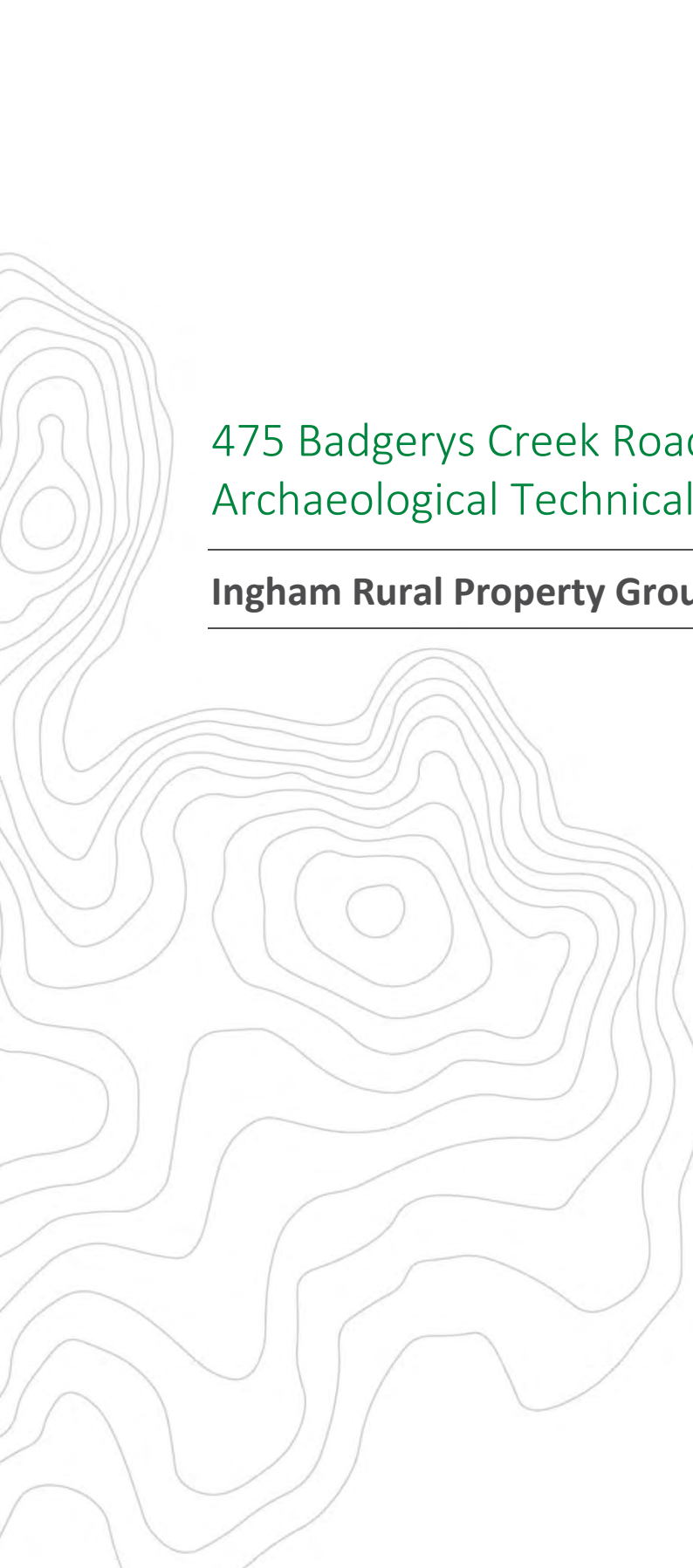


Appendix C Archaeological Technical Reports

Attached on the following pages.

A stylized topographic map with green contour lines is positioned on the left side of the page, extending from the top left towards the bottom left.

475 Badgerys Creek Road, NSW – Stage 1 (Substation) Archaeological Technical Report

Ingham Rural Property Group Pty Limited

DOCUMENT TRACKING

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Template 2.8.1

Contents

1. Introduction	1
1.1 Project background.....	1
1.2 Study area – Stage 1	1
1.3 Purpose and Objectives of the archaeological assessment	1
1.4 Legislative context	4
1.4.1 National Parks and Wildlife Act 1974	4
1.4.2 Aboriginal Land Rights Acts 1983.....	4
1.4.3 Environmental Planning & Assessment Act 1979	5
1.5 Investigators and contributors.....	5
2. Environmental context	7
2.1 Soil Landscapes	7
2.2 Hydrology	8
2.3 Vegetation	8
2.4 Land use history.....	8
2.5 Summary.....	8
3. Aboriginal context	13
3.1 Ethnohistory	13
3.2 Archaeological context	14
3.2.1 Previous archaeological investigations in the region.....	14
3.2.2 Previous archaeological investigations within the Study Area	16
3.2.3 Database searches	17
3.3 Regional character and predictive model	21
3.3.1 Regional character	21
3.3.2 Predictive models	22
4. Archaeological survey	26
4.1 Purpose.....	26
4.2 Survey strategy	26
4.2.1 Site definition and recording	26
4.2.2 Protocol for recording Potential Archaeological Deposits.....	27
4.3 Survey results	27
4.3.1 Survey coverage.....	30
4.4 Discussion	30
5. Archaeological test excavations	33

5.1 Introduction.....	33
5.2 Research design	33
5.3 Test Excavation methodology.....	33
5.3.1 Test Excavation Area 1.....	34
5.3.2 Test Excavation Area 2.....	34
5.3.3 Stage 1 test pits.....	34
5.3.4 Stage 2 expansion pits	34
5.3.5 General procedures.....	35
5.3.6 Lithic Analysis	35
5.4 Test excavation results	35
5.4.1 Soils and stratigraphy.....	36
6. Analysis and discussion	41
7. Impact assessment	42
8. Management and mitigation measures	43
8.1 AHIMS sites.....	43
8.2 Unexpected finds.....	43
9. Recommendations.....	44
References	46
Appendix A – AHIMS Search Results.....	48
Appendix B – Site Cards.....	53

List of Figures

Figure 1: The study area, Stage 1 Substation works – south west corner of Lot 99 DP1287207	2
Figure 2: Planning proposal for 475 Badgerys Creek Road (source: Urbis 2023)	3
Figure 3: Soils, hydrology, and elevation within the study area	9
Figure 4: 1961 aerial imagery – majority of Stage 1 area has been cleared and ploughed for pasture..	10
Figure 5: 1978 aerial imagery – further disturbance from construction of buildings roads and agricultural practices (irrigation, fencing dams).....	11
Figure 6: 1991 aerial imagery	12
Figure 7: Regional overview of AHIMS sites surrounding the study area	19
Figure 8: AHIMS sites within the study area	20
Figure 9: Drainage line/ flat landform in west of study area; view south-west.....	28
Figure 10: Ground surfaces and vegetation cover in middle of creek line; view southwest	28
Figure 11: Visible ground surface and shallow soil exposure on bank of drainage line.	28
Figure 12: Limited visibility in patches across study area.	28
Figure 13: Gently sloping landform, dense grass cover and small stands of trees; view south east.....	28
Figure 14: Modified landform and surface disturbance from former residence in centre of study area; view south	28
Figure 15: Prior disturbance from pastoral infrastructure in north-east of study area.....	29

