullet Creek. Eight test pits were excavated to the sterile clay layer and seven artefacts were recovered from four test pits by

Biosis (2011a). Artefacts consisted of three flakes, a core and three pieces of debitage and were made from silcrete, chert and mudstone. The site was assessed as having low significance as it is a common site type in the region and contained a limited range of artefact types.

6.1.15 AHIMS 52-5-0585/Cleveland Road PAD 3

This site was located within alluvial flats 200 metres from Mullet Creek on the western side of the drainage line. Five test pits were excavated across this PAD and no Aboriginal cultural material was identified by Biosis (2011a). Results indicated that Cleveland Road PAD 5 has undergone partial subsurface disturbance due to the previous residential construction and assumed demolition (Biosis 2011a, pp. 32). This is not a valid site and the area has since been disturbed as part of the construction of Daisy Banks Drive.

6.1.16 AHIMS 52-5-0586/Cleveland Road PAD 4

This site is located within alluvial flats 200 metres from Mullet Creek to the east of the small drainage line. Five test pits were excavated by Biosis (2011a) with one artefact recovered, a hammer stone made of andesite. Due to the lack of additional cultural material in other excavated test pits, It was considered that the artefact was an isolated find, and that no further sub-surface deposits are present across the entire PAD area or associated landform. The site was assessed as having low scientific value due to its isolated nature and has since been destroyed under an AHIP.

6.1.17 AHIMS 52-5-3765/Cleveland Road PAD 5

This site was located within alluvial flats 50 metres south of Reid Creek. Three test pits were excavated in this area of PAD by Biosis (Biosis 2011a) and no Aboriginal cultural material was recovered. It was determined that this area was associated with a braided drainage channel and had been heavily disturbed as a result. This is not a valid site and the area has since been disturbed as part of the construction of the Fairwater Drive extension to Daisy Banks Drive.

6.1.18 AHIMS 52-2-3815/Riverpark Way AFT-1

This site consisted of an isolated chalcedony flake that was originally identified on the surface of a drainage channel. The site was identified with low scientific potential due to its location in the disturbed drainage channel and isolated nature.

6.1.19 AHIMS 52-2-3285/WDRA_AX_22

WDRA_AX_22 consisted of two artefacts that were recovered from the upper 10 centimetres of a 1 metre by 1 metre test pit excavated by AMBS (2006a). The site was located on an alluvial flat that was subject to overbank flows. AMBS (2006a) assigned the site with low archaeological potential and due to the common nature and limited artefact types the site is of low scientific significance.

6.2 Southern Precinct

6.2.1 AHIMS 52-5-0583/Cleveland Road PAD 1

Cleveland Road PAD 1 was subject to subsurface testing by Biosis in 2011 (Biosis 2011a). A series of five test pits were located within the defined PAD with three located on the western side of the drainage feature and two on the eastern side. The testing indicated that the PAD had not undergone any significant topsoil disturbance. No artefacts were recovered from the test excavation. It was considered that any further subsurface testing would not yield any archaeological material within the larger extent of the PAD site.

6.2.2 AHIMS 52-5-0622/Cleveland Road AFT-7

Cleveland Road AFT-7 is located within alluvial flat 15 metres from Mullet Creek. Seven test pits were excavated by Biosis (Biosis 2011a) with eight artefacts recovered from four pits, consisting of chert, chalcedony, siltstone and silcrete flakes, a core and debitage pieces. This site consisted of a common site type in the area and contains low scientific significance.

6.2.3 AHIMS 52-5-0623/Cleveland Road AFT-8

Cleveland Road AFT-8 is located between sites AHIMS 52-5-0583/Cleveland Road PAD-1 and AHIMS 52-5-0622/Cleveland Road AFT-7, within alluvial flats between 50 and 100 metres from Mullet Creek. Three test pits were excavated by Biosis (Biosis 2011a)with one chert flake recovered. This site consisted of a common site type in the area and contains low scientific significance.

6.2.4 AHIMS 52-5-0507/WDRA_AX_02

WDRA_AX-02 is located on an alluvial flat adjacent to Mullet Creek which borders the southern boundary of the property. WDRA_AX-02 is an artefact scatter that contains two artefacts, a flake and a core. The two artefacts were recovered from two 1 metre by 1 metre excavations undertaken by AMBS (2006a) across an area of 100 square metres. The artefacts were comprised of quartz and silicified tuff. This site consisted of a common site type in the area and contains low scientific significance.

6.2.5 AHIMS 52-2-0508/WDRA_AX_03

WDRA_AX_03 is located on a spur crest near mullet Creek which borders the southern portion of the study area. WDRA_AX_03 is an artefact scatter that contains four artefacts. The artefacts were recovered from a 1 metre by 1 metre test excavation undertaken by AMBS (2006a). The artefacts were comprised of chert and quartzite artefacts and were a common site type of low scientific significance.

6.2.6 AHIMS 52-5-0877/Mullet Creek Artefact scatter 1 and CRS PAD 1

This site contained two chert complete flakes located on the ground surface and an area of associated CRS PAD 1 along the edge of Mullet Creek. It was identified during the Biosis (2018b) survey and likely reflects a continuation of the AHIMS 52-5-0622/Cleveland Road AFT-7 site. The scientific significance of this site is currently unknown.

6.2.7 CRS PAD 2

CRS PAD 2 consists of an area of archaeological potential located on a midslope landform elevated above the Mullet Creek floodplain. The scientific significance of this site is currently unknown.

6.2.8 CRS PAD 3

CRS PAD 3 consists of an area of archaeological potential located on a midslope landform elevated above the Mullet Creek floodplain. The scientific significance of this site is currently unknown.

6.2.9 CRS PAD 4

CRS PAD 4 consists of an area of archaeological potential located along the alluvial flats of Mullet Creek. It is slightly elevated making it a low risk flood area. The scientific significance of this site is currently unknown.

6.2.10 Cleveland Road Homestead

Cleveland homestead, located in the western portion of the study area and built c. 1840 has significant historical value as one of the oldest surviving rural homesteads in the West Dapto area. It is a good (representative in NSW and locally rare) example of Australian Colonial period architecture and representative of the NSW historical theme of settlement. Extensive deterioration and loss of significant

original fabric have, to a degree, limited its ability to interpret its history to the general public. However the homestead and its immediate surrounds including the remnant garden and ornamental trees, outhouse and remnant parts of original outbuildings still maintain significance to the local community. The wider setting of the homestead is still reminiscent of the original setting of the rural farm and views to and from the homestead contribute to the significance of the heritage item.

