



# Cleveland Road, Cleveland: Aboriginal cultural heritage archaeological survey report

DRAFT REPORT

Prepared for Illawarra Local Aboriginal Land Council

25 May 2018

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# Contents

<b>Glossary.....</b>	<b>v</b>
<b>Summary .....</b>	<b>vi</b>
<b>1 Introduction .....</b>	<b>8</b>
1.1 Project background .....	8
1.2 Location of the study area .....	8
1.3 Planning approvals .....	9
1.4 Scope of the assessment .....	9
1.5 Aboriginal consultation.....	9
<b>2 Desktop assessment.....</b>	<b>12</b>
2.1 Landscape context.....	12
2.2 Geology, soils and landforms.....	12
2.3 Hydrology .....	16
2.4 Flora and fauna .....	17
2.5 Resource statement .....	18
2.6 Previous land use.....	18
<b>3 Aboriginal context.....</b>	<b>21</b>
3.1 Ethnohistory and contact history .....	21
3.2 Regional context.....	22
3.3 Local context .....	24
3.3.1 Identified Aboriginal archaeological sites .....	29
3.3.2 Previously identified sites within the study area.....	29
3.3.3 Predictive statements.....	32
<b>4 Archaeological survey .....</b>	<b>35</b>
4.1 Archaeological survey aims .....	35
4.2 Survey methods .....	35
4.3 Constraints to the survey .....	35
4.4 Visibility .....	36
4.5 Exposure .....	36
4.6 Disturbances .....	37
4.7 Survey results .....	40
4.8 Discussion.....	42
<b>5 Conclusions and recommendations .....</b>	<b>46</b>
5.1 Conclusions .....	46
5.2 Recommendations .....	46
<b>References.....</b>	<b>49</b>
<b>Appendices .....</b>	<b>51</b>

<b>Appendix 1</b>	<b>AHIMS search results .....</b>	<b>52</b>
<b>Appendix 2</b>	<b>Aboriginal stakeholder comments .....</b>	<b>53</b>

## Tables

Table 1	Fairy Meadow soil landscape characteristics (Hazelton and Tille 1990, p. 100) .....	12
Table 2	Shellharbour soil landscape characteristics (Hazelton 1992, p.58) .....	13
Table 3	AHIMS sites within the study area .....	29
Table 4	Aboriginal site prediction statements .....	32
Table 5	Artefact analysis results.....	40

## Figures

Figure 1	Location of the study area .....	10
Figure 2	Study area detail.....	11
Figure 3	Geology of study area.....	14
Figure 4	Soil landscapes in study area.....	15
Figure 5	AHIMS sites within the vicinity of the study area .....	31
Figure 6	Survey effort.....	44
Figure 7	Survey results .....	45
Figure 8	Due Diligence Flow Chart .....	48

## Plates

Plate 1	Diagram showing Strahler stream order (Ritter et al. 1995, p. 151) .....	16
Plate 2	Flood risk zone in the study area, which is marked in blue (Source: Wollongong City Council) .....	17
Plate 3	1948/51 aerial showing previous land use (Wollongong City Council) .....	19
Plate 4	1961 aerial showing previous land use (Wollongong City Council) .....	19
Plate 5	1977 aerial showing previous land use (Wollongong City Council) .....	20
Plate 6	West-facing photo of study area showing grass coverage and low visibility .....	36
Plate 7	Example of exposure along creek bank (scale = 1 metre) .....	37
Plate 8	Photo of unsealed, gravelled driveway leading to residential house and farm. ....	38
Plate 9	Photo of one set of powerlines throughout the study area and farm fencing.....	38
Plate 10	Photo of artificial dam within the western portion of the study area. ....	39
Plate 11	Artefact #1 recovered from banks of Mullet Creek in the south eastern portion of the study area.....	41
Plate 12	Artefact #2 recovered from banks of Mullet Creek in the south eastern portion of the study area.....	41
Plate 13	AMBS (2006) test excavation results. Green test pits contained artefacts, which were located within the same landform feature as the moderate potential area. ....	43



Plate 14 Biosis (2011) test excavation results. Red test pits contained artefacts, which were located within the same landform feature as the moderate potential area located along mullet Creek. ....	43
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## Glossary

<b>AHIMS</b>	Aboriginal Heritage Information Management System
<b>AMBS</b>	Australian Museum Business Services
<b>DECCW</b>	Department of the Environment, Climate Change and Water
<b>Due diligence code</b>	<i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales</i> (DECCW 2010)
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EP&amp;A Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<b>GSV</b>	Ground Surface Visibility
<b>ICOMOS</b>	International Council on Monuments and Sites
<b>LEP</b>	Local Environment Plan
<b>LGA</b>	Local Government Area
<b>NPW Act</b>	<i>National Parks and Wildlife Act 1974</i>
<b>NSW</b>	New South Wales
<b>OEH</b>	NSW Office of Environment and Heritage
<b>PAD</b>	Potential Archaeological Deposit
<b>Study area</b>	Lot 1 DP194419, Lot A DP156466 and Lot 293 DP751278
<b>The Code</b>	<i>The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW 2010)

## Summary

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Biosis Pty Ltd has been commissioned by Illawarra Local Aboriginal Land Council (client) to undertake an Aboriginal Cultural Heritage Due Diligence Assessment for the proposed residential development at Lot 1 DP194419, Lot A, DP156466 and Lot 293 DP751278 (the Project). The project involves assessing the potential future land use of large residual lands of Cleveland with a view to subdivide the lands for residential development.

Background research identified five Aboriginal sites registered with Aboriginal Heritage Information Management System (AHIMS) within the study area. An archaeological survey was conducted on 11 May 2018 by Amy Butcher. The overall effectiveness of the survey for identifying Aboriginal sites was considered to be low, due to both low ground surface visibility (GSV) predominantly due to vegetation cover (pasture grasses) and few ground exposures. However, two artefacts were identified on the banks of Mullet Creek within the south eastern portion of the study area.

Based upon the desktop assessment and archaeological survey, Biosis has been able to identify three areas of moderate potential archaeological deposit (PAD), associated with the hill slopes within the northern portion of the study area and an alluvial flat. The hill slope had been assessed by AMBS (2006) as having moderate potential.

The following recommendations were made:

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

The proposed works will impact numerous registers AHIMS sites; Cleveland Road PAD 1 (52-5-0583), Cleveland Road AFT-8 (AHIMS 52-5-0623), WDRA\_AX\_02 (AHIMS 52-5-0507) and WDRA\_AX\_03 (AHIMS 52-2-0508). Impacts to these sites cannot be avoided by the proposed works. The study area has been tested as part of two test excavation programs (AMBS 2006 and Biosis 2011). The test excavations 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. Further testing and salvage of this site is not recommended.

It is recommended that the client apply to OEH for an AHIP to impact on ; Cleveland Road PAD 1 (52-5-0583), Cleveland Road AFT-8 (AHIMS 52-5-0623), WDRA\_AX\_02 (AHIMS 52-5-0507) and WDRA\_AX\_03 (AHIMS 52-2-0508) which are currently protected under the NPW Act. The AHIP should be an area wide AHIP covering the entire study area.

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. The OEH issues AHIPs under Part 6 of the NPW Act.

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. 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 the OEH 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: Further archaeological assessment is required in areas of high archaeological potential**

If impacts to areas mapped as having high archaeological potential are proposed, as shown in Figure 7, then further archaeological and cultural heritage assessment will be required. This will take the form of an Aboriginal Cultural Heritage Assessment Report, Archaeological Report and test excavations in accordance with the *Code of Practice for archaeological investigation for Aboriginal objects in NSW* (DECCW 2010a) and *Aboriginal cultural heritage consultation requirements for proponents in New South Wales* (DECCW 2010c).

### **Recommendation 3: Salvage and further excavations of newly identified surface site**

A salvage and excavations of the two newly identified surface artefacts is recommended to identify the extent of the Cleveland Road AFT-7 (AHIMS 52-5-0622). Previous excavations of the site occurred in 2011 and were undertaken by Biosis where 8 artefacts were recovered. However, the identification of the two new artefacts has prompted further test excavations along Mullet Creek.

### **Recommendation 4: 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 5: Discovery of Aboriginal Ancestral Remains**

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

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



# 1 Introduction

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## 1.1 Project background

Biosis Pty Ltd has been commissioned by Illawarra Local Aboriginal Land Council (client) to undertake an Aboriginal Cultural Heritage Due Diligence Assessment for the proposed residential development at 129 and 273-275 Cleveland Road (Lot 1 DP194419, Lot A, DP156466 and Lot 293 DP751278) (the Project)). The project involves assessing the potential future land use of large residual lands of Cleveland with a view to subdivide the lands for residential development.

An assessment in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a) has been undertaken for the study area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) ('the Code') was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity.

## 1.2 Location of the study area

The study area is located within the Wollongong Local Government Area (LGA), Parish of Kembla, County of Camden (refer to Consultation with the Aboriginal community is not a formal requirement of the due diligence process; however, it is recognised in NSW that Aboriginal people are the primary determinants of the significance of their cultural heritage. A landscape may hold intangible values that can be assessed only by the Aboriginal community. This assessment has been prepared with consultation with the Illawarra Local Aboriginal Land Council. Due to the significance of Mullet Creek a representative from the LALC Troy Tungai attended the survey. There were no specific comments made about the study area, however Troy discussed the significance of Mullet Creek and its association with fishing and being a source of food, such as fresh water muscles.

Figure 1). The study area incorporates Lot 1 DP194419, Lot A DP156466 and Lot 313 DP1188000 and is bounded by Cleveland Road to the north and Mullet Creek to the south. (refer to Figure 2).

### 1.3 Planning approvals

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

- *National Parks and Wildlife Act 1974* (NSW) (NPW Act)
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Wollongong City Council Local Environmental Plan 2011* (LEP)
- *Wollongong City Council Development Control Plan (DCP)*

### 1.4 Scope of the assessment

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

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

### 1.5 Aboriginal consultation

Consultation with the Aboriginal community is not a formal requirement of the due diligence process; however, it is recognised in NSW that Aboriginal people are the primary determinants of the significance of their cultural heritage. A landscape may hold intangible values that can be assessed only by the Aboriginal community. This assessment has been prepared with consultation with the Illawarra Local Aboriginal Land Council. Due to the significance of Mullet Creek a representative from the LALC Troy Tungai attended the survey. There were no specific comments made about the study area, however Troy discussed the significance of Mullet Creek and its association with fishing and being a source of food, such as fresh water muscles.