Figure 16: Prior disturbances from road along northern extent of study area; view west	29
Figure 17: Recorded location of registered AHIMS ID 45-5-2691, low visibility	29
Figure 18: Soil exposure on top of sloping landform; at southern extent of study area	29
Figure 19: Gentle sloping landform descending to the east of the study area; view north-east of unnamed drainage line and stand of new tree growth.....	29
Figure 20: Survey Units, Contours and Landforms.....	31
Figure 21: Areas of Potential Archaeological Deposit; both previously registered and newly identified	32
Figure 22: Area 1 test pit 11 –View north west from test area towards the drainage line and Badgerys Creek	36
Figure 23: Area 1 test pit 11 – North profile – mixed brown clay loams, clear horizon orange medium clay	36
Figure 24: Area 1 test pit 5 – View across transect (TP 5-6)	37
Figure 25: Area 1 test pit 5 – North profile of test pit 5, flooding, ground saturated, mixed clay loams	37
Figure 26: North profile for test pit 9 – homogenous friable brown loams – clear horizon orange clays	38
Figure 27: North profile of test pit 21 showing shallow mixed soils – clay loam to medium orange clay.	38
Figure 28: Results for test excavation area 1, units not excavated due to visible disturbance and flooding. Test pits 1 and 2 abandoned due to flooding.	39
Figure 29: Results for test excavation area 2, units not excavated due to visible disturbance, shallow soils and flooding.	40

List of Tables

Table 1: Test excavation field personnel.....	6
Table 2: Cumberland Plain subregion summary (source: NSW Department of Planning, Industry and Environment).....	7
Table 3: Parameters for the AHIMS database search and results	17
Table 4: Frequencies of site types.....	18
Table 5: AHIMS sites within the study area	18
Table 6: AHIMS sites adjacent to the study area	18
Table 7: Predictive model for the occurrence of archaeological site types in the study area.....	23
Table 8: Interpretive model for examining archaeological assemblages, after Kuskie (2009:81-82).....	24
Table 9: Survey coverage	30
Table 10: Landform summary	30
Table 11: Soil summaries for test pits 3-18 in Area 1	36
Table 12: Soil summaries for test pits 1-24 across Area 2	37

Abbreviations

Abbreviation	Description
ACHA	Aboriginal Cultural Heritage Assessment
AHID	Australian Heritage Database
AHIP	Aboriginal Heritage Impact Permit
AHIMS	Aboriginal Heritage Information Management System
ARD	Archaeological Research Design
ATR	Archaeological Technical Report
CHL	Commonwealth Heritage List
DECCW	(Former) Department of Environment Climate Change and Water
ELA	Eco Logical Australia Pty Ltd
Heritage NSW	Heritage NSW, Department of Premier and Cabinet
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
SHI	State Heritage Inventory
SHR	State Heritage Register
WHL	World Heritage List

1. Introduction

1.1 Project background

Ingham Property Group (the proponent) are proposing to subdivide and develop 475 Badgerys Creek Road, Bradfield NSW. The proposed subdivision will be undertaken in two stages, this assessment will address requirements to inform the rezoning proposal and Stage 1 Development Application (DA) for the proposed substation works in the south west corner of 475 Badgerys Creek Road, Badgerys Creek.

GML 2020 prepared a baseline Aboriginal Heritage Report to inform a master planning proposal for the property identified as Lot 1 DP 1123344. Thirteen sites had previously been recorded on the property comprising stone artefacts and Potential Archaeological Deposits (PAD). GML recorded one additional artefact site and 12 locations with potential cultural heritage values. Two zones for potential future conservation were identified as well as several locations that were considered as archaeologically sensitive.

Ingham Property Group engaged Eco Logical Australia (ELA) to conduct an Archaeological Assessment to document the archaeological values within the study area and to identify any known or unrecorded Aboriginal sites.

This assessment has been undertaken in accordance with Heritage NSW, Department of Premier and Cabinet (Heritage NSW) *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a).

1.2 Study area – Stage 1

This assessment Stage 1 study area is situated in the south-western corner of 475 Badgerys Creek Road, Bradfield NSW (Lot 99 DP1287207) (Figure 1). The Stage 1 study area covers approximately 18 ha of the property and is on a gently sloping landform bound by property fencing, access roads and two minor drainage lines of Badgerys Creek.

The study area is located in the Parish of Bringelly in the County of Cumberland, within the Liverpool Local Government Area (LGA). The study area falls within the Gandangara Local Aboriginal Land Council boundaries.

1.3 Purpose and Objectives of the archaeological assessment

The purpose of the archaeological investigation is to understand the presence, nature, and extent of the Aboriginal archaeological resource within the areas of proposed works. The cataloguing and analysis of the recovered artefacts will inform the scientific, cultural, and historical significance of the site and in turn management of the heritage resource

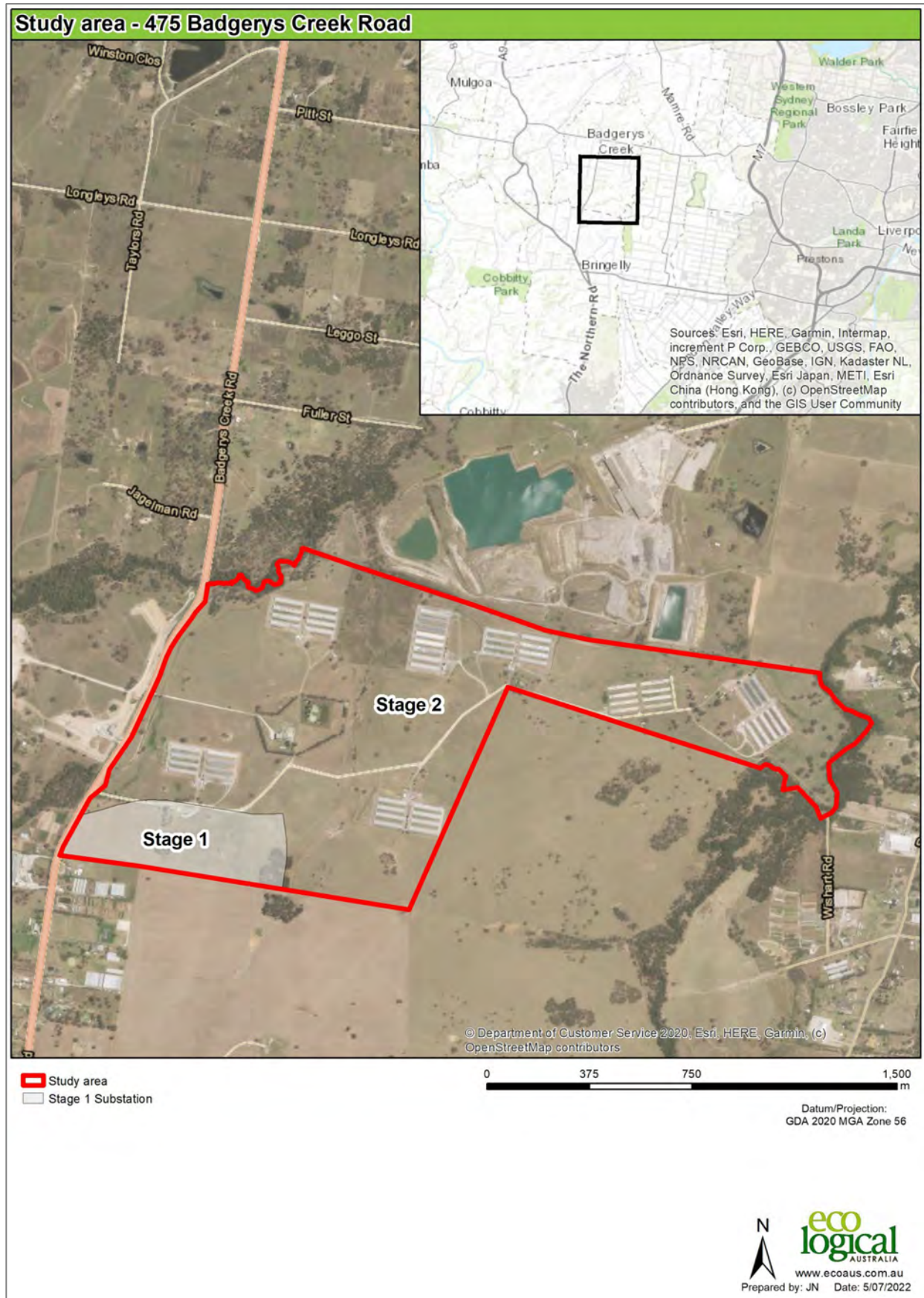


Figure 1: The study area, Stage 1 Substation works – south west corner of Lot 99 DP1287207