The mature plantings include Hoop Pines, Cypress, Bunya Pine, Poplars, Coral Trees, Norfolk Pine, Fig Trees, Eucalypts and remnant garden hedges cover sections of fence post and wire, and timber picket fencing surrounding the homestead. These plantings can be regarded as contributory to the significance of the homestead as they are substantial trees/plantings likely dating from the original building of the homestead. The remnant fence lines also contribute to the significance demonstrating the original configuration of the homestead complex. Despite the current condition of the homestead building it is considered to be significant at a local level.

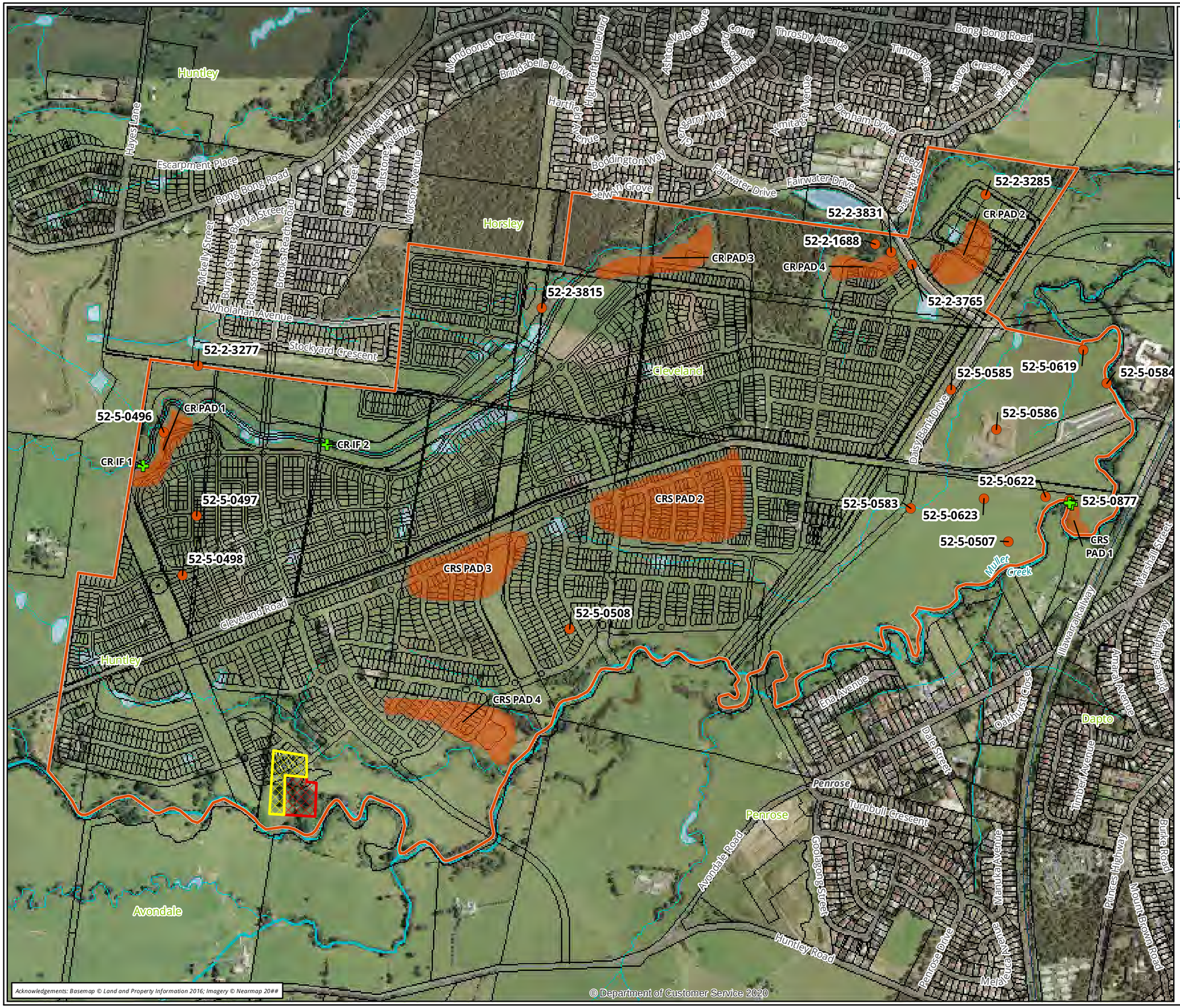
Table 10 Heritage sites within the study area

Site ID	Name	Condition	Site Type	Impacts proposed	Recommendations
52-5-0622	Cleveland Road AFT-7	Valid	Artefact	No	Avoid impacts
52-5-0623	Cleveland Road AFT-8	Valid	Artefact	No	Avoid impacts
52-5-0619	Cleveland Road AFT-6	Valid	Artefact	No	Avoid impacts
52-2-3831	Cleveland Road FT 1	Valid	Aboriginal Ceremony and Dreaming	No	Avoid impacts
52-2-3832	Cleveland Road FT 2	Valid	Aboriginal Ceremony and Dreaming	No	Outside of study area. Avoid impacts
52-2-3815	Riverpark Way AFT-1	Valid	Artefact	No	Avoid impacts
52-2-1688	WD1-1;	Valid	Artefact	No	Avoid impacts
52-5-0877	Mullet Creek Artefact Scatter 1	Valid	Artefact	No	Avoid impacts
52-5-0507	WDRA_AX_02	Valid	Artefact	No	Avoid impacts
52-5-0508	WDRA_AX_03	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is

					obtained prior to impact
52-2-3285	WDRA_AX_22	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-5-0496	WDRA_AX_23	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-5-0497	WDRA_AX_24	Valid	Artefact	Yes	This site was previously tested by by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-5-0498	WDRA_AX_25	Valid	Artefact	Yes	This site was previously tested by AMBS (2006a) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
52-2-3765	Cleveland Road PAD 5	Not a valid site	N/A	No	This site was tested by BIosis (2011a) and was

					determined not to be a valid site.
52-5-0585	Cleveland Road PAD 3	Not a valid site	N/A	No	This site was tested by BIosis (2011a) and was determined not to be a valid site.
52-5-0586	Cleveland Road PAD-4	Destroyed	Artefact	No	This site was tested by BIosis (2011a) and has been destroyed through an AHIP.
52-5-0583	Cleveland Road PAD 1	Valid	Artefact	No	Avoid impacts
52-5-0584	Cleveland Road PAD 2	Valid	Artefact	No	Avoid impacts
N/A	CRS PAD 1	Valid	Potential Archaeological Deposit (PAD)	No	Avoid impacts
N/A	CRS PAD 2	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
N/A	CRS PAD 3	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
N/A	CRS PAD 4	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
52-5-095	CR PAD 1	Valid	Artefact	Yes	This site was been tested by Biosis (In prep) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact