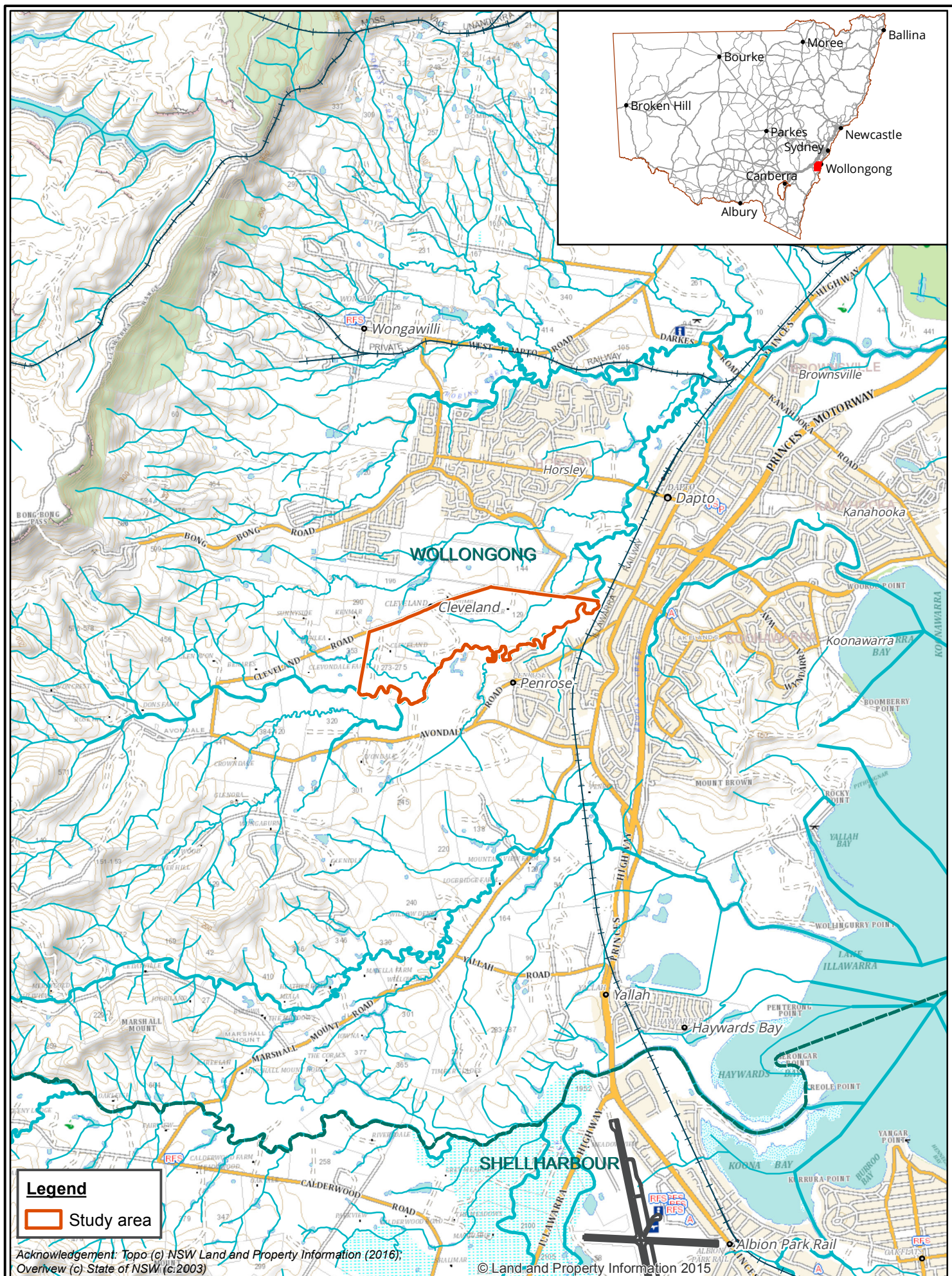
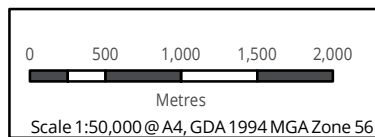


Figure 1: Location of the study area

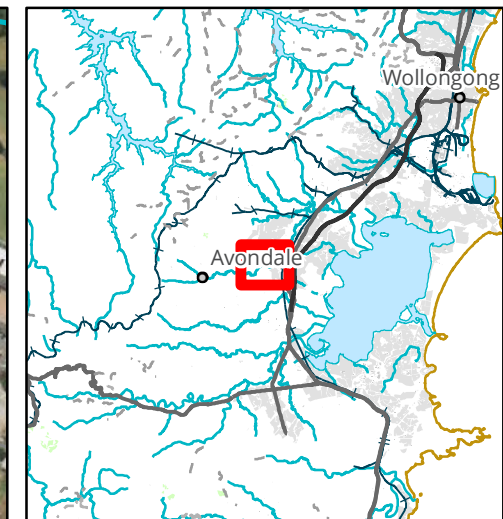


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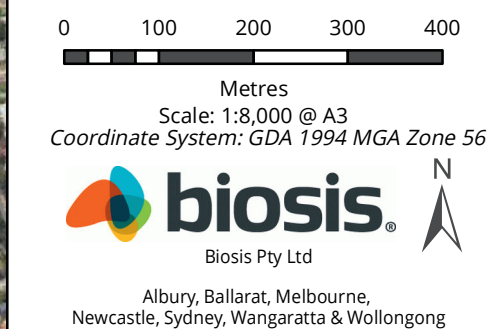




#### Legend

Study area

Figure 2: Study area detail



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## 2 Desktop assessment

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

### 2.1 Landscape context

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

### 2.2 Geology, soils and landforms

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

There are two soil landscapes within the study area, the Fairy Meadow soil landscape and Shellharbour (Hazelton and Tille 1990) (Figure 4). Fairy Meadow is associated with the alluvial plains, floodplains, valley flats, swamp landscapes and terraces below the Escarpment and is described as a 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 1. 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 and Tille 1990, p. 100).

The total depth of Fairy Meadow soil landscape within upper floodplains and terraces is <100cm. They overlay Quaternary sediments that consist of quartz sand, lithic fluvial sand, silt and clay. Total soil depth within valley flats is <150cm and overlies Quaternary sediments. 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. 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 (Hazelton and Tille 1990).

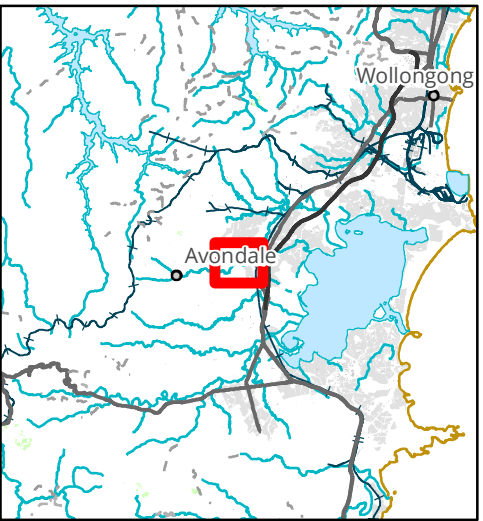
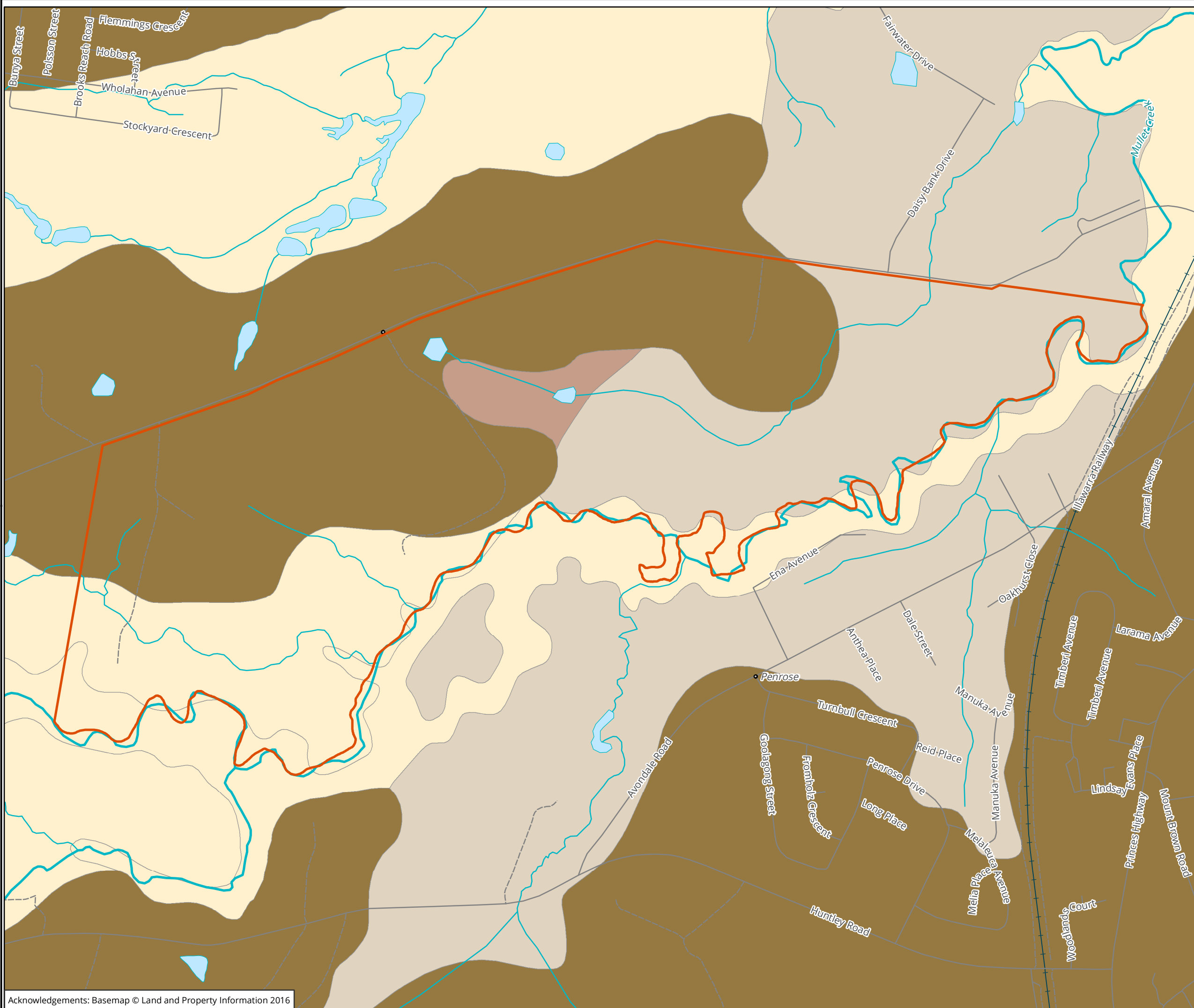
**Table 1 Fairy Meadow soil landscape characteristics (Hazelton and Tille 1990, p. 100)**

Soil Material	Description
<b>Fairy Meadow 1 (fa1)</b>	Brownish black loose sandy loam, fa1 is associated with upper floodplains and terraces; typically forms a topsoil up to 20cm thick.
<b>Fairy Meadow 2 (fa2)</b>	Brown sand, fa2 overlies fa1 on upper floodplains, and forms topsoil on valley flats; depths vary, but fa2 is generally up to 40cm thick.
<b>Fairy Meadow 3 (fa3)</b>	Yellowish brown clay that underlies fa2 for a depth of up to 50cm in valley flats.
<b>Fairy Meadow 4 (fa4)</b>	Olive brown clay that underlies fa3 for a depth of up to 80cm in valley flats; it sits above Quaternary sediments.