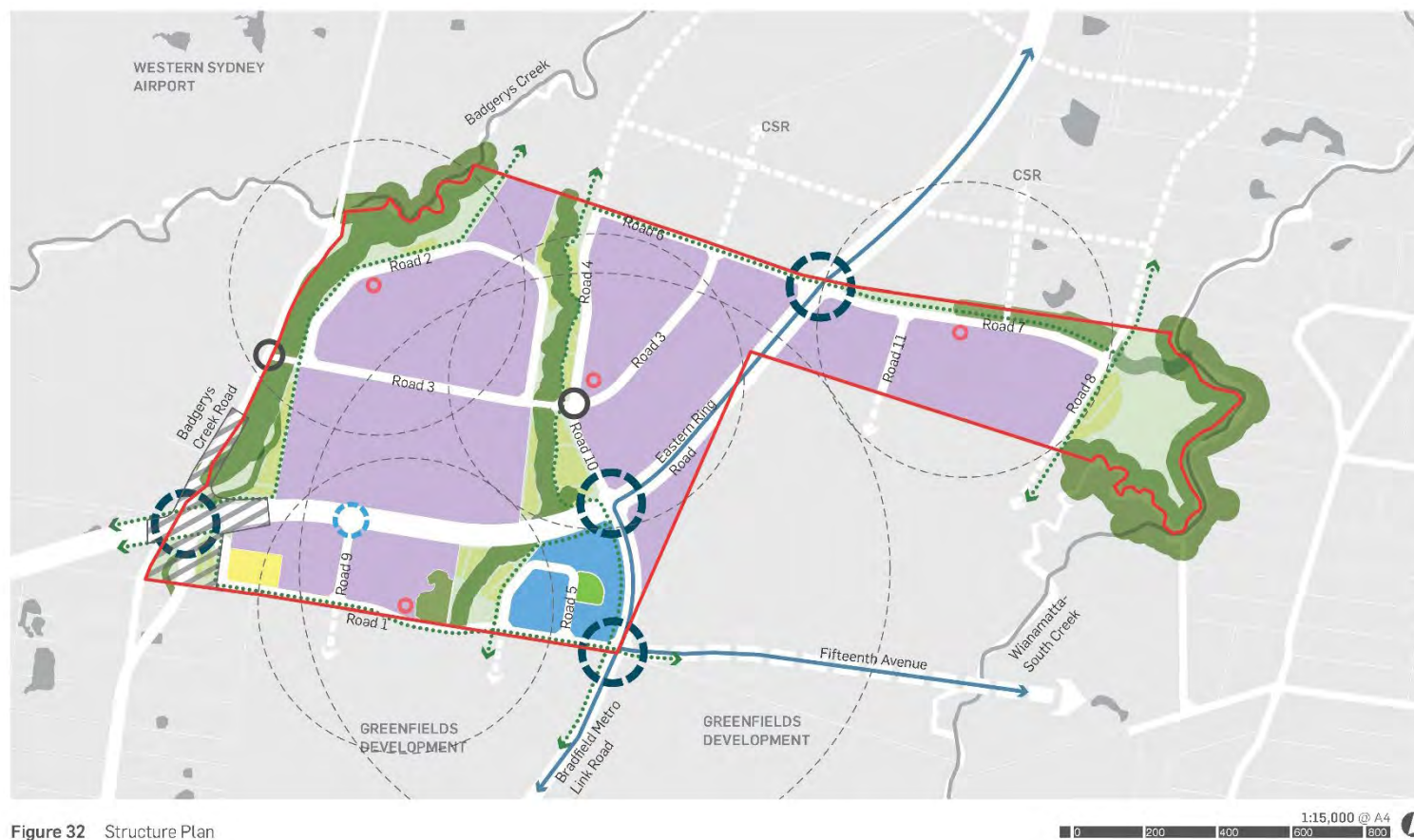


Figure 2: Planning proposal for 475 Badgerys Creek Road (source: Urbis 2023)

1.4 Legislative context

1.4.1 National Parks and Wildlife Act 1974

Aboriginal cultural heritage in NSW is afforded protection under the provisions of the *National Parks and Wildlife Act 1974* (NSW) [NPW Act]. The Act is administered by Heritage NSW, which has responsibilities under the legislation for the proper care, preservation, and protection of 'Aboriginal objects' and 'Aboriginal places'.

Under the provisions of the NPW Act, all Aboriginal objects are protected irrespective of their level of significance or issues of land tenure. Aboriginal objects are defined by the Act as, *any deposit, object or material evidence (that is not a handicraft made for sale) relating to Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains)*. Aboriginal objects are limited to physical evidence and may be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include scarred trees, artefact scatters, middens, rock art and engravings, as well as post-contact sites and activities such as fringe camps and stockyards. Heritage NSW must be notified about the discovery of Aboriginal objects under section 89A of the NPW Act.

Part 5 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to destroy, deface, damage, or move them from the land. *The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (CoP) (DECCW 2010b) as adopted by the and Wildlife Regulation 2019 (NPW Regulation) made under the NPW Act, provides guidance to individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects. The CoP also determines whether proponents should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the Act. The CoP can be used for all activities across all environments. The NPW Act provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP. However, if an Aboriginal object is encountered in the course of an activity work must cease and an application should be made for an AHIP.

The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010a) assists in establishing the requirements for undertaking archaeological investigation without an AHIP or establishing the requirements that must be followed when carrying out archaeological investigation in NSW where an application for an AHIP is likely to be made. Heritage NSW recommends that the requirements of this Code also be followed where a proponent may be uncertain about whether or not their proposed activity may have the potential to harm Aboriginal objects or declared Aboriginal places.

1.4.2 Aboriginal Land Rights Acts 1983

The *Aboriginal Land Rights Act 1983* (ALR Act) established Aboriginal Land Councils (at State and Local levels). Division 1A outlines the functions of Local Aboriginal Land Councils and their statutory obligation under the ALR Act to:

- (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and
- (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

The study area is within the boundary of the Gandangara Local Aboriginal Land Council (LALC).

1.4.3 Environmental Planning & Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (NSW) [EP&A Act] requires that consideration is given to environmental impacts as part of the land use planning process. In NSW, environmental impacts are interpreted as including cultural heritage impact. Proposed activities and development are considered under different parts of the EP&A Act, including:

- Major projects (State Significant Development under Part 4.1 and State Significant Infrastructure under Part 5.1), requiring the approval of the Minister for Planning.
- Minor or routine developments, requiring local council consent, are usually undertaken under Part 4. In limited circumstances, projects may require the Minister's consent; and
- Part 5 activities which do not require development consent. These are often infrastructure projects approved by local councils or the State agency undertaking the project.