52-2-4582	CR PAD 2	Valid	Artefact	Yes	This site was been tested by Biosis (In prep) and assessed with low scientific significance, it is recommended that an AHIP is obtained prior to impact
N/A	CR PAD 3	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
N/A	CR PAD 4	Valid	Potential Archaeological Deposit (PAD)	Yes	This site has not been tested and further assessment is required
52-5-0952	CR IF1	Valid	Artefact	Yes	This site was identified by Biosis (In prep) as an isolated surface artefact of low scientific significance. It is recommended that it is collected under an AHIP
52-5-0951	CR IF2	Valid	Artefact	Yes	This site was identified by Biosis (In prep) as an isolated surface artefact of low scientific significance. It is recommended that it is collected under an AHIP
5950	Cleveland House	Valid	Historical item and areas of potential	Yes	Avoid impacts if possible. Further assessment if impacts cannot be avoided



Legend

- Study area
- Development footprint
- AHIMS record
- Newly recorded site
- PAD

Historical archaeological potential

- High
- Moderate

Figure 8 Heritage sites in the study area

0 80 160 240 320 400

Metres

N

Scale: 1:10,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 33235,
Date: 06 October 2020,
Checked by: MJS, Drawn by: AEDM, Last edited by: skumar
Location: P:\33200s\33235\Mapping\33235_F8_HeritageSites.mxd

Acknowledgements: Basemap © Land and Property Information 2016; Imagery © Nearmap 20##

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7 Conclusion and Recommendations

A review of the AHIMS record and previously completed assessments within the study area indicate there are a total of 28 Aboriginal heritage sites, including 18 identified on the AHIMS register and 10 newly recorded Aboriginal sites identified during the assessments undertaken by Biosis. One historical heritage item and associated areas of potential was also identified within the study area. Of these 29 sites, there is potential that 16 Aboriginal and one historical heritage sites may be impacted by the proposed works in the future.

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

- The North Precinct ACHA currently being undertaken.
- The South Precinct ADDA and HHA completed in 2018.
- The updated planning proposal.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter (2013).
  - The code.

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

7.1 North Precinct recommendations

Recommendation 1: Application for an AHIP

It is recommended that an AHIP application is made to impact sites AHIMS 52-5-0496/WDRA_AX_23 AHIMS 52-5-0497/WDRA_AX_24, AHIMS52-5-0498/WDRA_AX_25 and AHIMS 52-2-3285 AHIMS 52-5-0953/CR PAD 1, AHIMS 52-2-4582/CR PAD2, AHIMS 52-5-0952/CR IF1, AHIMS 52-5-0951/CR IF2 which cannot be avoided by the proposed development works. It is recommended that this AHIP be for a timeframe of 15 years.

For information about AHIPs and their preparation, see below.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places or cause land to be disturbed for the purposes of discovering an Aboriginal object. Heritage NSW issues AHIPs under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the Heritage NSW. Once the application is lodged processing time can take between 8-12 weeks. It should be noted that there will be an application fee levied by Heritage NSW for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one study area an application for an AHIP to cover the entire study area is recommended.

Recommendation 2: Surface collection of AHIMS 52-5-0952/CR IF1 and AHIMS 52-5-0951/CR IF2

It is recommended that surface artefacts at sites AHIMS 52-5-0952/CR IF1 and, AHIMS 52-5-0951/CR IF2 are collected as part of a surface salvage program in accordance with the proposed AHIP application prior to the commencement of works.

Recommendation 3: Further investigation of CR PAD 3 and CR PAD 4 is required

Access to CR PAD 3 and CR PAD 4 was not available at the time of this assessment and test excavations could not be undertaken in this area. It is recommended that test excavations of these sites are undertaken by an experienced archaeologist prior to submission of an AHIP to ascertain if these sites need to be included in an AHIP before impacts can occur.

Recommendation 4: Avoidance of sites AHIMS 52-2-3815/Riverpark Way AFT-1, AHISM 52-2-1688/WD1, 52-2-3831/Cleveland Road FT 2, AHIMS 52-2-3832/Cleveland Road FT 2, AHIMS 52-5-0619/Cleveland Road AFT-6, and AHIMS 52-0584/Cleveland Road PAD 3

AHIMS 52-2-3815/Riverpark Way AFT-1, AHIMS 52-2-1688/ WD1, AHIMS 52-2-3831/Cleveland Road FT 1, AHIMS 52-2-3832/Cleveland Road FT 2, AHIMS 52-0584/ Cleveland Road PAD 3, AHIMS 52-5-0619/Cleveland Road AFT-6 and are located outside of the proposed development footprint and it is recommended that impacts to these sites are avoided.

Recommendation 5: Development of a CHMP

It is recommended that a CHMP be developed in consultation with the RAPs and Heritage NSW prior to the commencement of works. The CHMP will outline Aboriginal site management requirements including the management of identified sites, unexpected finds, and further works required prior to development.

Management options – previously identified sites

The CHMP should provide provisions to ensure that the identified sites located outside of the development area are not unintentionally impacted during works. This should include provision for exclusion fencing and development of suitable no go buffers if required.

Stop works provision – previously unidentified sites or objects

The CHMP should include a stop work provision for any potential heritage sites identified during construction which are not previously identified as part of the assessment or the CHMP.

All Aboriginal places and objects are protected under the NPW Act. This protection extends to Aboriginal objects and places that have not been identified but might be unearthed during construction. If construction proceeds, work must cease if Aboriginal objects or places are identified which have not previously been identified as part of this assessment or have not been approved for harm under a CHMP. Heritage NSW and the archaeologist must be notified to make an assessment of the find and advise on subsequent management.

Historical archaeological sites are protected under the relics provisions (s139 – 146) of the NSW *Heritage Act 1977* (Heritage Act). Should any historical archaeological sites be identified during any phase of the proposed development, all works must cease in the vicinity of the find and the project archaeologist and Heritage NSW notified. Should the archaeological nature of the find be confirmed the Heritage Branch of the NSW Department of Planning, will require notification.

Stop works provision – Discovery of Aboriginal Ancestral Remains

The CHMP should also include a provision for the 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 Newquest Property must:

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

Heritage training and induction

The CHMP should develop a training and heritage induction for all employees, contractors and associated subcontractors working on site. The induction training should address elements related to:

- Relevant legislation.
- CHMP conditions.
- Location of identified heritage sites.
- Basic identification skills for Aboriginal and non-Aboriginal artefacts and human remains.
- Procedure to follow in the event of an unexpected heritage item find during construction works.
- Procedure to follow in the event of discovery of human remains during construction works.
- Penalties and non-compliance.

Long term care and control agreement

As part of the CHMP, a long term care agreement of artefacts should be developed for all Aboriginal artefacts identified during the test excavations and salvage works. This should be undertaken in consultation with the RAPs.