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 2. The limitation of this type of soil landscape is the mass movement nature of shallow soils, water erosion hazard, sodicity, hard setting, low permeability, low let bearing strength with a high shrink swell. The mass movement of shall shallow soils would not present *in situ* archaeological material in the top soil layer, however archaeological material could be preserved in the layers below.

**Table 2 Shellharbour soil landscape characteristics (Hazelton 1992, p.58)**

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



**Legend**

Study area

**Geological units**

- Alluvial floodplain deposits
- Alluvial terrace deposits
- Alluvial valley deposits
- Broughton Formation

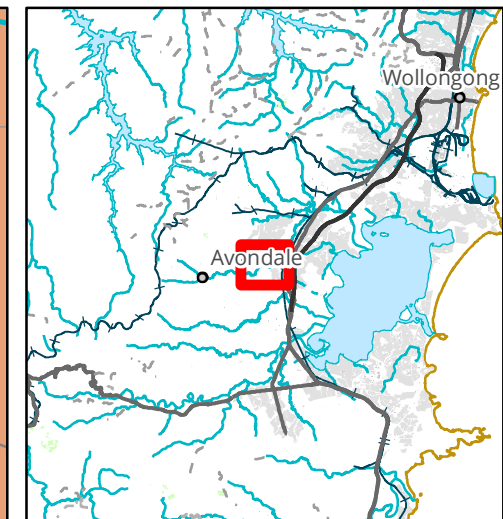
Figure 3: Geology of the study area

0 100 200 300 400  
Metres


Scale: 1:8,000 @ A3  
Coordinate System: GDA 1994 MGA Zone 56

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#### Legend

 Study area

#### Soil landscapes

 ALBION PARK

 FAIRY MEADOW

 SHELLHARBOUR

Figure 4: Soil landscapes of the study area

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Metres

Scale: 1:8,000 @ A3  
Coordinate System: GDA 1994 MGA Zone 56



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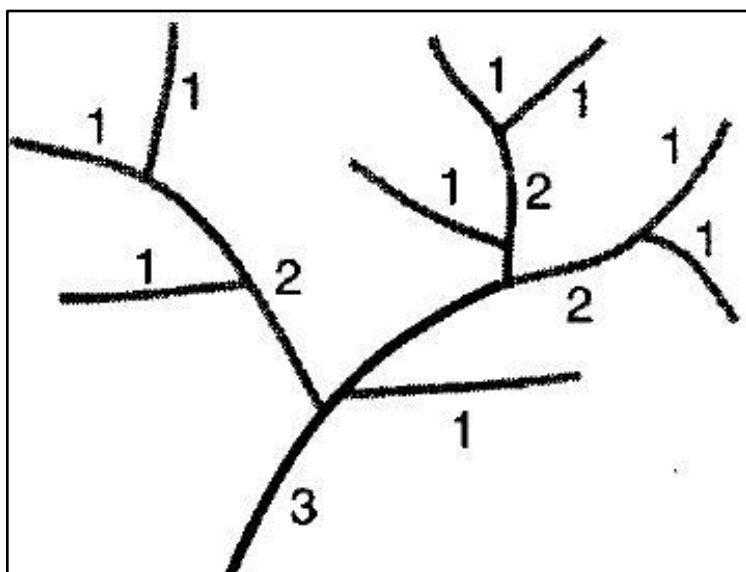
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## 2.3 Hydrology

There are a number of hydrological features flowing through the study area, primarily in the form of small creeks and streams. Streams and creeks on the gently sloping coastal plains are unconfined by topography and have extensive floodplains. Mullett Creek is a fourth order creek that runs east to west along the southern portion of the study area.

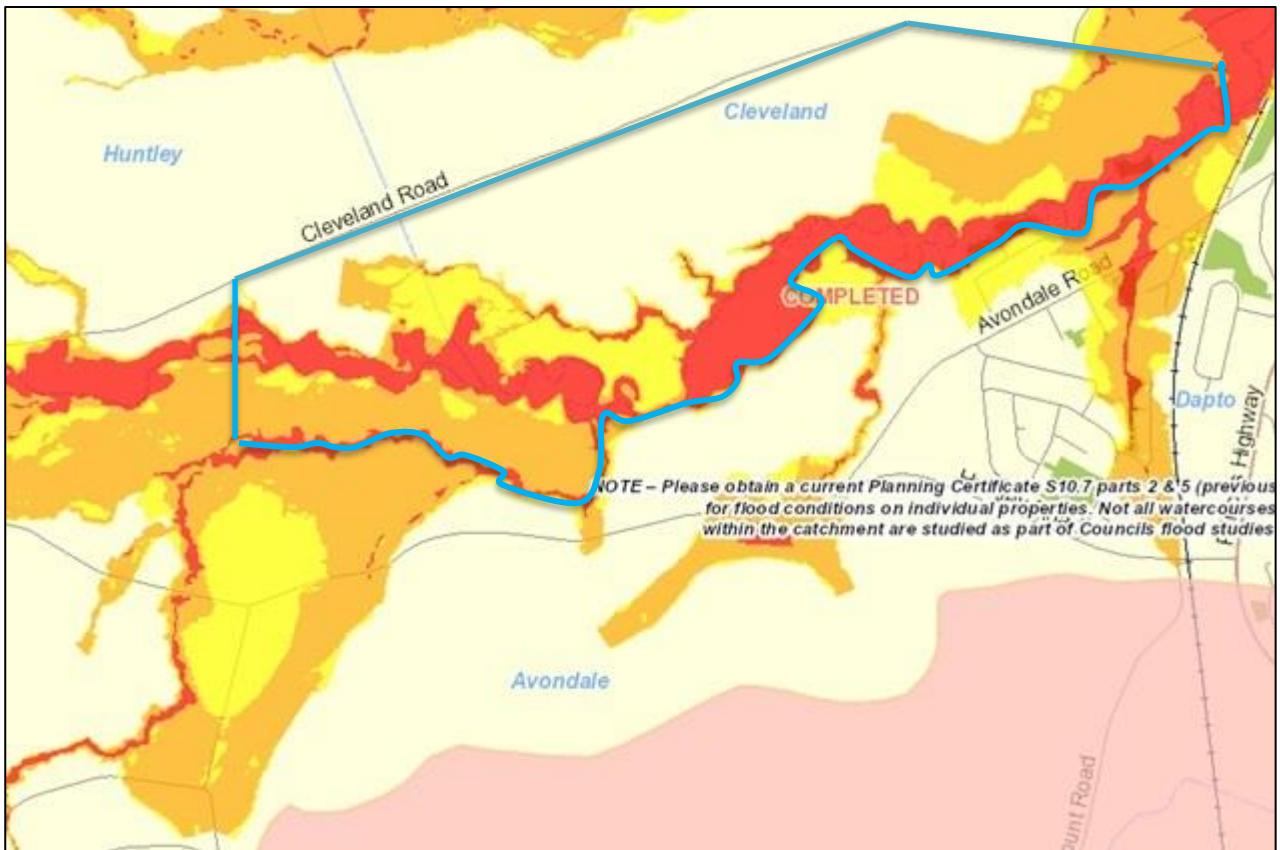
Stream order is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in NSW. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of campsites as they would have been more likely to provide a stable source of water and by extension other resources which would have been used by Aboriginal groups.



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

The stream order system used for this assessment was originally developed by Strahler (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in Plate 1. As stream order increases, so does the likelihood that the stream would be a perennial source of water. Robins Creek is a semi-permanent (ephemeral) water source that flows into Mullet Creek which incorporates numerous minor creek systems which originate at the base of the Illawarra Escarpment, and flow east towards Lake Illawarra. These creeks include Gibsons Creek, Dapto Creek, Forest Creek and Shaeffes Creek (AMBS 2006, p. 24). This area of the escarpment is also subjected to flooding.

The landforms within the study area are associated with Quaternary sands, silts and clay within alluvial deposits associated with the Mullet Creek system and can be described as flood prone broad plains and flats. Dallas and Sullivan's (1995) Aboriginal Heritage Planning Concept Study of the Wollongong LGA described that most sites would have been located above the flood zone and some sites may have been buried in flood deposits or destroyed by high energy creeks. Regular flooding events cause deposition of sediments and can cause significant impacts on any cultural material, which if present may not be *in situ*. Mullet Creek is located in a high risk flood area (Plate 2).



**Plate 2 Flood risk zone in the study area, which is marked in blue (Source: Wollongong City Council)**

## 2.4 Flora and fauna

The margins of the Wollongong Plains are characterised by mixed warm temperate and subtropical rainforest complexes on rich shale soils and alluvium under the 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 Plain of the Illawarra region 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. Angular cobbles and pebbles of fossilised wood have been recorded near the study area in the bed of Robins Creek (Sefton 1990, p. 4), which is located north of the current study area

A number of useful plant species would have been available in the study area. 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 (Percival and Stewart 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 (Percival and Stewart 1997).

Terrestrial and avian resources used for food but 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 2010, p. 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 2010, p. 99).

## 2.5 Resource statement

The Wollongong Plains of the Illawarra region 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. Angular cobbles and pebbles of fossilised wood have been recorded near the study area in the bed of Robins Creek (Sefton 1990, p. 4). Robins Creek is located approximately 2.1 kilometres north of the current study area.

A number of useful plant species would have been available in the study area. 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 (Percival and Stewart 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 (Percival and Stewart 1997).

Terrestrial and avian resources used for food but 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 2010, p. 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 2010, p. 99).