The EP&A Act also controls the making of environmental planning instruments (EPIs) such as Local Environment Plans (LEPs) and State Environmental Planning Policies (SEPPs). The study area is within the Liverpool LGA and activities undertaken on this land are controlled by *the State Environmental Planning Policy (Western Sydney Aerotropolis) 2020*. SEPPs commonly identify and have provisions for the conservation archaeological sites, Aboriginal objects and Aboriginal places of heritage significance. SEPPs are prepared by the state government to guide planning and management decisions in the LGAs and establish the requirements for the use and development of land. Part 4 (28) of the SEPP *State Environmental Planning Policy* states.

(2) Requirement for consent. *Development consent is required for the following—*

- (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- (d) disturbing or excavating an Aboriginal place of heritage significance,

1.5 Investigators and contributors

This report has been prepared by Jennifer Norfolk ELA Archaeologist, with review by Karyn McLeod, ELA Principal Archaeologist.

Jennifer Norfolk has an MSc. (Marine Archaeology) from Southampton University. Karyn McLeod has a BA Honours (Archaeology) from the University of Sydney and a MA (Cultural Heritage) from Deakin University.

Aboriginal community consultation process is being undertaken in accordance with Heritage NSW *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010b). The field

survey was undertaken with Heritage Officer Kirsty Chalker of Cubbitch Barta Native Title Claimants Aboriginal Corporation in attendance. Kirsty Chalker provided a report of findings and recommendations from field survey (Appendix B).

Test excavations were conducted by ELA archaeologists with assistance from the following Aboriginal organisations (Table 1) over a period of 2 weeks. Test excavations were directed by Jennifer Norfolk, ELA Archaeologist.

Table 1: Test excavation field personnel

Organisation	Name
ELA Archaeologists	Jennifer Norfolk
	Charlotte Bradshaw
	Kate Storan
	Jessica Horton
Kamilaroi-Yankuntjatjarra Working Group	Ray Adams
	Jamie Currell
	Robert Hunter
Waawaar Awaa Aboriginal Corporation	Todd Hall
	Justin Kennedy

2. Environmental context

Landscape, geomorphic history, and extent of disturbance within a given area all play a role in the presence and/or preservation of Aboriginal objects. As outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a), this section aims to assist in the prediction of:

- The potential of the landscape to contain Aboriginal objects; and
- The ways Aboriginal people have used the landscape in the past, with reference to the presence of resource areas, surfaces for art and other focal points which may have been used for particular activities and settlement; and
- Disturbance, including historical land-use, which may have removed earlier archaeological evidence; and
- The likely distribution of the material traces of Aboriginal land use based on the above.

To investigate these elements, this section focuses on the environmental context of the current study area, including geomorphology and soils, vegetation, hydrology, and previous land use to identify potential disturbance.

The study area is situated within the Cumberland subregion of the NSW Sydney Basin bioregion of NSW. A summary of the geology, landforms, soils, and vegetation typical within this subregion is provided in Table 2 below:

Table 2: Cumberland Plain subregion summary (source: NSW Department of Planning, Industry and Environment)

Cumberland Subregion	
Geology	Triassic Wianamatta groups shales and sandstones. A down warped block on the coastal side of the Lapstone monocline. Intruded by a small number of volcanic vents and partly covered by Tertiary river gravels and sands. Quaternary alluvium along the mains streams.
Characteristic Landforms	Low rolling hills and wide valleys in a rain shadow area below the Blue Mountains. At least three terrace levels evident in the gravel splays. Volcanics from low hills in the shale landscapes. Swamps and lagoons on the floodplain of the Nepean River.
Typical Soils	Red and yellow texture contrast soils on slopes, becoming harsher and sometimes affected by salt in tributary valley floors. Pedal uniform red to brown clays on volcanics. Poor uniform stony soils, often with texture contrast profiles on older gravels, high quality loams on modern floodplain alluvium.
Vegetation	Grey box, forest red gum, narrow-leaved ironbark woodland with some spotted gum on the shale hills. Hard-leaved scribbly gum, rough-barked apple and old man banksia on alluvial sands and gravels. Broad-leaved apple, cabbage gum and forest red gum with abundant swamp oak on river flats. Tall spike rush, and juncus with Parramatta red gum in lagoons and swamps.

2.1 Soil Landscapes

The study area covers the Blacktown (residual) Soil Landscape. Dominant soil types include friable greyish brown loam and hard setting brown clay loam overlying strongly pedal mottled brown light clay. Topsoils reach a depth of up to 300mm and contain significant sand and silt content overlying hard-

setting clay subsoils. Shallow to moderately deep (<1.5m) soils occur on crests, upper slopes, and well-drained areas.

These types of soils are often shallow and can be significantly disturbed by historical and modern activities. This has significant implications for the survivability of historical and Aboriginal deposits, and it is rare for these types of soils to contain significantly deep, stratified, or old archaeological deposits.

2.2 Hydrology

The study area is 1.8km west of South Creek which is a high order system that runs south to north and feeds into the Hawkesbury River. Badgerys Creek is 800m to the north of the study area and runs in a general direction from south west to north east and is a tributary of South Creek. Two minor tributaries of Badgerys Creek pass through the study area across the west and east boundaries. These minor drainage lines are unnamed, have been heavily modified from past land use and may be seasonal.

2.3 Vegetation

Across a majority of the study area, native vegetation has been cleared for agricultural land use with a few small stands of vegetation remaining. The landscape would have been open woodland with dry sclerophyll forest, the native vegetation would have been dominated by tree species including Grey box (*E. moluccana*) and Forest red gum (*E. tereticornis*) Broad-leaved ironbark, narrow-leaved ironbark, Woollybutt and forest oak would have been less common. The understorey would have hosted various shrub and grass species.

2.4 Land use history

The study area has historically been extensively cleared for grazing and pastoral practices. The earliest available aerial imagery from 1955 shows that the area was historically cleared of native vegetation and possibly used for pastoral activities. Later imagery from 1965 and 1989 show the development of agricultural infrastructure including the construction of large sheds, several residences, a dam, and access roads.

The study area has had irrigation infrastructure buried through the fields, fencing and vehicle access tracks.

2.5 Summary

Overall, the characteristics of the study area present moderate sensitivity for evidence of Aboriginal occupation. There is the potential for archaeological deposits in the sheltered and relatively flat area in close proximity to the second order stream in the west. As a majority of the area has been extensively cleared of vegetation, very few trees remain, none of which appear to be old growth. A majority of the study area has undergone moderate disturbances associated with the construction of buildings and vehicle access, land clearing and pastoral land use.