Recommendation 6: 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. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 7: Continued consultation with the registered Aboriginal stakeholders

As per the consultation requirements, it is recommended that the proponent provides a copy of the Draft North Precinct ACHA report to the Aboriginal stakeholders and considers all comments received. The proponent should continue to inform these groups about the management of Aboriginal cultural heritage sites within the study area throughout the life of the project.

South Precinct recommendations

Aboriginal heritage

Recommendation 1: Further archaeological assessment is required in areas of high archaeological potential CRS PAD2, CRS PAD3 and CRS PAD4

If impacts to areas mapped as having archaeological potential are proposed then further archaeological and cultural heritage assessment will be required. This will take the form of an ACHA Report, Archaeological Report and test excavations in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010) (the Code) and consultation guidelines.

Recommendation 2: Archaeological survey of Lot 1 DP 741423 and Lot 1 DP1126171 is required

Lot 1 DP 741423 and Lot 1 DP1126171 were not assessed as part of previous Biosis assessments and will need to undergo an archaeological survey to determine if any Aboriginal or historical sites are present within these areas that may be impacted.

Recommendation 3: Application for an AHIP to impacts sites AHIMS 52-5-0583/Cleveland Road PAD 1 and AHIMS 52-2-0508/WDRA_AX_03

The proposed works will impact AHIMS sites; AHIMS 52-5-0583/Cleveland Road PAD 1 and AHIMS 52-2-0508/WDRA_AX_03. Impacts to these sites cannot be avoided by the proposed works. These sites have been the focus of two test excavation programs (AMBS 2006b, Biosis 2011a) which have increased our current understanding of Aboriginal occupation in the region ensuring that any scientific and cultural information obtained can be accessed and used by future generations.

It is recommended that the client apply to Heritage NSW for an AHIP to impact on AHIMS 52-5-0583/Cleveland Road PAD 1and AHIMS 52-2-0508/WDRA_AX_03 which are currently protected under the NPW Act. The AHIP should be an area wide AHIP covering the entire study area.

Recommendation4: Avoid impacts to AHIMS 52-5-0622/Cleveland Road AFT-7, AHIMS 52-5-0623/Cleveland Road AFT-8, AHIMS 52-5-0507/WDRA_AX_02 and AHIMS 52-5-0877/Mullet Creek Artefact scatter 1, CRS PAD 1

The proposed works will not impact on AHIMS 52-5-0622/Cleveland Road AFT-7, AHIMS 52-5-0623/Cleveland Road AFT-8, AHIMS 52-5-0507/WDRA_AX_02 and AHIMS 52-5-0877/Mullet Creek Artefact scatter 1, CRS PAD 1. It is recommended that impacts to these sites are avoided to preserve them for future generations.

Recommendation 5: No further archaeological assessment is required in areas of low archaeological potential

No further archaeological work is required in areas identified as having low archaeological potential except in the event that unexpected Aboriginal sites, objects or human remains are unearthed during development.

Recommendation 6: Discovery of Aboriginal Ancestral Remains

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

4. Immediately cease all work at that location and not further move or disturb the remains
5. Notify the NSW Police and Heritage NSW's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location

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6. Not recommence work at that location unless authorised in writing by Heritage NSW.

Historical heritage

Recommendation 1: Avoid areas marked high and moderate archaeological potential if possible

The current development plans are shown to result in impacts to Cleveland House and areas of historical potential associated with it. It is recommended that impacts to the Cleveland House curtilage and areas identified as containing high and moderate archaeological potential be avoided as they are likely to contain archaeological deposits.

Recommendation 2: Retaining of visual barriers if possible

It is recommended that the existing vegetation that currently lines the unnamed creek and surrounds the Cleveland Homestead should be retained. This vegetation creates a visual barrier between the heritage values in Lot 1 DP 194419 and the future development as part of the significance of the homestead complex includes its rural setting.

Recommendation 3: Preparation of a Heritage Management Plan

It is recommended that a Heritage Management Plan is prepared for the Cleveland Homestead if impacts can be avoided. The homestead has been left unmanaged for an extensive period of time resulting in the deterioration of this locally valuable resource. The CHMP should outline recommended structural repairs prepared by a qualified heritage architect, future use for the homestead including any future subdivisions and recommended lot size, height restrictions and buffer plantings.

Recommendation 4: Preparation of an updated Historical Heritage Assessment (HHA) and SoHI and updated recommendations if impacts cannot be avoided.

The HHA and SoHI originally prepared by Biosis for the Cleveland Homestead were assessed under a previous neighborhood plan which did not show any physical impacts to the listed item by proposed works. The currently proposed plan has the potential to impact on Cleveland House and the areas of archaeological potential and therefore recommendations 1 and 2 may not be feasible. An updated HHA and SoHI should be prepared to determine what suitable heritage controls are required if impacts cannot be avoided.

Recommendation 5: Archaeological investigation required prior to works for areas of potential if impacts cannot be avoided.

It has been determined that some parts of the study area have a moderate or high potential for the survival of archaeological resources of local significance. In NSW, archaeological sites of State or local significance are considered "relics", which are protected by the *Heritage Act 1977*. In NSW, impacts to relics are only permitted with a section 140 approval (excavation permit). Given the potential for local significant archaeological remains to be present within the study area a section 140 approval is required.

An application should be made to the Heritage Council for a section 140 approval (excavation permit) supported by an updated SoHI. An archaeological research design and methodology will also need to be prepared to support the application.

It is likely that archaeological works will consist of monitoring during demolition works (i.e. removal of floor surfaces, foundations etc.) and any additional ground disturbance works within the study area until an archaeologically sterile layer is encountered. Deeper archaeological excavation may be required depending on the nature of remains encountered. The works described must be supervised by and guided by an appropriately qualified archaeologist to ensure that any archaeological remains are identified and recorded.

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Should substantial archaeological remains be identified it may be necessary to undertake archaeological excavation using open area techniques.

Recommendation 6: Archival recording if impacts cannot be avoided

Prior to any impacts to the study area, a detailed archival recording should be undertaken to document Cleveland House and its relationship with the wider setting of the heritage item. Archival recordings should be undertaken in accordance with the *NSW Heritage Office documents How to Prepare Archival Records of Heritage Items* (Heritage Office 1998) and *Photographic Recording Of Heritage Items Using Film or Digital Capture* (Heritage Office 2006).

Recommendation 7: Discovery of unanticipated heritage items

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. The Heritage Council will require notification if the find is assessed as a relic. Relics are historical archaeological resources of local or State significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification.

References

AHMS 2010. Aboriginal and Historical Archaeological and Cultural Heritage Assessment: Lots 1/549692, 60/1063539 and 601/1054648, Bong Bong Road, West Dapto, NSW,.

AHMS 2012. 'McPhail Lands' Aboriginal Cultural Heritage Assessment, Report for Stockland.

Ali A 1980. Gazetteer of historic buildings, places and relics; Wollongong, Shellharbour, Kiama and Shoalhaven, Wollongong NSW.