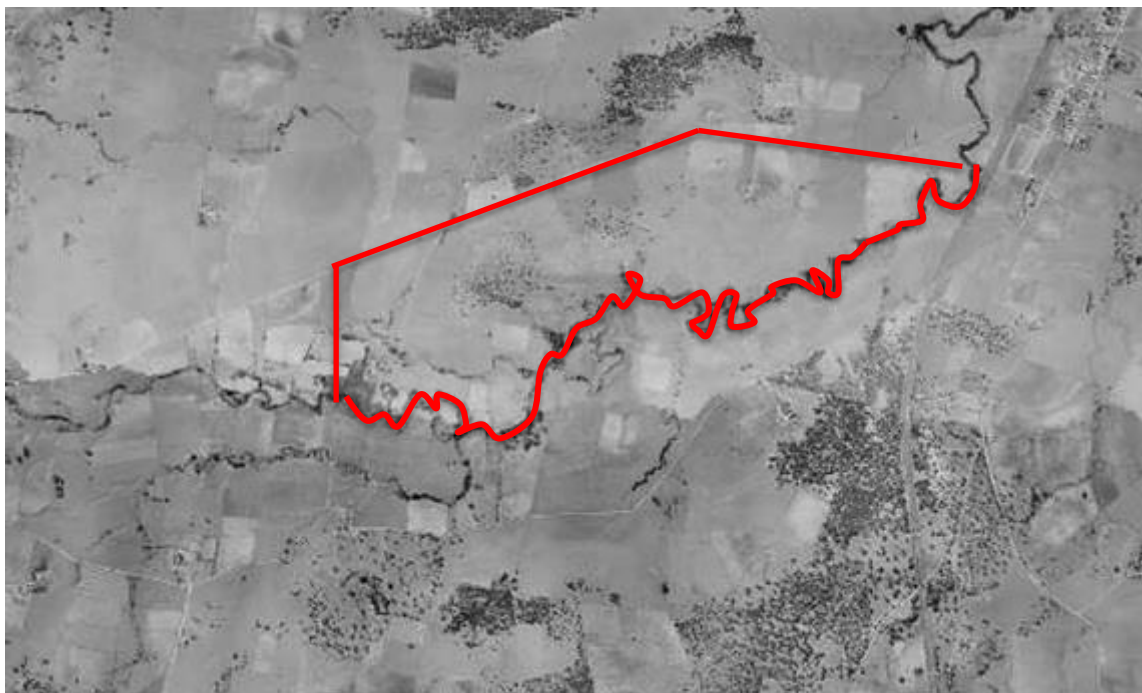
## 2.6 Previous land use

By 1816-1817, free-settlers started arriving in the area. The first land grants in the region were marked out by Surveyor General John Oxley and significant land clearing was soon undertaken. Early European land use predominantly comprised cedar-getting, agriculture and dairying. Cedar cutters were first to open up in the Illawarra as early as 1805. When they had exhausted the easily accessible timber by 1820, wheat farming and cattle grazing took over and the Coastal Plain was extensively settled and cleared for pastoral estates and farms. Many early houses were built of rough timber slab construction (Kass 2010, p. 66).

During the 1840s-50s farmers concentrated on producing a range of foodstuffs and materials for the Sydney market. During this time, wheat also emerged as a major crop prompting the establishment of flour mills such as George Brown's south of Mullet Creek. The wheat industry declined from the 1850s as a result of extreme drought, constant flooding and instances of rust prompting the establishment of the more suitable dairy industry.

The use of cattle for the production of beef and milk increased after 1887. Produces supplied various local butter and cheese factories located close by to the transport link provided by the railway. Dairying within West Dapto continued through to the 20th century leaving a significant imprint on the cultural landscape.

Review of aerial images overlooking the study area reveals that large portions of the study area was cleared of vegetation prior to 1948 and 1951 aerial survey. A large portion of the study area was likely previously used for agricultural practices between 1961 and present, as evidence by the removal of trees. Plate 3 and Plate 4 show the initial vegetation clearance of the area with further vegetation clearance in 1977 (Plate 5).

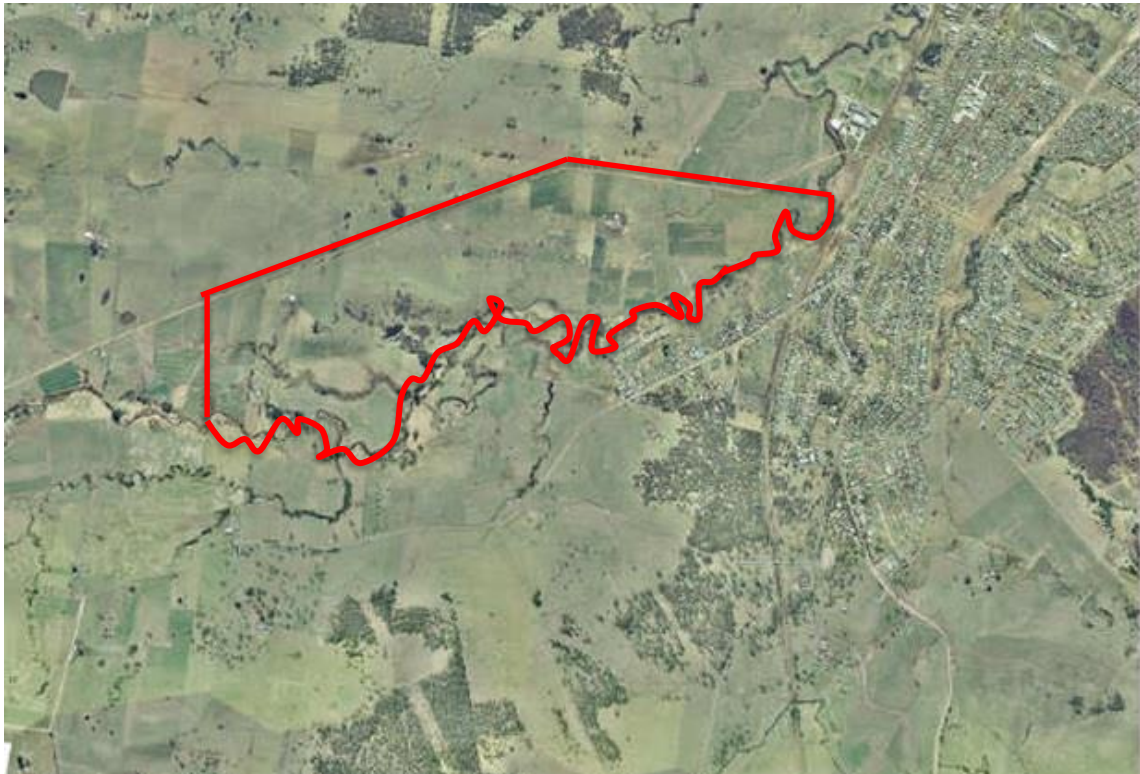


**Plate 3 1948/51 aerial showing previous land use (Wollongong City Council)**



**Plate 4 1961 aerial showing previous land use (Wollongong City Council)**





**Plate 5 1977 aerial showing previous land use (Wollongong City Council)**

## 3 Aboriginal context

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### 3.1 Ethnohistory and contact history

It is generally accepted that Aboriginal peoples have inhabited Australia for at least 65,000 years and possessed a distinctive stone tool assemblage (Clarkson et al 2017). 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 on 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 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, to the west are the Gundanguura, and in the south the Thoorga are identified (Tindale 1974).

The areas inhabited by each of the 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 Dharawal or cabbage tree palm from which their language is named (Wesson, 2009, p. 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, p. 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, p. 2). The next recorded contact occurred in 1796, when Flinders and Bass travelled along the coast in the Tom Thumb (Organ 1990, p. 8). Organ (1993, p. 49) also notes 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.

Following the arrival of European settlers into the Illawarra the movement of Aboriginal hunter-gatherers began to become increasingly restricted. European expansion was swift and soon there had been considerable loss of land to agriculture. This led to violence and conflict between Europeans and Aboriginal people as both groups sought to compete for the same resources. At the same time diseases such as small pox were having a devastating effect on the Aboriginal population. Death, starvation and disease were some of the disrupting factors that led to a reorganisation of the social practices of Aboriginal communities after European contact. The formation of new social groups and alliances were made as Aboriginal people sought to retain some semblance of their previous lifestyle (Biosis 2016).



## 3.2 Regional context

### **Proposed electrification of railway line: Dapto to Kiama (Koettig 1992)**

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 1992p. 4).

### **Proposed Illawarra water quality project installation, Kembla Grange (Navin Officer 1994)**

Navin Officer was commissioned by Camp Scott and Furphy to undertake an archaeological survey of the proposed Illawarra water quality project installation at Kembla Grange. 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. Foothills, 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 (1994 p. 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 1993).

### **Reddalls Road deviation, Kembla Grange (South East Archaeology 2001)**

South East Archaeology was commissioned by Forbes Rigby Pty. Limited to undertake an Aboriginal assessment of the proposed Reddalls Road deviation, Kembla Grange, NSW. The area was divided into four survey areas all of which were sampled for unregistered Aboriginal sites. One new site was identified approximately 30 metres to the east of the proposed route. This single artefact was found in an exposure along a drainage diversion trench created by earth working machinery (South East Archaeology 2001p.14).

### **Smiths Lane, Wongawilli, Rezoning (Navin Officer 2002)**

Navin Officer 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 1 kilometre north of the study area subject to assessment in this report. 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 p.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. It was recommended that sub-surface testing be undertaken in the identified areas of PAD.

### **Huntley Eco-Park (Biosis 2007)**

Biosis 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 at the west and low level relief with gentle slopes and alluvial plains at the east. Survey was undertaken that resulted in two new Aboriginal sites identified. 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 its tributary. Avondale 2 is an artefact scatter located on an exposed track close to the 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 p. 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 p. 67-8).

### **Dapto Land Review (GML Heritage 2015)**

GML 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 (GML 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 per cent are likely to have moderate to high potential.
- Sites on alluvial soils which have been excavated appear to contain stratified deposits, and such sites should be test 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 10m. 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.

## **20 Iredell Road, Horsley, NSW (Biosis 2015)**

Biosis 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 in and to the immediate east of the current study area. The assessment identified two previously recoded sites (WDRA\_AX\_2-, 52-2-3283 and WDRA\_AX\_21, 52-2-3284) as well as four additional sites located within 300 metres of Robins Creek. The assessment identified areas of potential 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.

Further assessment of high and moderate potential landforms was recommended as part of any future approvals.

## **3.3 Local context**

### **Aboriginal heritage management plan: West Dapto release area (AMBS 2006)**

Australian Museum Business Services (AMBS) completed an Aboriginal Heritage Management Plan for the West Dapto Release Area (WDRA). This large scale study was commissioned by the 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, located within the current study area, was a subsurface testing of a 100 square metres area (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 (353 from within < 20 centimetres of deposit) 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).
- Streams – edges of Pleistocene and Holocene terraces within 10 metres of stream channels (86).
- Spur crests (63).

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 pit 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 2006: 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 2006: 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 this report are closely related to the archaeological record and the natural environment (AMBS 2006: 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 (AMBS 2006).

The closest site identified as part of the assessment is located 240 metres south-west of the current study area. The site was identified through the excavation of three test pits measuring 1 metre by 1 metre on the alluvial flat close to Robins Creek (this landform had similar characteristics to those within the study area). The first test pit excavated yielded a total of 6 artefacts recovered from the upper 30 centimetres of the sandy loam deposit. This site was registered as site WDRA\_AX\_20 (AHIMS 52-2-3283). The second and third test pits yielded a total of 16 artefacts, recovered in the upper 40 centimetres of compacted loam and was recorded as WDRA\_AX\_21 (AHIMS 52-2-3284). Artefacts recovered from this excavation consisted of chert, quartz, silicified wood, quartzite, silcrete and tuff; artefact types included flakes, broken flakes and flaked pieces. WDRA\_AX\_21 (AHIMS 52-2-3284) due to its relatively high landform integrity was considered to have potential for further archaeological material to be present within the associated landform (AMBS 2006: 294).