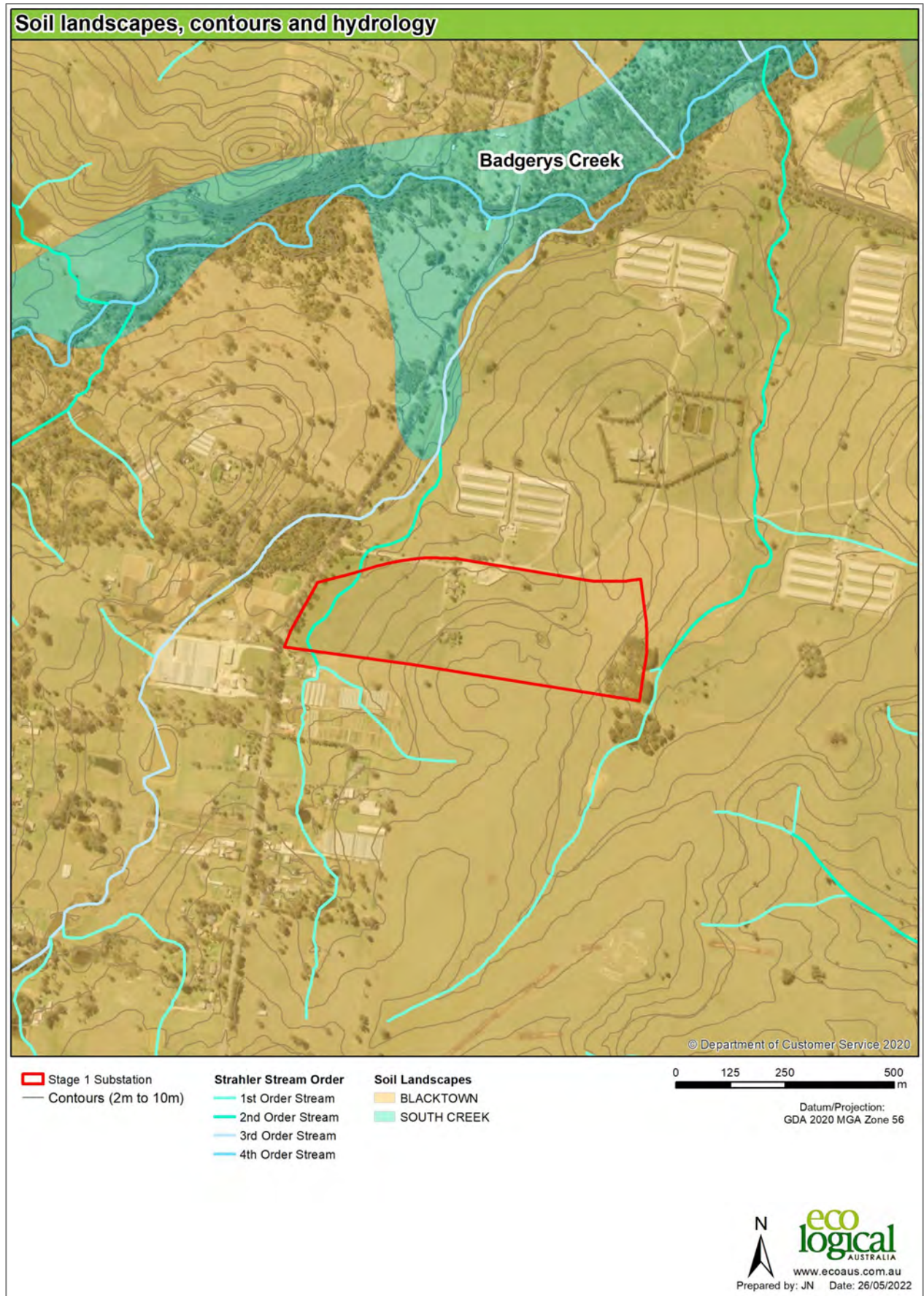


Figure 3: Soils, hydrology, and elevation within the study area

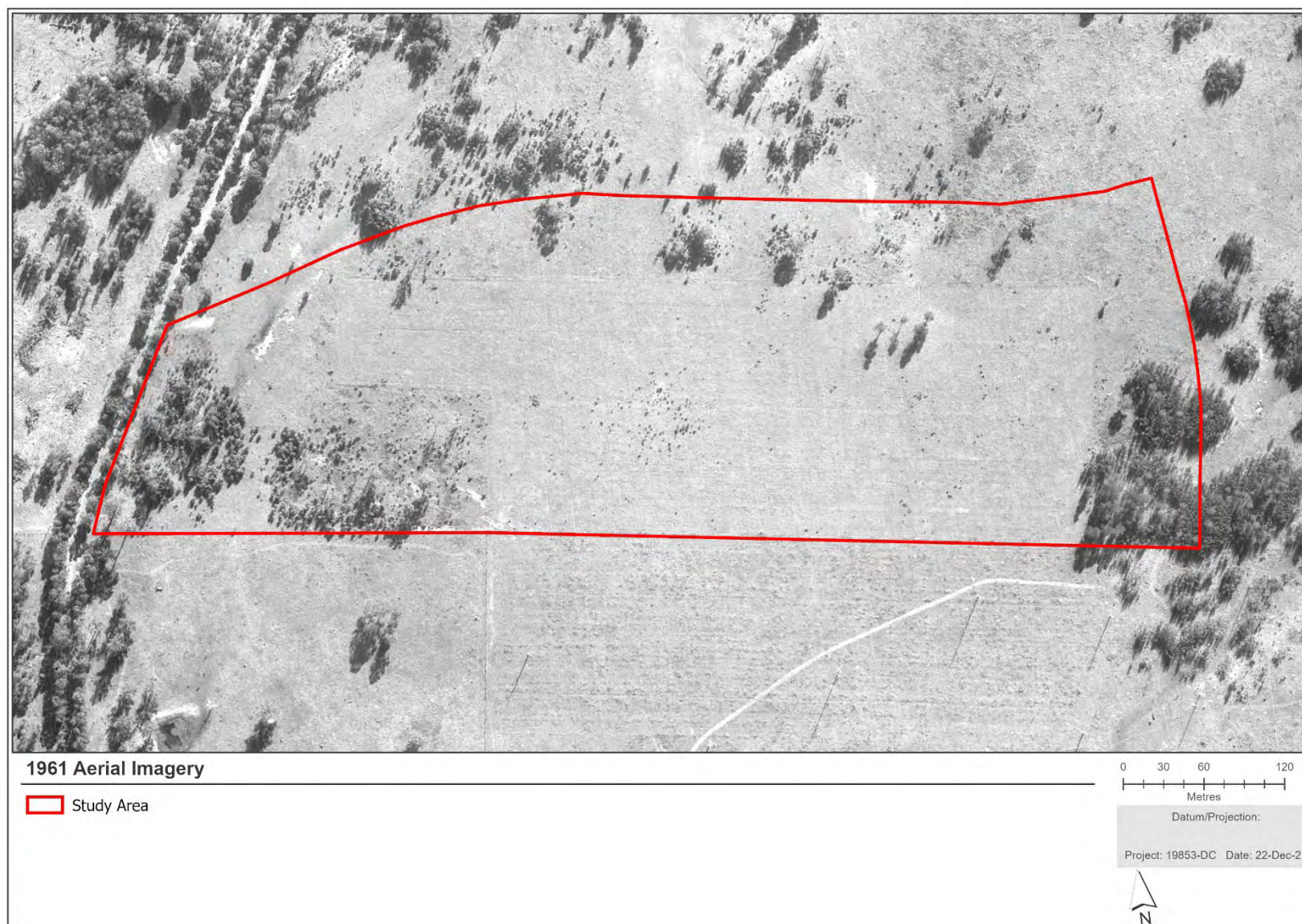


Figure 4: 1961 aerial imagery – majority of Stage 1 area has been cleared and ploughed for pasture.