Allen J & O'Connell J 2003. 'The long and the short of it: archaeological approaches to determining when humans first colonised Australia and New Guinea', Australian Archaeology, 57: 5–19.

AMBS 2006a. Volume 1: Aboriginal Heritage Management Plan: West Dapto Release Area, An unpublished report to Wollongong City Council.

AMBS 2006b. Harrington Park 2 and Mater Dei Rezoning Project Phase 2 Indigenous Heritage Assessment and Conservation Strategy, Unpublished report to APP Corporation on behalf of Camden Council.

AMBS 2008. Aboriginal heritage study: Illawarra Escarpment. Australian Museums Business Services, Report prepared for Wollongong City Council.

Artefact Heritage 2018. Rezoning and subdivision of 109 Darkes Road, Kembla Grange, Report to NewQuest Property Pty Ltd.

Attenbrow V 2002. Sydney's Aboriginal Past: Investigating the archaeological and historical records, University of New South Wales Press Ltd, Sydney.

Biosis In prep. Cleveland Road North Precinct: Aboriginal Cultural Heritage Assessment. Report for Newquest Property,.

Biosis 2007. Huntley Eco-Park, Aboriginal Archaeological Assessment, New South Wales. Report to TCG Planning,.

Biosis 2011a. Fairwater Drive extension to Cleveland Road, Report for Wollongong City Council.

Biosis 2011b. Water and Wastewater Servicing of the West Dapto Urban Release Area and Adjacent Growth Areas: Aboriginal Heritage Assessment and Impact Management, Report prepared for Sydney Water (Parramatta). Biosis Pty Ltd, Sydney, NSW.

Biosis 2015a. Fowlers Road Extension, West Dapto, NSW: Archaeological Report, Report prepared for Cardno. Biosis Pty Ltd, Wollongong, NSW. Project no. 17547.

Biosis 2015b. Stage 1 – West Dapto and Wongawilli Roads Upgrade, Horsley and Wongawilli, NSW: Aboriginal Cultural Heritage Assessment Report. reprot for GHD,.

Biosis 2016. Iredell Road Cultural Heritage Assessment. Report for MMJ,.

Biosis 2018a. Cleveland Homestead: Historical Heritage Assessment and Statement of Heritage Impact. Report to Illawarra Local Aboriginal Land Council,.

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Biosis 2018b. Cleveland Road Aboriginal Cultural heritage archaeological survey report,.

Biosis 2020. Darkes Road Aboriginal Cultural Heritage Assessment. Report for Newquest Property,.

Biosis Pty Ltd 2018. Hayes Lane, Huntley Aboriginal cultural heritage assessment,.

Cousins A 1948. The Garden of New South Wales: A History of the Illawarra & Shoalhaven Districts 1770-1900, Illawarra Historical Society, Wollongong.

CSIRO 2009. Australian soil and land survey field handbook, 3rd edn, CSIRO Publishing & National Committee on Soil and Terrain, Collingwood, Victoria.

DECCW 2010a. Aboriginal Cultural Heritage Consultation Requirements for Proponents, Department of Environment and Climate Change, Sydney NSW.

DECCW 2010b. Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Department of Environment and Climate Change, Sydney NSW.

Department of Environment, Climate Change and Water 2010. Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Donlon D & Sefton C 1988. Investigation of a midden at Judbooley Park, Windang, including assessment of Human Skeletal Remains, Report for the City of Wollongong.

GML Heritage 2015. Dapto Land Review, Report for Stockland.

Hazelton P & Tille P. 1990. Soil Landscapes of the Wollongong-Port Hacking 1:100 000 Sheet, Soil Conservation Service of NSW, Sydney.

Hazelton PA 1992. Soil Landscapes of the Kiama 1:00,000 Sheet, Department of Conservation and Land Management (incorporating the Soil Conservation Service of NSW), Sydney.

Heritage Office 1998. How to Prepare Archival Records of Heritage Items.

Heritage Office 2006. Photographic Recording of Heritage Items Using Film or Digital Capture.

Kayandel Archaeological Services 2008. Tullimbar village development subsurface archaeological testing program,.

Koettig M 1992. Assessment of Aboriginal Sites Proposed Electrification of Railway Line: Dapto to Kiama, Report to Epps and Associates.

McDonald W. 1976. Nineteenth-Century Dapto, Illawarra Historical Society, Wollongong, http://ro.uow.edu.au/ihspubs/4.

Navin Officer 1993. Archaeological Investigation of Proposed Subdivision Site No. 12285 West Dapto, NSW, Report to K.W.Williams and Associates Pty Ltd.

Navin Officer 1994. Archaeological Survey of proposed Illawarra Water Quality Project Installation, Kembla Grange, NSW, Report to Camp Scott and Furphy.

Navin Officer 2002. Smith Lane, Wongawilli Rezoning Application. Report for Forbes Rigby Pty Ltd,.

NPWS 2002. Native vegetation of the Illawarra escarpment and coastal plain: bioregional assessment study part 1, National Parks and Wildlife Service, Hurstville NSW.

NSW Heritage Branch, Department of Planning 2009. Assessing significance for historical archaeological sites and 'relics', http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/ArchSignificance.pdf.

Organ M 1990. A Documentary History of the Illawarra and South Coast Aborigines 1770-1850, Aboriginal Education Unit, Wollongong University, Wollongong.

Organ M 1993. Illawarra South Coast Aborigines 1770-1900, Report to the Australian Institute of Aboriginal and Torres Strait Islander Affairs, Canberra.

Rosen S 1995. Heritage Assessment for Nepean Tunnel Amplification Project, Sydney Water.

Sefton C 1980. Aboriginal Cultural Resources Study Illawarra Region, Illawarra Regional Planning Committee, Wollongong.

Sefton C 1984. West Dapto archaeological potential study, Unpublished report to Wollongong City Council.

Sefton C 1990. Archaeological Survey of West Dapto Stage 1 Release Area, Report to Kevin Mills & Associates.

Stewart K & Percival B 1997. Bush foods of New South Wales: a botanic record and an Aboriginal oral history, Royal Botanic Gardens Sydney, Sydney NSW.

Tindale N 1974. Aboriginal Tribes of Australia, University of California Press, Berkeley.

Wesson S & New South Wales Government Office of Environment and Heritage 2009. Murni, Dhungang, Jirrar: living in the Illawarra - Aboriginal people and wild resource use,.