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 (2006). 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 2006: 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 2006: 177). Artefacts were retrieved from alluvial flats at a maximum depth of 60 to 70 centimetres.

### **Proposed residential development at Bong Bong Road, West Dapto (AHMS 2010)**

Archaeological and Heritage Management Solutions (AHMS) completed Aboriginal and historical archaeological and cultural heritage assessment for the proposed Stockland residential subdivision of land at Bong Bong Road in West Dapto. 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 model 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: 44-5). One previously recorded Aboriginal archaeological site was located within the assessed area, WDRA\_AX\_47 (AHIMS 52-2-3277).

During the archaeological survey one artefact scatter was identified, WDSY1 (AHIMS 52-2-3779) and one Potential Archaeological Deposit (PAD), WDY2 (AHIMS 52-2-3778). WDSY1 was located on a terrace between two arms of Robins Creeks within an area that was identified as having archaeological potential by AMBS in 2006. 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 p.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. WDRA\_AX\_47 was tested by AMBS in 2006 and three artefacts (silcrete and chert flakes) were recovered from three 1x1m test pits across approximately 50 square metres on a flat adjacent to Robins Creek tributary.

Site 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.

### **Sydney water servicing WDURA and adjacent growth areas (Biosis 2011a)**

Biosis 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: NRE Wongawilli AFT-1 (AHIMS 52-2-3813), Smiths Lane AFT-2 (AHIMS 52-2-3814) and Riverpark Way AFT-3 (AHIMS 52-2-3815). All of the sites were located in the disturbed context and the potential for further sub-surface deposits was assessed as low (Biosis 2010 p.156-8). 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 2011 p.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 (Biosis 2010: Figure 50).

### **Fairwater Drive extension to Cleveland Road (Biosis 2011b)**

Biosis was commissioned by Wollongong City Council to undertake a program of sub-surface testing for the proposed Fairwater Drive extension to Cleveland Road, following on the Comber survey from 2009. Five PADs were registered within the proposed works areas that were subject to archaeological test excavations:

- Cleveland Road PAD-1 (AHIMS 52-5-0583) 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.

- Cleveland Road PAD-2 (AHIMS 52-5-0584) is located within alluvial flats 10 metres of the western bank of Mullet Creek. Eight test pits were excavated to the sterile clay layer. 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.
- Cleveland Road PAD-3 (AHIMS 52-5-3765) 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 Cleveland Road PAD 3 has undergone partial subsurface disturbance due to the previous residential construction and assumed demolition (Biosis 2011 p.32).
- Cleveland Road PAD-4 (AHIMS 52-5-0586) 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 2011 p.34). The site was assessed as having low scientific and moderate cultural significance.
- Cleveland Road PAD-5 (AHIMS 52-5-3765) 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 focused also on the banks of Mullet Creek and its tributaries. Mullet Creek catchment area has been previously identified as being highly archaeologically sensitive by AMBS (2006). As a result three new Aboriginal sites were recorded:

- Cleveland Road AFT-6 (AHIMS 52-5-0619) is located within alluvial flats 10 metres south of Mullet Creek. 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.
- Cleveland Road AFT-7 (AHIMS 52-5-0622) is located within alluvial flat 15 metres from Mullet Creek, and within the study area. Seven test pits were excavated with eight artefacts recovered from four, 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.
- Cleveland Road AFT-8 (AHIMS 52-5-0623) is located between sites Cleveland Road PAD-1 (AHIMS 52-5-0583) and Cleveland Road AFT-7 (AHIMS 52-5-0622), within alluvial flats between 50 and 100 metres from Mullet Creek, within the study area. 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 2011b p.46). Recovery of at least one artefact in 71.4 per cent 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 2011b p.61). 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 creeklines with the 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 2011 p.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 figtree that was located to the north-west of the assessed area was recorded on AHIMS register as Cleveland Road FT1 (AHIMS 52-5-3831); it holds a high cultural and spiritual significance, with the significant potential for it to be a Women's Site (Biosis 2011b p.61).

### **Preliminary aboriginal and historic heritage assessment West Dapto urban release area (AMBS 2012)**

Australian Museum Business Services (AMBS) were commissioned by PB+MWH on behalf of the Sydney Water Corporation (SWC) to undertake a preliminary Aboriginal and historic heritage assessment for the provision of proposed water and wastewater infrastructure for the West Dapto Urban Release Area. In 2009 an environmental constraints analyses identified the areas European and Aboriginal heritage as a noteworthy environmental factor and recommended further mapping of historic heritage items, aboriginal items and the areas archaeological potential to be assessed. The study area was focused on all areas around Horsley that could be potential impacted on by the water and wastewater infrastructure. In total 309 sites were recorded within the study area boundary, these consisted of middens (which were the most common), followed by open campsites and artefact scatters.

### **Proposed residential subdivision at McPhail Lands on Bong Bong Road, West Dapto (AHMS 2012)**

AHMS was commissioned by Stockland to undertake Aboriginal cultural heritage assessment 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: WDSY1 (AHMS 52-2-3779) and WDSY2 (52-2-3778). 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: 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: 101). Site 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: 103). Salvage was recommended for site WDSY1 prior to ground disturbance works associated with the proposed development.

### **20 Iredell Road, Horsley, NSW (Biosis 2015)**

Biosis 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 1.5 kilometres north of the current study area. The assessment identified two previously recoded sites (WDRA\_AX\_2-, 52-2-3283 and WDRA\_AX\_21, 52-2-3284) as well as four additional sites located within 300 metres of Robins Creek. The assessment identified areas of potential 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.

Further assessment of high and moderate potential landforms was recommended as part of any future approvals.

### 3.3.1 Identified Aboriginal archaeological sites

An extensive search of the AHIMS database was conducted on 8 May 2018 (Client service ID: 343540). The search identified 10 Aboriginal archaeological sites within a 1 kilometre search area, centred on the proposed study area (**Error! Reference source not found.** and Table 3). Five of these registered sites are located *within* the study area (Figure 5). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied where notable discrepancies occurred.

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

**Table 3 AHIMS sites within the study area**

Site type	Occurrences	Frequency (%)
Artefact	26	50
Ceremony and Dreaming	2	3.8
PAD	17	32.7
PAD, Artefact	5	9.6
Scarred Tree	2	3.8
<b>Total</b>	<b>5</b>	<b>100</b>

A simple analysis of the Aboriginal cultural heritage sites registered within 4 km of the study area indicates that the dominant site type is artefact representing 50% (n=26), with PAD of 32.7% (n=17). Ceremony and Dreaming and scarred tree were represented by 3.8% each (n=2 each). All the sites were located within close proximity to the reliable sources of water, were either exposed by the land clearing works (artefact scatters), in the areas with remnant native vegetation (scarred trees) or within areas of relevant sandstone outcrops for grinding grooves and overhang development (shelters with art/deposit).

### 3.3.2 Previously identified sites within the study area

AHIMS search results identified five registered sites with the study area. These sites consisted of one PAD and four artefact sites. Please refer to Figure 5 for the locations of the AHIMS sites within the study area.

### **Cleveland Road PAD 1 (52-5-0583)**

Cleveland Road PAD 1 was subject to subsurface testing by Biosis in 2011. 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 significance 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.

### **Cleveland Road AFT-7 (AHIMS 52-5-0622)**

Cleveland Road AFT-7 is located within alluvial flat 15 metres from Mullet Creek, approximately 500 metres south of the study area. Seven test pits were excavated with eight artefacts recovered from four, 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.

### **Cleveland Road AFT-8 (AHIMS 52-5-0623)**

Cleveland Road AFT-8 is located between sites Cleveland Road PAD-1 (AHIMS 52-5-0583) and Cleveland Road AFT-7 (AHIMS 52-5-0622), within alluvial flats between 50 and 100 metres from Mullet Creek, approximately 500 metres south of the study area. Three test pits were excavated with one chert flake recovered. The site was assessed as having low to moderate scientific and high cultural significance.

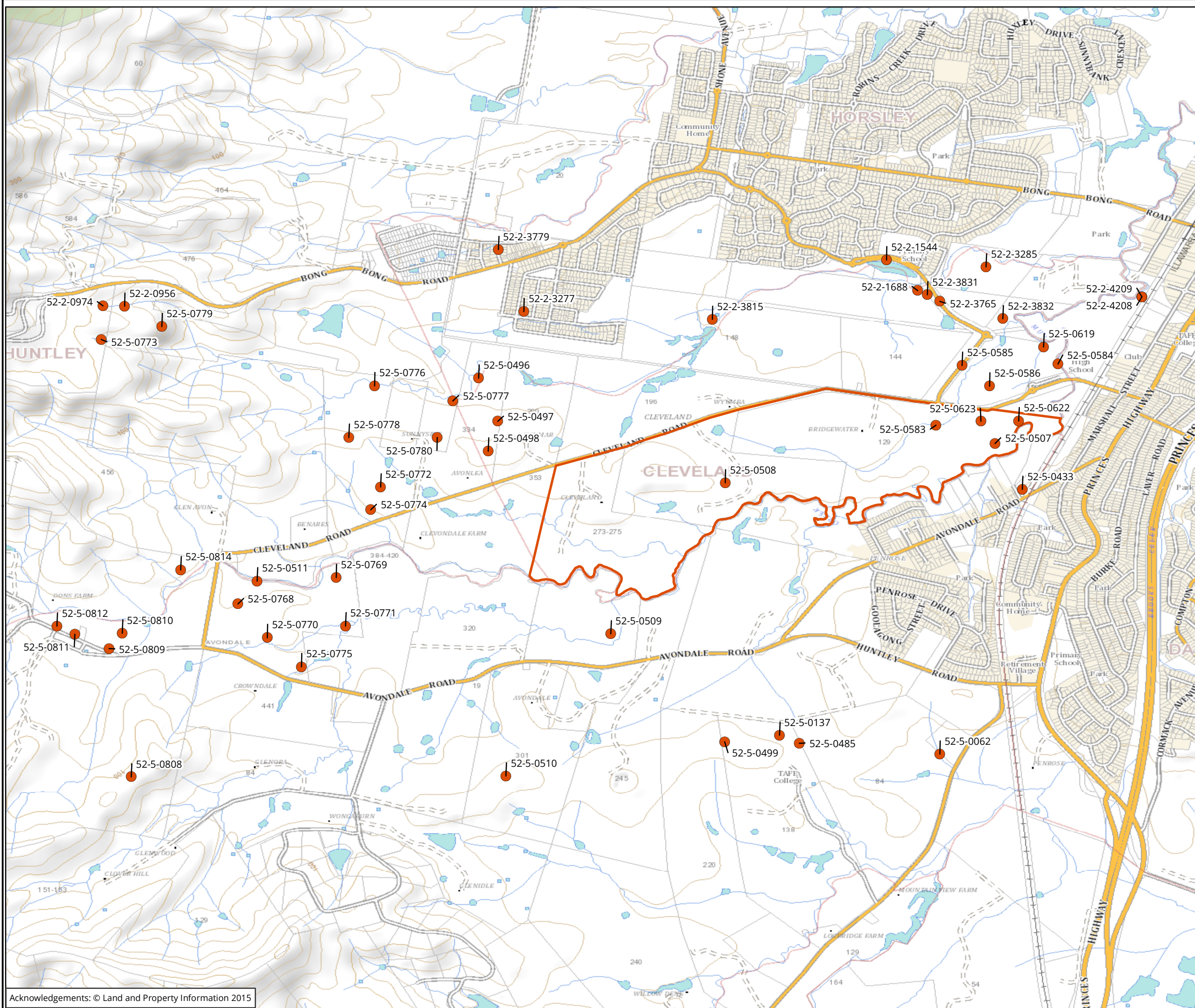
### **WDRA\_AX\_02 (AHIMS 52-5-0507)**

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 2 artefacts, a flake and a core. The two artefacts were recovered from two 1 meter x 1 meter excavations across an area of 100 m sq. The artefacts comprised of quartz and silicified tuff. The site was determined to be located within an area of moderate sensitivity.