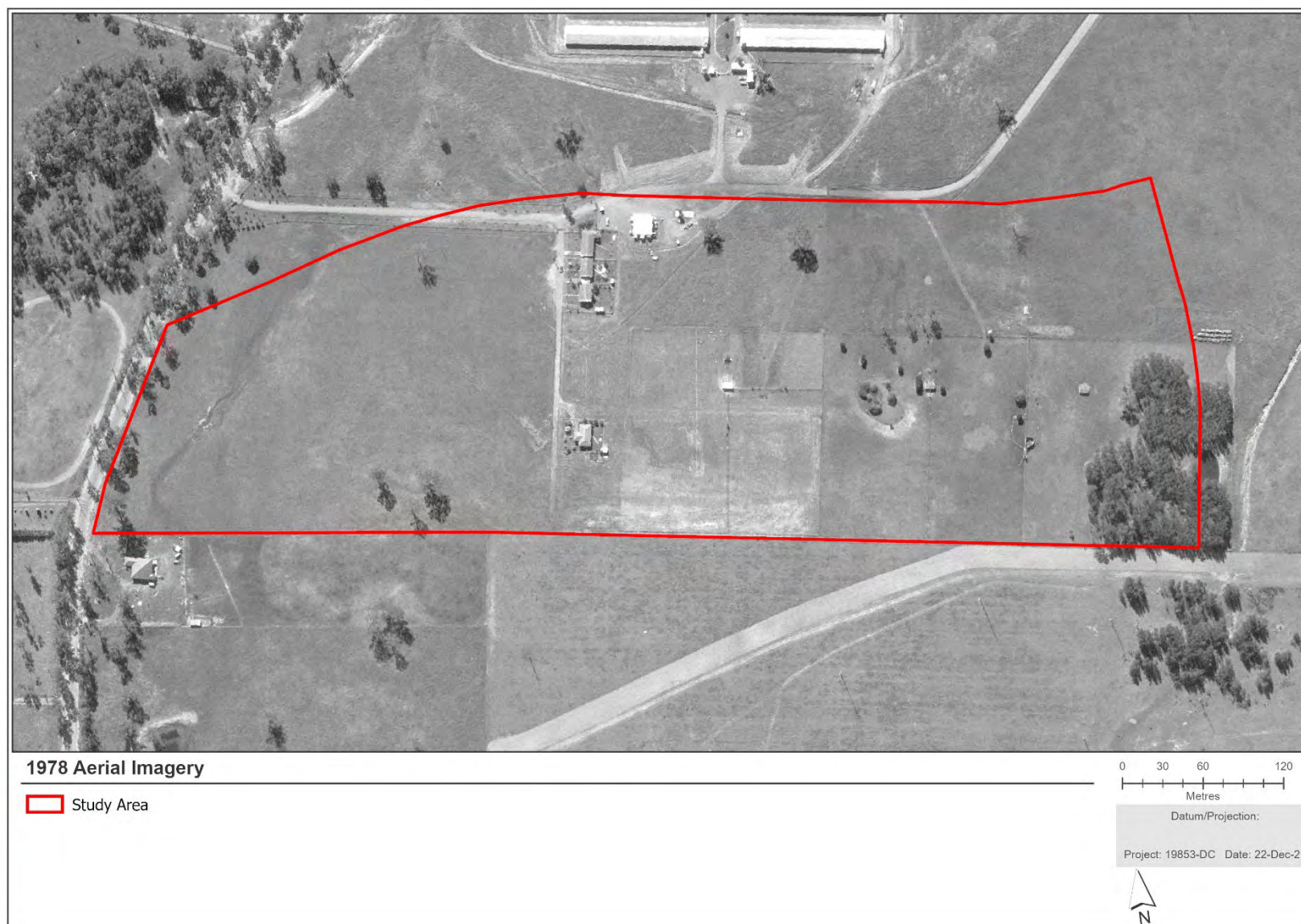


Figure 5: 1978 aerial imagery – further disturbance from construction of buildings roads and agricultural practices (irrigation, fencing dams).

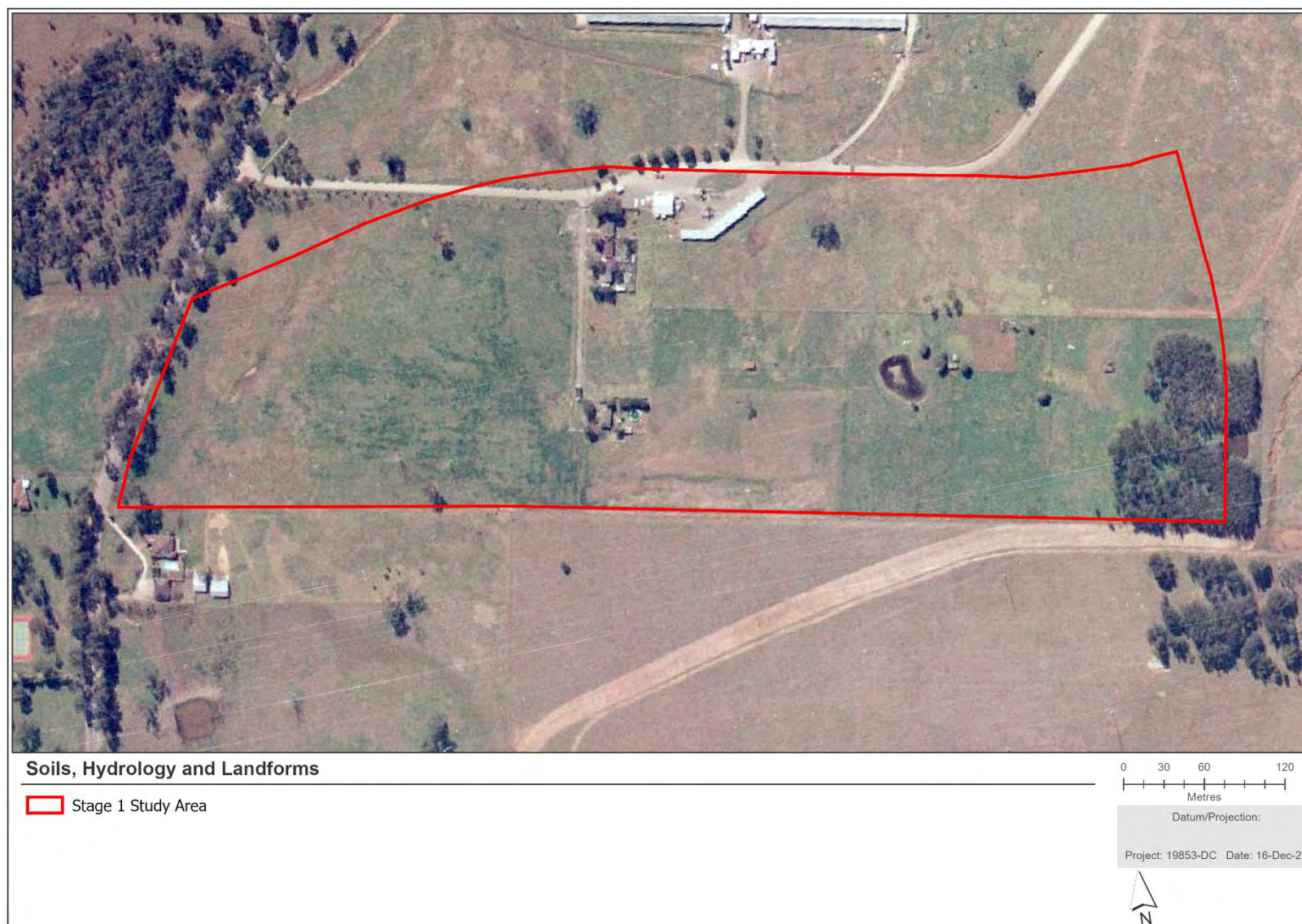


Figure 6: 1991 aerial imagery

3. Aboriginal context

3.1 Ethnohistory

An accurate reconstruction of past lifeways, technologies and land-use patterns of the Aboriginal people who inhabited the Badgerys Creek region is often hindered by a lack of written records and an ethnocentric bias of European settlers. Oral histories by Aboriginal people provide valuable insights into the past, though these are not always available.