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Appendices

Appendix 1 AHIMS search results

This Appendix is not to be made public.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 33235 - MJS

Client Service ID : 507898

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0001	Duck Creek 2	AGD	56	295112	6176960	Open site	Valid	Artefact : -	Open Camp Site	102212,102375,102766
Contact		**Recorders**	Australian Museum Consulting (AM Consulting),Doctor.Susan Mcintyre-Tamwoy					**Permits**		
52-5-0249	Ash Pond 1;	AGD	56	297344	6176868	Open site	Valid	Artefact : -	Open Camp Site	102212
Contact		**Recorders**	Mr.Kelvin Officer,Mrs.Georgia Roberts,K Carberry					**Permits**		
52-5-0056	Duck Creek 3	AGD	56	295010	6176810	Open site	Valid	Modified Tree (Carved or Scarred) : -, Artefact : -	Open Camp Site,Scarred Tree	877,102212,102375,102766
Contact		**Recorders**	Doctor.Susan Mcintyre-Tamwoy					**Permits**		
52-5-0062	Yallah	AGD	56	295990	6177710	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	102212,102375
Contact		**Recorders**	A Anderson					**Permits**		
52-5-0137	Yallah	AGD	56	295240	6177800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	102212,102375,102766
Contact		**Recorders**	Mrs.Caryll Sefton					**Permits**		
52-5-0147	Duck Creek 1	AGD	56	295290	6177150	Open site	Valid	Artefact : 15	Open Camp Site	102212,102375,102766
Contact		**Recorders**	Australian Museum Consulting (AM Consulting),Doctor.Susan Mcintyre-Tamwoy					**Permits**		
52-2-1542	Bong Bong 1;West Dapto;	AGD	56	294840	6180620	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1920,102149,102212,102235,102375,102766
Contact		**Recorders**	Mrs.Caryll Sefton					**Permits**		
52-2-1543	Bong Bong 3 West Dapto;	AGD	56	294660	6181000	Open site	Not a Site	Modified Tree (Carved or Scarred) : -	Scarred Tree	1920,99171,102149,102212,102235,102375,102766
Contact		**Recorders**	Mrs.Caryll Sefton					**Permits**		
52-2-1544	Bong Bong 2;West Dapto;	AGD	56	295680	6180490	Open site	Valid	Artefact : -	Open Camp Site	1920,102149,102212,102235,102375,102766
Contact		**Recorders**	Mrs.Caryll Sefton					**Permits**	603	
52-2-2227	TEST PITTING AREA 21	AGD	56	297820	6182550	Open site	Valid	Artefact : 18		102212,102766
Contact		**Recorders**	Stuart Huys					**Permits**		
52-2-2233	test pittting area 22	AGD	56	297730	6182180	Open site	Valid	Artefact : 2		102212,102766

Report generated by AHIMS Web Service on 25/05/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 292492 - 298498, Northings : 6176984 - 6182984 with a Buffer of 50 meters. Additional Info : heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Stuart Huys					Permits		
52-5-0412	Test Pithing area 19	AGD	56	295930	6177270	Open site	Valid	Artefact : -		102212
	Contact	Recorders	Stuart Huys					Permits		
52-5-0523	Tallawara Pipeline PAD3	AGD	56	297760	6177440	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102212,104139
	Contact	Recorders	Biosis Pty Ltd - Sydney					Permits	2742	
52-5-0524	KPAD1 Wyndarra Way	AGD	56	298125	6179025	Open site	Valid	Potential Archaeological Deposit (PAD) : -		102212,102766
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits	2888	
52-5-0622	Cleveland Road AFT-7	GDA	56	296422	6179786	Open site	Valid	Artefact : 1		102766
	Contact	Recorders	Mrs.Georgia Roberts					Permits	3373	
52-5-0623	Cleveland Road AFT-8	GDA	56	296245	6179780	Open site	Valid	Artefact : 1		102766
	Contact	Recorders	Mrs.Georgia Roberts					Permits		
52-5-0613	TLPD AFT-7	GDA	56	297785	6177313	Open site	Valid	Artefact : 1		104139
	Contact	Recorders	Mrs.Georgia Roberts					Permits		
52-5-0614	TLPD AFT-8	GDA	56	297445	6177283	Open site	Valid	Artefact : 1		104139
	Contact	Recorders	Mrs.Georgia Roberts					Permits		
52-5-0615	TLPD AFT-9	GDA	56	297219	6177499	Open site	Valid	Artefact : 1		104139
	Contact	Recorders	Mrs.Georgia Roberts					Permits		
52-5-0619	Cleveland Road AFT-6	GDA	56	296529	6180206	Open site	Valid	Artefact : 1		102766
	Contact	Recorders	Mrs.Georgia Roberts					Permits	3373	
52-5-0617	TLPD AFT-10c	GDA	56	297124	6177020	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mrs.Georgia Roberts					Permits		
52-2-3831	Cleveland Road FT 1	GDA	56	295980	6180487	Open site	Valid	Aboriginal Ceremony and Dreaming : -		102766
	Contact	Recorders	Ms.Miranda Fire-Star (nee Morton)					Permits		
52-2-3832	Cleveland Road FT 2	GDA	56	296335	6180360	Open site	Valid	Aboriginal Ceremony and Dreaming : -		102766
	Contact	Recorders	Ms.Miranda Fire-Star (nee Morton)					Permits		
52-2-3813	NRE Wongawilli-AFT1	AGD	56	293948	6181455	Open site	Valid	Artefact : 15		102766
	Contact	Recorders	Mrs.Georgia Roberts,Biosis Pty Ltd - Wollongong					Permits		
52-2-3815	Riverpark Way AFT-1	GDA	56	294979	6180326	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mrs.Georgia Roberts,Biosis Pty Ltd - Wollongong					Permits		

Report generated by AHIMS Web Service on 25/05/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 292492 - 298498, Northings : 6176984 - 6182984 with a Buffer of 50 meters. Additional Info : heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-4219	Iredell Pad 5	GDA	56	294741	6181723	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-2-4220	Iredell Pad 6	GDA	56	294750	6181800	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Biosis Pty Ltd - Wollongong,Miss.Shannon Smith,Miss.S					**Permits**	3922	
52-2-4221	Iredell Pad 7	GDA	56	294692	6181879	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-2-4222	Iredell Pad 2	GDA	56	294565	6181438	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-2-4223	Iredell Pad 1	GDA	56	294638	6181353	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-2-4224	Iredell Pad 3	GDA	56	294616	6181499	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-2-4225	Iredell Pad 4	GDA	56	294736	6181519	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	3922	
52-5-0823	Yallah to Oak Flats PAD 8 (YTOF PAD 8)	GDA	56	296688	6177569	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Mr.Josh Symons					**Permits**		
52-2-4209	Fowlers Road 01	GDA	56	296981	6180497	Open site	Not a Site	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Ms.Ana Jakovljevic					**Permits**		
52-2-4208	Fowlers Raod 01	GDA	56	296981	6180497	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		