### **WDRA\_AX\_03 (AHIMS 52-2-0508)**

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 4 artefacts. The artefacts were recovered from a 1 meter x 1 meter test excavation. The artefacts comprised of chert and quartzite. The site was determined to be located within an area of moderate sensitivity.





#### Legend

- AHIMS Records
- Study area

Figure 5: AHIMS records near the study area

NOT TO BE MADE PUBLIC

0 200 400 600 800 1,000  
Metres

Scale: 1:20,000 @ A3  
Coordinate System: GCS GDA 1994



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Albury, Ballarat, Melbourne,  
Sydney, Wangaratta & Wollongong

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### 3.3.3 Predictive statements

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

This model is based on:

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

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

**Table 4 Aboriginal site prediction statements**

Site Type	Site Description	Potential
Flaked Stone Artefact Scatters and Isolated Artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	<b>High:</b> Stone artefact sites have been previously recorded in the study area on level, well-drained topographies in close proximity to reliable sources of fresh water. Due to the distance from permanent fresh water resources, the potential for artefacts to be present within the study area is assessed as high.
Shell Middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	<b>Low:</b> Shell midden sites have not been recorded within the vicinity of the study area. There is a low potential for shell middens to be located in the study area as the first order drainage line is not permanent water source.
Quarries	Raw stone material procurement sites.	<b>Low:</b> There is no record of any quarries being within or surrounding the study area.
Potential Archaeological Deposits (PADs)	Potential sub surface deposits of cultural material.	<b>High:</b> PADs have been previously recorded in the region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms.

Site Type	Site Description	Potential
Modified Trees	Trees with cultural modifications	<b>Low:</b> Scarred trees are present in the region; however, due to past extensive vegetation clearance only a small number of mature native trees are present in the study area so it is assessed as low potential.
Grinding Grooves	Grooves created in stone platforms through ground stone tool manufacture.	<b>Low:</b> No grinding grooves have been previously recorded in the region. Suitable horizontal sandstone rock outcrops could occur along drainage lines so there is a low potential for them to occur.
Burials	Aboriginal burial sites.	<b>Low:</b> 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.	<b>Low:</b> The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are present only at one small part in the east of the study area, within Hawkesbury Sandstone Soil Landscape.
Aboriginal Ceremony and Dreaming Sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	<b>Low:</b> 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.	<b>Low:</b> There are no post-contact sites previously recorded in the study area and historical sources do not identify one.



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

## 4 Archaeological survey

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An archaeological survey of the study area was undertaken on 11 May 2018 by Amy Butcher. The survey sampling strategy, methodology and a discussion of results are provided below.

### 4.1 Archaeological survey aims

The principle aims of the survey were to:

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

### 4.2 Survey methods

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

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

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

### 4.3 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to the effectiveness of the survey within the

study area were ground surface visibility. The study area has a low GSV due to the extensive grass coverage across the study area, and as a result no potential surface sites could be observed during the survey.

#### 4.4 Visibility

In most archaeological reports and guidelines visibility refers to ground surface visibility, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010b). Ground surface visibility across the study area was typically low (5%) due to extensive grass coverage (Plate 6). Small areas of GSV were present around fencing and gateways, access tracks and areas of animal grazing.



**Plate 6 West-facing photo of study area showing grass coverage and low visibility**

#### 4.5 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke and Smith 2004: 79, DECCW 2010b). Overall, the study area displayed areas of exposure less than 5% due to extensive grass coverage. Areas of limited exposure were located on the banks of Mullet Creek, which runs east to west within the southern portion of the study area. There were small portions of erosion along the creek (Plate 7).





**Plate 7 Example of exposure along creek bank (scale = 1 metre)**

## 4.6 Disturbances

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

The study area has undergone vast vegetation clearance over the entire extent and would have resulted in the removal of topsoil, which would have caused minimal disturbance. Other minor disturbances that were observed within the study area were that of existing houses and sheds, and several powerlines running through the study area (Plate 8).. A man made dam was observed in the western portion of the study area which would have caused moderate disturbance to the ground surface (Plate 10)..



**Plate 8 Photo of unsealed, gravelled driveway leading to residential house and farm.**



**Plate 9 Photo of one set of powerlines throughout the study area and farm fencing.**





**Plate 10 Photo of artificial dam within the western portion of the study area.**



## 4.7 Survey results

The archaeological survey was undertaken by Biosis archaeologist, Amy Butcher and Illawarra Local Aboriginal Land Council (ILALC) representative Troy Tungai. The survey consisted of a pedestrian survey that targeted areas of exposure across all landforms in the study area (Figure 6). This method was chosen as the high grass coverage across the study area made it impossible to identify surface artefacts outside areas of exposure.

A number of disturbances were identified within the northern portion of the study area and were associated with the dwelling and additional buildings. A large portion of the disturbances within this portion of the study area can be attributed to farming practices, such as cattle farming and associated paddock fences and artificial dams.

A review of previous assessments carried out within the study area and in the local area has identified that a large number of sites have been identified in close proximity and within the study area. There were four previously recorded sites located within the eastern portion of the study area and one previously recorded site located in the western portion of the study area. These sites consisted of four artefact sites and one PAD site. Cleveland Road PAD 1 (52-5-0583) was subject to subsurface testing by Biosis in 2011, however it was concluded that further subsurface testing of the PAD extent would not yield further Aboriginal material.) and Cleveland Road AFT-8 (AHIMS 52-5-0623) were recovered from subsurface testing undertaken by Biosis in 2011, with WDRA\_AX\_02 (52-5-0507) and WDRA\_AX\_03 (52-2-0508) were identified by AM Consulting during test excavations.

During the current site investigation two artefacts were identified on the banks of Mullet Creek and three areas of high sensitivity and one area of moderate.

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 is located immediately adjacent to Cleveland Road AFT-7 (AHIMS 52-5-0622) where seven test pits were excavated with eight artefacts recovered from four test pits.

**Table 5 Artefact analysis results**

Artefact No.	Artefact Type	Material	Platform	Termination	Length (mm)	Width (mm)	Thickness (mm)
Artefact #1	Flake	Chert	Flat	Hinge	35	23	4
Artefact #2	Flake	Chert	Crushed	Hinge	16	1	2.5



**Plate 11 Artefact #1 recovered from banks of Mullet Creek in the south eastern portion of the study area**



**Plate 12 Artefact #2 recovered from banks of Mullet Creek in the south eastern portion of the study area**

## 4.8 Discussion

The two artefacts that were identified and recorded along Mullet Creek were found within an area of exposure, as well as being located within a high flood risk zone, however previous excavations of Cleveland Road AFT-7 (AHIMS 52-5-0622) yielded 8 artefacts across 7 test pits. This suggests that further assessment of the artefact site, in the form of excavations is warranted due to the nature in which the artefacts are located. Although the density of artefacts that were presented were low, it suggests occupation along Mullet Creek. This is further supported by test excavations that were undertaken by Biosis (2015) at Iredell Road, Horsley. The assessment identified areas of potential 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.

The extensive AMBS study of West Dapto Release Area (2006), which encompasses part of the study area, indicated that all landforms within the study area were subject to some use by Aboriginal people in the past, although variations in artefact numbers and range indicated that some landforms were subject to greater use. AMBS (2016) suggested that;

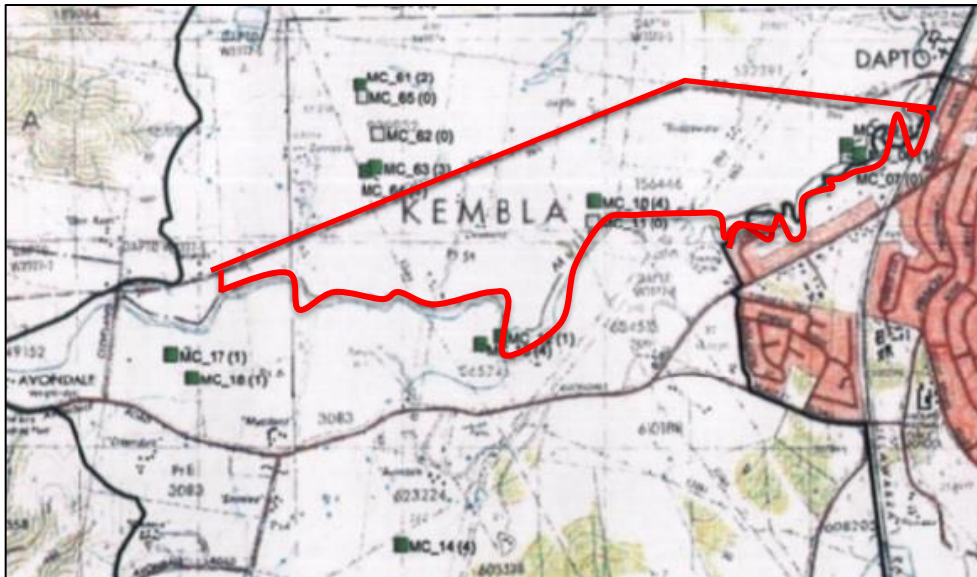
- The highest density of artefacts were present in landforms in the following order: hillslopes, 2<sup>nd</sup> order streams, 1<sup>st</sup> order streams, 3<sup>rd</sup> order streams, alluvial flats, 4<sup>th</sup> order streams, and spur crests.
- Artefacts recovered from stream landforms consisted of 33 artefacts from 3<sup>rd</sup> order streams, followed by 27 from 2<sup>nd</sup> order streams, then 15 from 1<sup>st</sup> order streams and 11 from 4<sup>th</sup> order streams.