Aboriginal people have continuously occupied Australia for at least 65,000 years (Clarkson et al 2017), utilising the land and available resources. Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The earliest undisputed radiocarbon date from the Sydney region comes from a rock shelter site north of Penrith, Shaw's Creek, dated to around 14,700 BP (Attenbrow 2010). Alternate artefactual evidence found on the Nepean River suggests Aboriginal people have occupied the Sydney region for at least 40,000 years (Nanson *et al.* 1987; Stockton & Holland 1974).

Badgerys Creek lies within a transitional area between the tribal boundaries of the Dharug, Dharawal and Gundungurra language groups (Attenbrow, 2010). The precise geographical boundaries between these three groups cannot be clearly defined due to the limitations of historical records (Kohen and Lampert 1987), however the study area (present-day Penrith and Liverpool LGAs) is now generally considered to have been occupied by Darug-speaking clans (Attenbrow 2010). Anthropologist R.H. Matthews writes:

"The Dharuk speaking people adjoined the Thurrawal on the north, extending along the coast to the Hawkesbury River, and inland to what are now Windsor, Penrith, Campbelltown, and intervening towns." (Matthew, 1901d: 55 in Attenbrow, 2010: 32)

The Darug people were semi-nomadic hunter gatherers who utilised available resources, including the various animals and plants in the region. Aboriginal people hunted wallabies, kangaroos, possums, flying foxes, birds and fish and collected wild honey and yams, which also served as important food sources. Family groups belonged to clans who were united by languages and cultural affinities and had ties to specific areas of land.

The arrival of European settlers severely impacted the lives of the local Aboriginal populations as it led to a smallpox epidemic which spread to neighbouring regions and killed over half of the Aboriginal population in the Sydney Basin region (Organ, 1990) and led to significant social restructuring. In the Cumberland Plains region, European graziers slowly took over the traditional Aboriginal land, creating a competition for resources, widespread social disruption to traditional ways of life and ultimately led to a disconnection of local Aboriginal people from their traditional lands. Some Aboriginal people remained and continued to live a semi-traditional life on the peripheries of European settlements until at least the mid-1800s, despite the impacts to their traditional ways of being (Attenbrow, 2010).

3.2 Archaeological context

3.2.1 Previous archaeological investigations in the region

Several archaeological assessments have been carried out in the wider Greater Western Sydney region in recent years as there has been an increasing number of residential developments in the area. The most relevant investigations to this project will be summarised below.

AUSTRALIAN MUSEUM CONSULTING 2014, ENVIRONMENTAL SURVEY OF COMMONWEALTH LAND AT BADGERYS CREEK: ABORIGINAL HERITAGE. CONSULTANCY REPORT TO SMEC AUSTRALIA.

Australian Museum Consulting (AMC) prepared an environmental survey of Commonwealth owned land at Badgerys Creek for SMEC Australia Pty Ltd, on behalf of the Western Sydney Unit of the Department of Infrastructure and Regional Development. The report assessed the condition of specific environmental aspects with a particular focus on Aboriginal cultural heritage over a large area located immediately to the study areas southwest.

The report detailed the findings of previous environmental investigations undertaken during the 1980s and 1990s. These assessments had previously identified 60 Aboriginal heritage sites, comprising open artefact scatters, scarred trees, and isolated artefacts. Of these, 23 Aboriginal heritage sites were identified within areas of moderate and high archaeological potential, associated primarily with minor and secondary creek corridors. AMC 2014 conducted a targeted survey of these moderate and high potential sites and confirmed their condition and scientific potential.

The assessment made the follow recommendations:

- Aboriginal community consultation.
- An additional Aboriginal heritage survey to identify and record a representative sample of material traces and evidence of Aboriginal occupation within the Badgerys Creek area.
- Full archaeological survey of all landforms.
- A program of archaeological test and salvage excavations throughout impact areas.

AMBS, 2012. INDIGENOUS HERITAGE ASSESSMENT PROJECT: AUSTRAL AND LEPPINGTON NORTH PRECINCTS, SOUTH WEST GROWTH CENTRES. PREPARED FOR THE NSW DEPARTMENT OF PLANNING AND INFRASTRUCTURE.

Australian Museum Business Services (AMBS) was commissioned by the NSW Department of Planning and Infrastructure to prepare an Aboriginal heritage assessment for the Austral and Leppington North Precincts of the South West Growth Centres located 3 km to the west of the study area.

The AMBS study was important for the establishment of areas of archaeological potential in the Austral and Leppington North Precinct and its contribution to predictive modelling for artefact distribution and density within the area. This model is based primarily on proximity to water courses and the level of ground disturbance within an area. AMBS defined disturbance areas in Austral and North Leppington as:

- High disturbance – “road corridors, underground gas pipelines, dams, and properties classified as childcare centres, churches, commercial, community halls, industrial, market gardens,

poultry, Rebels club, residential/retirement village and schools, as well as the SWRL corridor which will be constructed in the near future”.

- Moderate disturbance – “Transmission lines and properties classified as dual occupancy/large residential”.
- Low disturbance - “Properties classified as parks, significant vegetation / bushland, and vacant / grazing/ developable.”

The AMBS report recommended that conservation zones be established for areas of moderate and high archaeological potential. Where this is not possible, detailed Aboriginal heritage impact assessments of site-specific development areas was recommended to be undertaken including, if necessary, archaeological test excavation.

ARTEFACT HERITAGE, 2012. *THE NORTHERN ROAD UPGRADE FROM THE OLD NORTHERN ROAD, NARELLAN TO MERSEY RD, BRINGELLY – ABORIGINAL ASR. PREPARED FOR ROADS AND MARITIME SERVICES.*

Artefact Heritage were previously engaged by Sinclair Knight Merz, on behalf of the NSW Roads and Maritime Services (RMS), to conduct an Aboriginal archaeological survey and assessment report for the proposed upgrade of the Northern Road. The proposed upgrade included 15k m of the Northern Road between the Old Northern Road, Narellan and Mersey Road, Bringelly located 2.5 km south of the study area.

An initial desktop assessment, including an extensive search of the AHIMS database, identified eighteen Aboriginal sites within the area of investigation. Fourteen previously unrecorded Aboriginal sites were identified during the site survey, with two of the sites being re-recordings of previous sites. Five of the sites were artefact scatters and nine were isolated finds. Four previously recorded sites and PADs within the study area were found to be either destroyed or disturbed and five were found to be subject to existing AHIPS.

The survey resulted in the identification of twenty four Aboriginal sites within the study area, with seven sites located more than 20 m outside of the study area and two new sites more than 50 m outside. Fifteen sites were identified as being directly impacted by the proposal. Ten sites were assessed as having a low archaeological significance and five were assessed as having a moderate archaeological significance.

Recommendations included that salvage excavations be conducted for the five sites with moderate archaeological significance that could not be avoided by the proposed works and that an Aboriginal Heritage Impact Permit (AHIP) be sought prior to any impacts.