Report generated by AHIMS Web Service on 25/05/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 292492 - 298498, Northings : 6176984 - 6182984 with a Buffer of 50 meters. Additional Info : heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Ms.Ana Jakovljevic					**Permits**	3869	
52-5-0943	WD2 NHTA 5	GDA	56	293428	6179275	Open site	Valid	Artefact : -		104358
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
52-5-0944	WD2 NHTA 4	GDA	56	293717	6179754	Open site	Valid	Artefact : -		104358
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
52-5-0945	WD2 NHTA 1	GDA	56	293140	6180110	Open site	Valid	Artefact : -		104358
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
52-5-0946	WD2 NHTA 3	GDA	56	293479	6179810	Open site	Valid	Artefact : -		104358
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**		
52-2-1158	Logbridge Farm	AGD	56	295022	6176925	Open site	Valid	Artefact : -	Open Camp Site	102212,102766
	Contact	**Recorders**	Australian Museum Consulting (AM Consulting),A Anderson					**Permits**		
52-2-1688	WD1-1;	AGD	56	295830	6180320	Open site	Valid	Artefact : -	Open Camp Site	102212,102375,102766
	Contact	**Recorders**	P Saunders					**Permits**	484	
52-2-1032	Wongawilli;Camden;	AGD	56	293800	6182000	Open site	Valid	Artefact : -	Open Camp Site	366,1819,102149,102212,102235,102375,102766,103149,104154
	Contact	**Recorders**	Ms.Laila Haglund					**Permits**		
52-2-1033	Wongawilli;Camden same as 52-2-3293	GDA	56	294771	6182379	Open site	Valid	Artefact : 31	Open Camp Site	366,1819,102149,102212,102235,102375,102766,103149,104154
	Contact	**Recorders**	Australian Museum Consulting (AM Consulting),Ms.Laila Haglund,Biosis Pty Ltd - V					**Permits**	3505	
52-5-0433	West Dapto Release Area PAD	AGD	56	296343	6179210	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		102149,102212,102766
	Contact	**Recorders**	Ms.Meaghan Russell					**Permits**	2244	
52-5-0527	Wyndarra Way Isolated Find 1	AGD	56	298221	6179190	Open site	Valid	Artefact : -		101062,102212,102766
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd					**Permits**	2958	
52-2-3659	Bong Bong Road IA1	GDA	56	296829	6181080	Open site	Valid	Artefact : 1		102149,102212,102766
	Contact	**Recorders**	Biosis Pty Ltd - Sydney					**Permits**		

Report generated by AHIMS Web Service on 25/05/2020 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 292492 - 298498, Northings : 6176984 - 6182984 with a Buffer of 50 meters. Additional Info : heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-3660	Bong Bong Road IA2	GDA	56	297014	6181373	Open site	Valid	Artefact : 1		102212,102766
Contact		Recorders	Biosis Pty Ltd - Sydney					Permits		
52-5-0532	WWIF1 (Wyndarra Way Isolated Find 1)	GDA	56	298221	6179190	Open site	Valid	Artefact : 1		102212,102766
Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
52-5-0768	WD3 PAD 09	GDA	56	292801	6178674	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Doctor.Tim Owen					Permits		
52-5-0769	WD3 PAD 10	GDA	56	293256	6178833	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Doctor.Tim Owen					Permits		
52-5-0770	WD3 PAD 12	GDA	56	292942	6178487	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Doctor.Tim Owen					Permits		
52-5-0771	WD3 IF + PAD 11	GDA	56	293306	6178561	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Doctor.Tim Owen					Permits		
52-5-0772	WD3 PAD 07	GDA	56	293452	6179348	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	
52-5-0774	WD3 PAD 08	GDA	56	293409	6179218	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	
52-5-0775	WD3 AS + PAD 13	GDA	56	293105	6178327	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Doctor.Tim Owen					Permits		
52-5-0776	WD3 IF + PAD 03	GDA	56	293411	6179917	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0777	WD3 PAD 04	GDA	56	293779	6179840	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	
52-5-0778	WD3 PAD 05	GDA	56	293298	6179624	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	
52-5-0780	WD3 PAD 06	GDA	56	293711	6179632	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen,Doctor.Tim Owen					Permits	4472	
52-5-0813	Avondale 2	GDA	56	292493	6177492	Closed site	Valid	Artefact : -		
Contact		Recorders	Mr.Jamie Reeves					Permits		
52-5-0814	Avondale 1	GDA	56	292530	6178860	Open site	Valid	Artefact : -		
Contact		Recorders	Mr.Jamie Reeves					Permits	4033	
52-5-0877	Mullet Creek Artefact Scatter 1	GDA	56	296490	6179776	Open site	Valid	Artefact : 1		
Contact		Recorders	Biosis Pty Ltd - Wollongong					Permits		
52-2-4519	BBTC PAD	GDA	56	293917	6180534	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					Permits	4579	
52-2-4520	BBTC ISO	GDA	56	293847	6180313	Open site	Valid	Artefact : -		
Contact		Recorders	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					Permits	4579	
52-2-4435	Robins Creek PAD 1	GDA	56	296436	6182052	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Artefact - Cultural Heritage Management - Rose Bay,Miss.Julia McLachlan					Permits		
52-2-4436	Robins Creek PAD 2	GDA	56	296568	6182188	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders	Artefact - Cultural Heritage Management - Rose Bay,Miss.Julia McLachlan					Permits		
52-5-0917	WD2 AS01	GDA	56	293551	6179219	Open site	Valid	Artefact : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					Permits	4472	
52-5-0918	WD2 PAD 14	GDA	56	293640	6179944	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		104358
Contact		Recorders	GML Heritage Pty Ltd + Context - Surry Hills,GML Heritage Pty Ltd + Context - Surry					Permits	4472	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0919	WD2 Fig Trees	GDA	56	293542	6179618	Open site	Valid	Aboriginal Ceremony and Dreaming : -		104358
	Contact	**Recorders**	GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen					**Permits**	4472	
52-2-4479	Hayes Lane AFT 1	GDA	56	293467	6180914	Open site	Valid	Artefact : -		104143
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
52-5-0881	Avaondale 9	GDA	56	292597	6178636	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Alistair Grinbergs					**Permits**		
52-2-4488	Forest Creek AFT 1	GDA	56	295522	6182964	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					**Permits**		
52-2-3286	WDRA_AS_04	AGD	56	297848	6182822	Open site	Valid	Artefact : 2		100075,102212
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3287	WDRA_AS_05	AGD	56	297922	6182669	Open site	Valid	Art (Pigment or Engraved) : 1		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3288	WDRA_AS_07	AGD	56	298090	6182530	Open site	Valid	Artefact : 1		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0506	WDRA_AS_08	AGD	56	295391	6177151	Open site	Valid	Artefact : 12		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3289	WDRA_AX_01	AGD	56	296988	6181336	Open site	Valid	Artefact : 4		100075,102149,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0507	WDRA_AX_02	AGD	56	296210	6179467	Open site	Valid	Artefact : 2		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0508	WDRA_AX_03	AGD	56	294955	6179217	Open site	Valid	Artefact : 4		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0509	WDRA_AX_04	AGD	56	294440	6178354	Open site	Valid	Artefact : 6		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3270	WDRA_AX_42	GDA	56	296850	6182558	Open site	Valid	Artefact : 1		100075,102149,102212,102766,104005,104006
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting),Biosis Pty Ltd - Wollongong,Mrs.Sa					**Permits**	4585	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-3280	WDRA_AX_15	AGD	56	296934	6182145	Open site	Valid	Artefact : 3		100075,102149,102212,102766
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-2-3293	WDRA_AX_18 same as 52-2-1033	GDA	56	294817	6182270	Open site	Valid	Artefact : 31		100075,102149,102212,102235,102766,103149
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting),Biosis Pty Ltd - Wollongong,Ms.An						**Permits**	3505	
52-2-3272	WDRA_AX_41	AGD	56	295847	6182833	Open site	Valid	Artefact : 1		100075,102212,102766,103149,104112
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-2-3273	WDRA_AX_43	GDA	56	296661	6182514	Open site	Valid	Artefact : 1		102212,104005,104006
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting),Artefact - Cultural Heritage Manag						**Permits**	4299	
52-2-3274	WDRA_AX_44	AGD	56	296350	6182777	Open site	Valid	Artefact : 1		100075,102149,102212,102766,103149,104112
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-2-3275	WDRA_AX_45	AGD	56	296033	6182730	Open site	Valid	Artefact : 9		100075,102212,102235,102766,103149,104112
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-2-3276	WDRA_AX_46	AGD	56	296289	6182644	Open site	Valid	Artefact : 3		100075,102212,102766,103149,104112
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-5-0510	WDRA_AX_05	AGD	56	293969	6177542	Open site	Valid	Artefact : 4		100075,102212,102766
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-5-0511	WDRA_AX_06	AGD	56	292784	6178615	Open site	Valid	Artefact : 4		100075,102212,102766
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		
52-2-3291	WDRA_AX_09	AGD	56	297820	6182593	Open site	Valid	Artefact : 8		100075,102212,102766
	Contact S Scanlon	**Recorders** Australian Museum Consulting (AM Consulting)						**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 33235 - MJS