It can be concluded that although hill slopes would have the highest density of artefacts, landforms associated with watercourses will have a higher number of artefacts than surrounding landforms, and that among streams, 3<sup>rd</sup> order streams have the highest density of cultural material. This could be explained by post-depositional processes, such as washing out of artefacts from hill crests on to hill slopes that would have influenced the preservation of cultural material. These results are considered characteristic of the region.

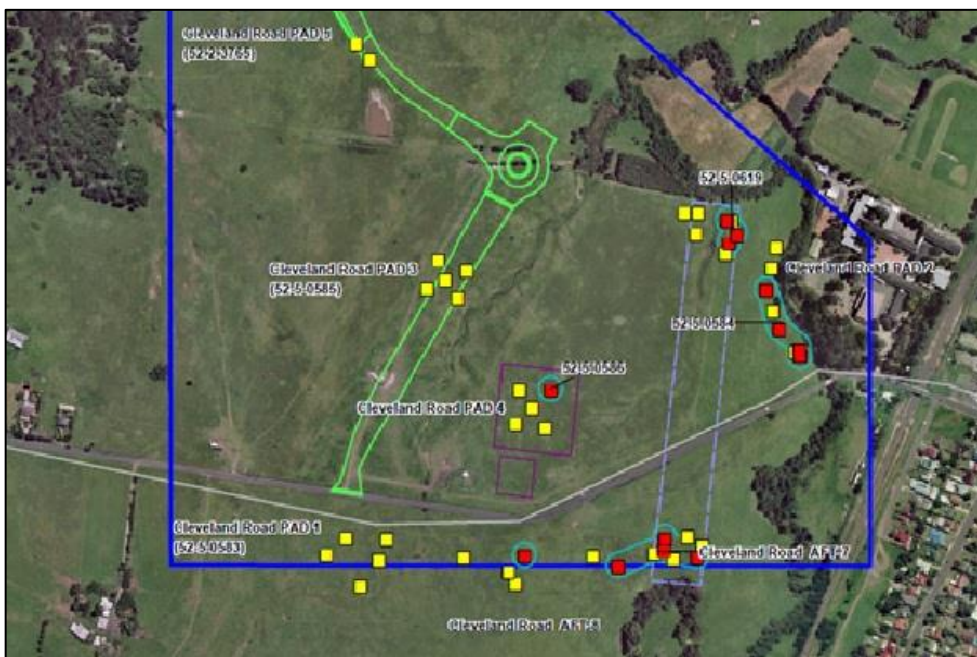
A study that was undertaken by Biosis in 2011, which encompasses the eastern portion of the study area consisted of 30 test pits across alluvial flat landform units and 13 test pits along the banks and drainage channels of Mullet Creek, which is a 4<sup>th</sup> order creek. Mullet Creek catchment area has been previously identified as being highly archaeologically sensitive by AMBS (2006). The test excavations recovered 23 artefacts, which revealed that creek and drainage lines had a greater number of artefacts than those on the open floodplain. In particular the excavation of Cleveland Road PAD 1 which is located within the eastern portion of the study area recovered no artefacts. The results also indicated that the Cleveland Road PAD 1 had not undergone any significant topsoil disturbance, with two distinct horizons in the stratigraphy. The results of this study are significantly different to the AMBS (2006) study where 4<sup>th</sup> order streams where artefact density was considered low.

It was concluded that the low number of artefacts overall did not allow for an accurate comparison to be made between other specific sites in the region. However, the location of at least one artefact in 71.4% of the sites that were tested during the 2011 study demonstrated that the study area was broadly being used by Aboriginal people in the past, with occupation focussing along Mullet Creek.



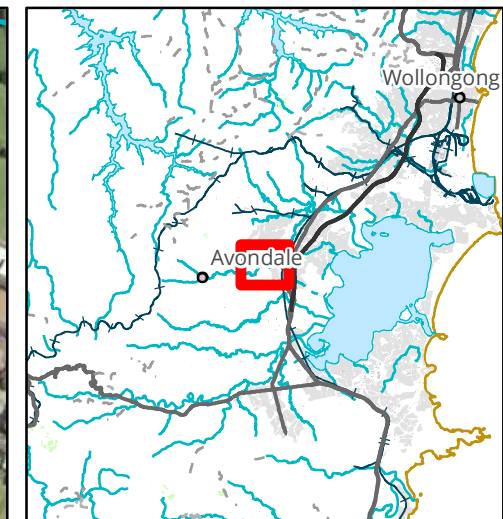


**Plate 13 AMBS (2006) test excavation results.** Green test pits contained artefacts, which were located within the same landform feature as the moderate potential area.



**Plate 14 Biosis (2011) test excavation results.** Red test pits contained artefacts, which were located within the same landform feature as the moderate potential area located along mullet Creek.





#### Legend

- Study area
- + Waypoints
- Survey tracks

Figure 6: Survey effort

0 100 200 300 400  
Metres

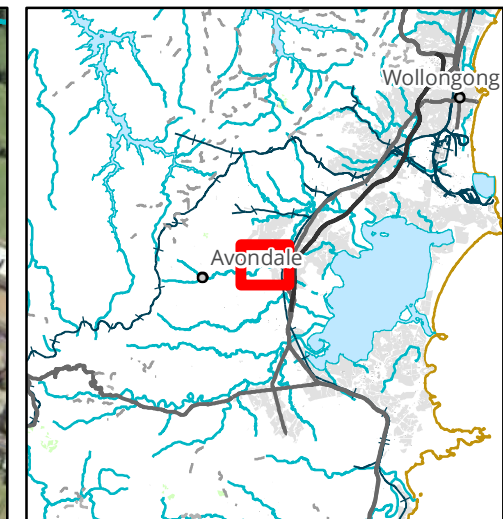
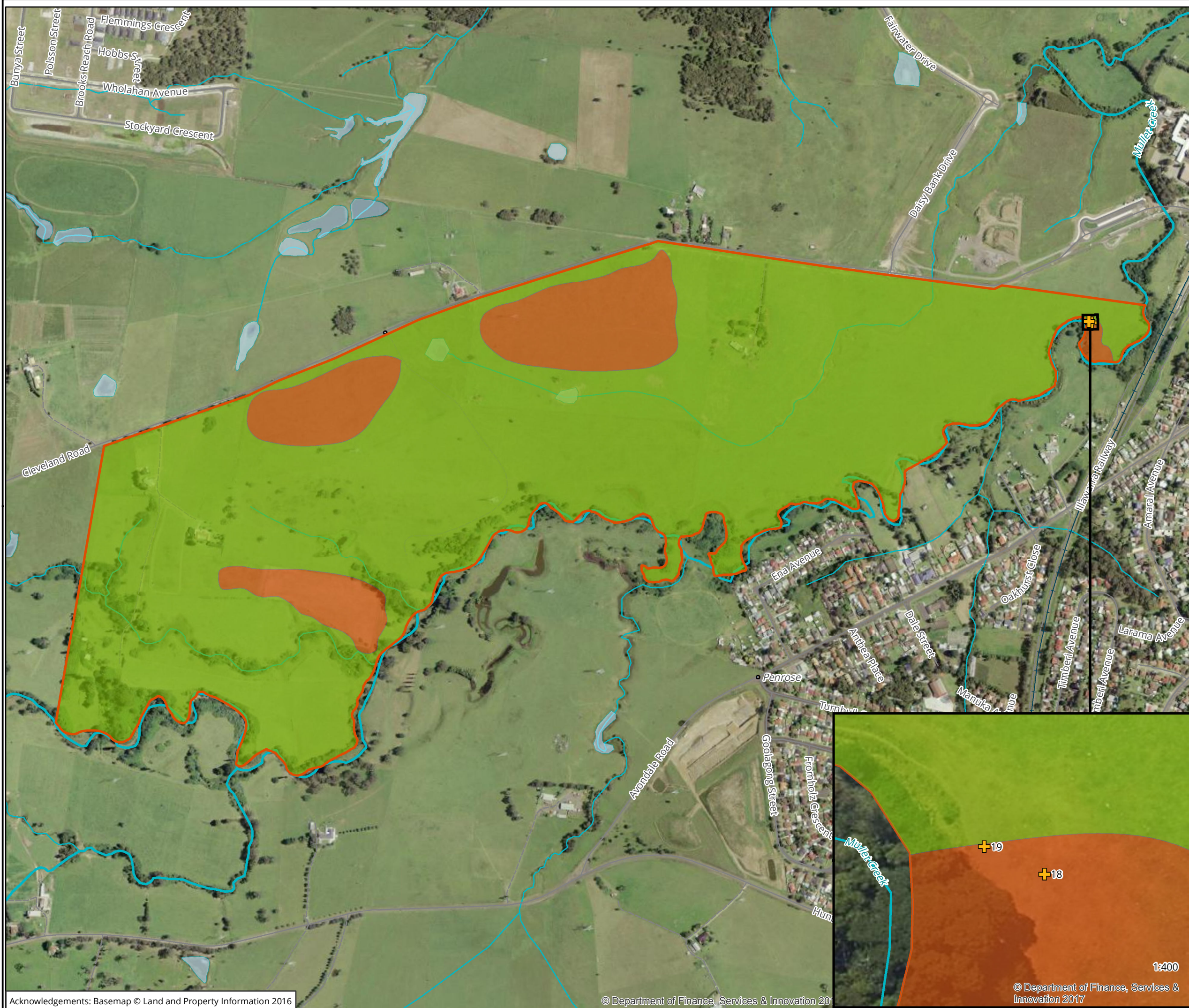
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Coordinate System: GDA 1994 MGA Zone 56



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

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#### Legend

- Study area
- + Newly recorded site

#### Archaeological potential

- High
- Low

Figure 7: Survey results

0 100 200 300 400  
Metres

Scale: 1:8,000 @ A3  
Coordinate System: GDA 1994 MGA Zone 56



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Newcastle, Sydney, Wangaratta & Wollongong

Matter: 27450  
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## 5 Conclusions and recommendations

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### 5.1 Conclusions

The assessment has identified two newly identified surface artefacts along the banks of Mullet Creek, these should be salvaged and further test excavations should be undertaken in order to identify the extent of the site. This site does warrant further assessment due to the nature of the landform in which it is associated. Furthermore Three areas of archaeological potential were identified within the study area which will require further assessment if impacts are proposed. Two areas of high archaeological potential were given to the relatively undisturbed areas on a midslope landform. These two areas are located adjacent to a neighbouring site of moderate potential which presented four artefacts. The third area of high archaeological potential is located with a low flood risk zone on an alluvial flat of Mullet Creek.

If impacts are to occur in these area then further assessment will take the form of Aboriginal Cultural Heritage Assessment and test excavations following the Code *to better understand the archaeological and cultural values of the study area*.

### 5.2 Recommendations

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

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

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

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

The proposed works will impact numerous registers AHIMS sites; Cleveland Road PAD 1 (52-5-0583), Cleveland Road AFT-8 (AHIMS 52-5-0623), WDRA\_AX\_02 (AHIMS 52-5-0507) and WDRA\_AX\_03 (AHIMS 52-2-0508). Impacts to these sites cannot be avoided by the proposed works. The study area has been tested as part of two test excavation programs (AMBS 2006 and Biosis 2011). The test excavations 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. Further testing and salvage of this site is not recommended.

It is recommended that the client apply to OEH for an AHIP to impact on ; Cleveland Road PAD 1 (52-5-0583), Cleveland Road AFT-8 (AHIMS 52-5-0623), WDRA\_AX\_02 (AHIMS 52-5-0507) and WDRA\_AX\_03 (AHIMS 52-2-0508) which are currently protected under the NPW Act. The AHIP should be an area wide AHIP covering the entire study area.

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. The Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the NPW Act.

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. 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 the OEH 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: Further archaeological assessment is required in areas of high archaeological potential**

If impacts to areas mapped as having high archaeological potential are proposed, as shown in Figure 7, then further archaeological and cultural heritage assessment will be required. This will take the form of an Aboriginal Cultural Heritage Assessment Report, Archaeological Report and test excavations in accordance with the *Code of Practice for archaeological investigation for Aboriginal objects in NSW* (DECCW 2010a) and *Aboriginal cultural heritage consultation requirements for proponents in New South Wales* (DECCW 2010c).

### **Recommendation 3: Salvage and further excavations of newly identified surface site**

A salvage and excavations of the two newly identified surface artefacts is recommended to identify the extent of the Cleveland Road AFT-7 (AHIMS 52-5-0622). Previous excavations of the site occurred in 2011 and were undertaken by Biosis where 8 artefacts were recovered. However, the identification of the two new artefacts has prompted further test excavations along Mullet Creek.

### **Recommendation 4: 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 5: Discovery of Aboriginal Ancestral Remains**

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

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





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## Appendices

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## Appendix 1 AHIMS search results

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**This Appendix is not to be made public.**

# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 27450-Cleveland

Client Service ID : 343540

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0062	Yallah	AGD	56	295990	6177710	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	102212,10237 5
	<u>Contact</u>									
	<u>Recorders</u>			A Anderson				<u>Permits</u>		
52-5-0137	Yallah	AGD	56	295240	6177800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	102212,10237 5,102766
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Caryll Sefton				<u>Permits</u>		
52-2-0956	Avon Mine;Avon Mine 2;	AGD	56	292130	6180150	Open site	Valid	Artefact : -	Open Camp Site	102149,10221 2,102375,1027 66
	<u>Contact</u>									
	<u>Recorders</u>			Illawarra Prehistory Group				<u>Permits</u>		
52-2-0974	Avon Mine;No.1;Bong Bong Road;	AGD	56	292030	6180150	Open site	Valid	Artefact : -	Open Camp Site	102212,10237 5,102766
	<u>Contact</u>									
	<u>Recorders</u>			Illawarra Prehistory Group				<u>Permits</u>		
52-2-1544	Bong Bong 2;West Dapto;	AGD	56	295680	6180490	Open site	Valid	Artefact : -	Open Camp Site	1920,102149,1 02212,102235, 102375,10276 6
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Caryll Sefton				<u>Permits</u>	603	
52-5-0622	Cleveland Road AFT-7	GDA	56	296422	6179786	Open site	Valid	Artefact : 1		102766
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Georgia Roberts				<u>Permits</u>	3373	
52-5-0623	Cleveland Road AFT-8	GDA	56	296245	6179780	Open site	Valid	Artefact : 1		102766
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Georgia Roberts				<u>Permits</u>		
52-5-0619	Cleveland Road AFT-6	GDA	56	296529	6180206	Open site	Valid	Artefact : 1		102766
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Georgia Roberts				<u>Permits</u>	3373	
52-2-3831	Cleveland Road FT 1	GDA	56	295980	6180487	Open site	Valid	Aboriginal Ceremony and Dreaming : -		102766
	<u>Contact</u>									
	<u>Recorders</u>			Ms.Miranda Fire-Star (nee Morton)				<u>Permits</u>		
52-2-3832	Cleveland Road FT 2	GDA	56	296335	6180360	Open site	Valid	Aboriginal Ceremony and Dreaming : -		102766
	<u>Contact</u>									
	<u>Recorders</u>			Ms.Miranda Fire-Star (nee Morton)				<u>Permits</u>		
52-2-3815	Riverpark Way AFT-1	GDA	56	294979	6180326	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
	<u>Recorders</u>			Mrs.Georgia Roberts,Biosis Pty Ltd - Wollongong				<u>Permits</u>		
52-2-4209	Fowlers Road 01	GDA	56	296981	6180497	Open site	Not a Site	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>									
	<u>Recorders</u>			Ms.Ana Jakovljevic				<u>Permits</u>		

Report generated by AHIMS Web Service on 08/05/2018 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 292540 - 296529, Northings : 6178671 - 6179748 with a Buffer of 1000 meters. Additional Info : AHIMS sites in the study area. Number of Aboriginal sites and Aboriginal objects found is 52

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# AHIMS Web Services (AWS)

## Extensive search - Site list report

Your Ref/PO Number : 27450-Cleveland

Client Service ID : 343540

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-4208	Fowlers Raod 01	GDA	56	296981	6180497	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Biosis Pty Ltd - Wollongong.Ms.Ana Jakovljevic					<u>Permits</u>	3869	
52-2-1688	WD1-1;	AGD	56	295830	6180320	Open site	Valid	Artefact : -	Open Camp Site	102212,10237 5,102766
	<u>Contact</u>	<u>Recorders</u>	P Saunders					<u>Permits</u>	484	
52-5-0433	West Dapto Release Area PAD	AGD	56	296343	6179210	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : -		102149,10221 2,102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Meaghan Russell					<u>Permits</u>	2244	
52-5-0768	WD3 PAD 09	GDA	56	292801	6178674	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0769	WD3 PAD 10	GDA	56	293256	6178833	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0770	WD3 PAD 12	GDA	56	292942	6178487	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0771	WD3 IF + PAD 11	GDA	56	293306	6178561	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0772	WD3 PAD 07	GDA	56	293452	6179348	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0773	WD3 PAD 01	GDA	56	292130	6180150	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0774	WD3 PAD 08	GDA	56	293409	6179218	Open site	Valid	Potential Archaeological Deposit (PAD) : -		

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## Extensive search - Site list report

Your Ref/PO Number : 27450-Cleveland

Client Service ID : 343540

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0775	WD3 AS + PAD 13	GDA	56	293105	6178327	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0776	WD3 IF + PAD 03	GDA	56	293411	6179917	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0777	WD3 PAD 04	GDA	56	293779	6179840	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0778	WD3 PAD 05	GDA	56	293298	6179624	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0779	WD3 PAD 02	GDA	56	292411	6180229	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0780	WD3 PAD 06	GDA	56	293711	6179632	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>	Doctor.Tim Owen					<u>Permits</u>		
52-5-0808	Avondale 7	GDA	56	292325	6177688	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>		
52-5-0809	Avondale 6	GDA	56	292205	6178410	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>	4033	
52-5-0810	Avondale 5	GDA	56	292265	6178497	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>	4033	
52-5-0811	Avondale 4	GDA	56	292044	6178487	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>	4033	
52-5-0812	Avondale 3	GDA	56	291960	6178530	Closed site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>	4033	
52-5-0814	Avondale 1	GDA	56	292530	6178860	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>	Mr.Jamie Reeves					<u>Permits</u>	4033	

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## Extensive search - Site list report

Your Ref/PO Number : 27450-Cleveland

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-5-0507	WDRA_AX_02	AGD	56	296210	6179467	Open site	Valid	Artefact : 2		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0508	WDRA_AX_03	AGD	56	294955	6179217	Open site	Valid	Artefact : 4		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0509	WDRA_AX_04	AGD	56	294440	6178354	Open site	Valid	Artefact : 6		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0510	WDRA_AX_05	AGD	56	293969	6177542	Open site	Valid	Artefact : 4		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0511	WDRA_AX_06	AGD	56	292784	6178615	Open site	Valid	Artefact : 4		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-2-3277	WDRA_AX_47	AGD	56	293994	6180161	Open site	Valid	Artefact : 3, Potential Archaeological Deposit (PAD) : -		100075,10214 9,102153,1022 12,102235,102 236,102237,10 2766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Army,Doctor.Tim Owen,Ms.Fenella Atkinson							<u>Permits</u>	3328,3403,3743,4056
52-2-3285	WDRA_AX_22	AGD	56	296146	6180460	Open site	Valid	Artefact : 2		100075,10214 9,102212,1022 35,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0496	WDRA_AX_23	AGD	56	293792	6179781	Open site	Valid	Artefact : 3		100075,10214 9,102212,1022 35,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0497	WDRA_AX_24	AGD	56	293886	6179541	Open site	Valid	Artefact : 1		100075,10214 9,102212,1022 35,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0498	WDRA_AX_25	AGD	56	293846	6179371	Open site	Valid	Artefact : 4		100075,10221 2,102766
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	
52-5-0499	WDRA_AX_26	AGD	56	294985	6177758	Open site	Valid	Artefact : 1		102212,10276 6
	<u>Contact</u>	S Scanlon								
	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)							<u>Permits</u>	

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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		100075,10221 2,102766
	<u>Contact</u> S Scanlon	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)					<u>Permits</u>		
52-2-3765	Cleveland Road PAD 3	GDA	56	296039	6180451	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Renee Regal					<u>Permits</u>	3294,3373	
52-5-0585	Cleveland Road PAD 4	GDA	56	296151	6180093	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Renee Regal					<u>Permits</u>	3294,3373	
52-5-0586	Cleveland Road PAD-4	GDA	56	296281	6179979	Open site	Destroyed	Potential Archaeological Deposit (PAD) : 1		102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Renee Regal					<u>Permits</u>	3294,3373	
52-5-0583	Cleveland Road PAD 1	GDA	56	296036	6179753	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Renee Regal					<u>Permits</u>	3294,3373	
52-5-0584	Cleveland Road PAD 2	GDA	56	296597	6180111	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102766
	<u>Contact</u>	<u>Recorders</u>	Ms.Renee Regal					<u>Permits</u>	3294,3373	
52-2-3779	WDSY1	GDA	56	293972	6180698	Open site	Valid	Artefact : 1		102149,10276 6,103849,1038 53
	<u>Contact</u>	<u>Recorders</u>	Extent Heritage Pty Ltd - Waterloo, Miss.Felicity Barry, Ms.Fenella Atkinson					<u>Permits</u>	3703,3815,3883	

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## Appendix 2    Aboriginal stakeholder comments

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*To be completed once stakeholder comments have been received.*