Client Service ID : 507898

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-3277	WDRA_AX_47	GDA	56	293994	6180161	Open site	Destroyed	Artefact : 3, Potential Archaeological Deposit (PAD) : -		100075,102149,102153,102212,102235,102236,102237,102766
	Contact S Scanlon	**Recorders**	Australian Army,Doctor.Tim Owen,Biosis Pty Ltd - Wollongong,Mrs.Samantha Keat					**Permits**	3328,3403,3743,4056	
52-2-3283	WDRA_AX_20	AGD	56	294207	6180791	Open site	Valid	Artefact : 17		100075,102149,102212,102235,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3284	WDRA_AX_21	AGD	56	294242	6180895	Open site	Valid	Artefact : 16		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0471	Tallawarra Pipeline 1	AGD	56	296270	6176924	Open site	Valid	Artefact : -		100549,102212
	Contact Searle	**Recorders**	Sam Moody					**Permits**	2526,2743,2770	
52-5-0472	Tallawarra Pipeline 2	AGD	56	296610	6177022	Open site	Valid	Artefact : -		100549,102212
	Contact Searle	**Recorders**	Sam Moody					**Permits**	2526	
52-2-3285	WDRA_AX_22	AGD	56	296146	6180460	Open site	Valid	Artefact : 2		100075,102149,102212,102235,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0496	WDRA_AX_23	AGD	56	293792	6179781	Open site	Valid	Artefact : 3		100075,102149,102212,102235,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0497	WDRA_AX_24	AGD	56	293886	6179541	Open site	Valid	Artefact : 1		100075,102149,102212,102235,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0498	WDRA_AX_25	AGD	56	293846	6179371	Open site	Valid	Artefact : 4		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0499	WDRA_AX_26	AGD	56	294985	6177758	Open site	Valid	Artefact : 1		102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-5-0500	WDRA_AX_27	AGD	56	295700	6176998	Open site	Valid	Artefact : 14		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 33235 - MJS

Client Service ID : 507898

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0485	WDRA_AX_29	AGD	56	295334	6177757	Open site	Valid	Artefact : 1		100075,102212,102766
	Contact S Scanlon	**Recorders**	Australian Museum Consulting (AM Consulting)					**Permits**		
52-2-3765	Cleveland Road PAD 5	GDA	56	296039	6180451	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	Contact	**Recorders**	Ms.Renee Regal					**Permits**	3294,3373	
52-5-0585	Cleveland Road PAD 3	GDA	56	296151	6180093	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	Contact	**Recorders**	Ms.Renee Regal					**Permits**	3294,3373	
52-5-0586	Cleveland Road PAD-4	GDA	56	296281	6179979	Open site	Destroyed	Potential Archaeological Deposit (PAD) : 1		102766
	Contact	**Recorders**	Ms.Renee Regal					**Permits**	3294,3373	
52-5-0583	Cleveland Road PAD 1	GDA	56	296036	6179753	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	Contact	**Recorders**	Ms.Renee Regal					**Permits**	3294,3373	
52-5-0584	Cleveland Road PAD 2	GDA	56	296597	6180111	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	Contact	**Recorders**	Ms.Renee Regal					**Permits**	3294,3373	
52-2-3778	West Dapto	GDA	56	293264	6180753	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766,103849
	Contact	**Recorders**	Miss.Felicity Barry					**Permits**		
52-2-3779	WDSY1	GDA	56	293972	6180698	Open site	Valid	Artefact : 1		102149,102766,103849,103853
	Contact	**Recorders**	Extent Heritage Pty Ltd - Pyrmont - Individual users,Miss.Felicity Barry,Ms.Fenella					**Permits**	3703,3815,3883	
52-2-4154	Darkes Road Kembla Grange Artefact Scatter 01 (DRKG AS01)	GDA	56	296327	6182276	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Josh Symons					**Permits**	3811	
52-2-4161	Shone Avenue Unexpected Find 01	GDA	56	294996	6181899	Open site	Destroyed	Shell : -		
	Contact	**Recorders**	Mr.Josh Symons,Miss.Stacey Kennedy					**Permits**	3786	
52-2-4397	West Dapto Rd AS1	GDA	56	295150	6182370	Open site	Valid	Artefact : 1, Potential Archaeological Deposit (PAD) : 1		103733
	Contact	**Recorders**	Extent Heritage Pty Ltd - Pyrmont - Individual users,Ms.Fenella Atkinson					**Permits**	4129,4381,4382	

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