NICHE ENVIRONMENT AND HERITAGE, 2019. *ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT SOUTH CREEK WEST PRECINCT (SOUTH-WEST) RELEASE AREA REZONING, THE NORTHERN ROAD BRINGELLY, NSW. PREPARED FOR BHL GROUP.*

Niche Environment and Heritage (Niche) was previously engaged by Boyuan Holdings Limited (BHL Group) to conduct an Aboriginal Cultural Heritage Assessment Report for the rezoning of the South Creek West Release Area (South-West) Precinct, 5 km south of the study area. The report comprised five separate lots that were zoned for primary production and had been used for agriculture, primarily cattle grazing. Previous archaeological assessments, the desktop assessment and visual inspection that was

completed for the report indicated that the proposed rezoning of the study area could potentially impact five registered AHIMS sites (AHIMS ID 45-5-3359, AHIMS ID 45-5-5282, AHIMS ID 45-5-3542, AHIMS ID 45-5-4139 and AHIMS ID 45-5-3543).

A desktop assessment found several landscape features, including raised level creek terraces along tributaries of Cobbitty, South and Lowes Creek that had the potential to yield surface and or buried Aboriginal objects. Due to the proximity of permanent water sources and the landscape, the study area was considered to have a high archaeological potential. However, according to previous investigations and predictive models, the wider region was thought to have been sporadically used by past Aboriginal people.

3.2.2 Previous archaeological investigations within the Study Area

GML HERITAGE, 2020. *BADGERYS CREEK ABORIGINAL HERITAGE REPORT. UNPUBLISHED REPORT PREPARED FOR LEND LEASE*

In 2020, GML was commissioned by Lendlease to prepare a baseline Aboriginal heritage report that informed the master planning proposal for the future development of 475 Badgerys Creek Road, Badgerys Creek, of which the current study area occupies the southwest extent.

The desktop assessment identified 13 existing AHIMS sites within the study area, including isolated finds, open artefact sites and areas of associated PAD. An archaeological survey conducted with representatives of the registered Aboriginal party Cubbitch Barta identified 7 new Aboriginal sites including three areas of PAD, two ring trees, one scar tree and one isolated artefact. The survey also identified two terraces that formed part of the area of PAD as well as a viewpoint that provided views of the surrounding landscape and the Blue Mountains.

The assessment recommended that an ACHA be conducted for the property, including archaeological test excavation and the implementation of Aboriginal Culture and Heritage Interpretation into the final design of the development. The assessment also recommended two discrete areas of PAD be allocated as primary conservation zones in line with exiting riparian corridor and biobanking zones.

EXTENT HERITAGE 2020, *WESTERN SYDNEY AEROTROPOLIS INITIAL PRECINCTS DRAFT ABORIGINAL AND NON-ABORIGINAL CULTURAL HERITAGE ASSESSMENT PREPARED FOR WESTERN SYDNEY PLANNING PARTNERSHIP*

In 2020, Extent Heritage Pty Ltd was commissioned by the Western Sydney Planning Partnership to prepare an Aboriginal and non-Aboriginal Cultural Heritage Assessment for the initial precincts within the Western Sydney Aerotropolis. This high level assessment of precincts within the Aerotropolis growth areas includes the current study area.

The report's desktop assessment includes a review of previous archaeological studies in the region, historical research, preliminary cultural values mapping, and desktop research. The report identified three registered Aboriginal sites that imposed specific constraints on the proposed works, and one that may impose specific constraints on the proposed design works, depending on the results of further investigation. Given their sensitive nature, details of the sites have been redacted.

Aboriginal community consultation undertaken as part of the report included the formation of a focus group of Elders and knowledge holders comprising the primary traditional owner representatives of Darug and

Dharawal descendants as well as the Local Aboriginal Land Councils whose land includes portions of the Aerotropolis study area. Consultation included a cultural values mapping workshop aimed at identifying and understanding key social, cultural and intangible values associated with the Aerotropolis region and to identify how the RAPs would like these values to be conserved, remembered and managed throughout this project and into the future. Key issues identified through consultation included:

- further archaeological investigations
- conservation of key well-preserved landforms, sites and scarred trees
- establishment of a repatriation area for recovered artefactual material
- Aboriginal naming of places within the Aerotropolis
- further consultation and workshops with a wider group of Aboriginal stakeholders
- Aboriginal stakeholder involvement in the development of interpretive stories and media for the precincts
- Additional on-site investigation and face-to-face consultation with Aboriginal stakeholders when the public health situation present at the time of the report would allow.

The assessment of Aboriginal heritage within the study area is an ongoing process that will require continuous consultation with the Aboriginal community and additional field survey and archaeological investigation.

3.2.3 Database searches

AHIMS SEARCH

The Aboriginal Heritage Information Management System (AHIMS) database is maintained by Heritage NSW and regulated under Section 90Q of the *National Parks and Wildlife Act 1974*. The AHIMS database holds information and records regarding the registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places that exist in NSW.

A search of the AHIMS database was conducted on 23 August 2021 (Search ID 615973) to identify if any registered Aboriginal sites were present within the study area (Appendix A). The search covered 4 km surrounding the study area to understand the known archaeological resource and provide an understanding of the types of features that might be present in the current landscape.

Table 3: Parameters for the AHIMS database search and results

Search Parameters		Search Result	
GDA Zone	56	Aboriginal sites recorded	76
EastingsEastings	289875 - 293875	Aboriginal places declared	0
NorthingsNorthings	6244469 - 6248469		
Buffer	0m		

The extensive search identified a total of 76 Aboriginal sites within the search parameters. The vast majority of Aboriginal sites are artefact scatters or isolated finds (88%).

The distribution of recorded Aboriginal sites adjacent to the study area is shown in Figure 8. The frequencies of site types and contexts recorded within the AHIMS database search area are listed below.

Table 4: Frequencies of site types

Site Features	Number	Percentage of site
Artefact	65	88
Modified Tree (Carved or Scarred)	5	6.7
Potential Archaeological Deposit (PAD)	3	4
Grinding Groove	1	1.3
Total	74	100

Two (2) Aboriginal sites have been identified by the AHIMS search as located within the study area with and additional three (3) sites located in the immediate vicinity of the study area.

Table 5: AHIMS sites within the study area

AHIMS ID	Site name	Site features	Description
45-5-2691 ***	B60	Artefact	Recorded by Navin Officer (1997) for the archaeological assessment of the proposed Second Sydney Airport at Badgerys Creek or Holsworthy Military Area EIS. The site card identifies the site as being on the fence line at the southern extent of the property (first order tributary). The site is comprised of a single isolated lithic, located approximately 300 m south southeast of the chicken sheds, on the fence line that delineates the southern extent of the study area The site was recorded on the old AGD system and has the incorrect coordinates.
45-5-5370	BCLL PAD 03	PAD	Recorded by GML (2020) the area of PAD included 173,525 m ² at the western extent of 475 Badgerys Creek Rd. Of this area, 51,662 m ² is located inside the study area. The site was identified during an archaeological survey and was registered as PAD as it comprised two raised terraces following a former creek line.

*** This site is an old site card that has been assigned the wrong coordinates. Review of the site card has identified the actual location of the AHIMS site is in the property south of the study area. The site is located on the boundary but outside the impact area.

Table 6: AHIMS sites adjacent to the study area

AHIMS ID	Site name	Site features	Description
45-5-2662	B61	Artefact	An isolated artefact located in an exposed section of turned earth on a valley floor. The artefact was a single, large, quartz flake. Identified during survey by Navin Officer in 1996.
45-5-2674	B100	PAD	An open artefact scatter consisting of two broken flakes, one chert and one tuff located on a mid-slope. Identified during survey by Navin Officer in 1996.
45-5-5371	BCLL PAD 02	PAD	Recorded by GML (2020) the area of PAD included both sides of unnamed creek line that runs through the centre of the property. A raised terrace in the centre of the PAD near to the bridge was identified as a possible focus for past Aboriginal activities.

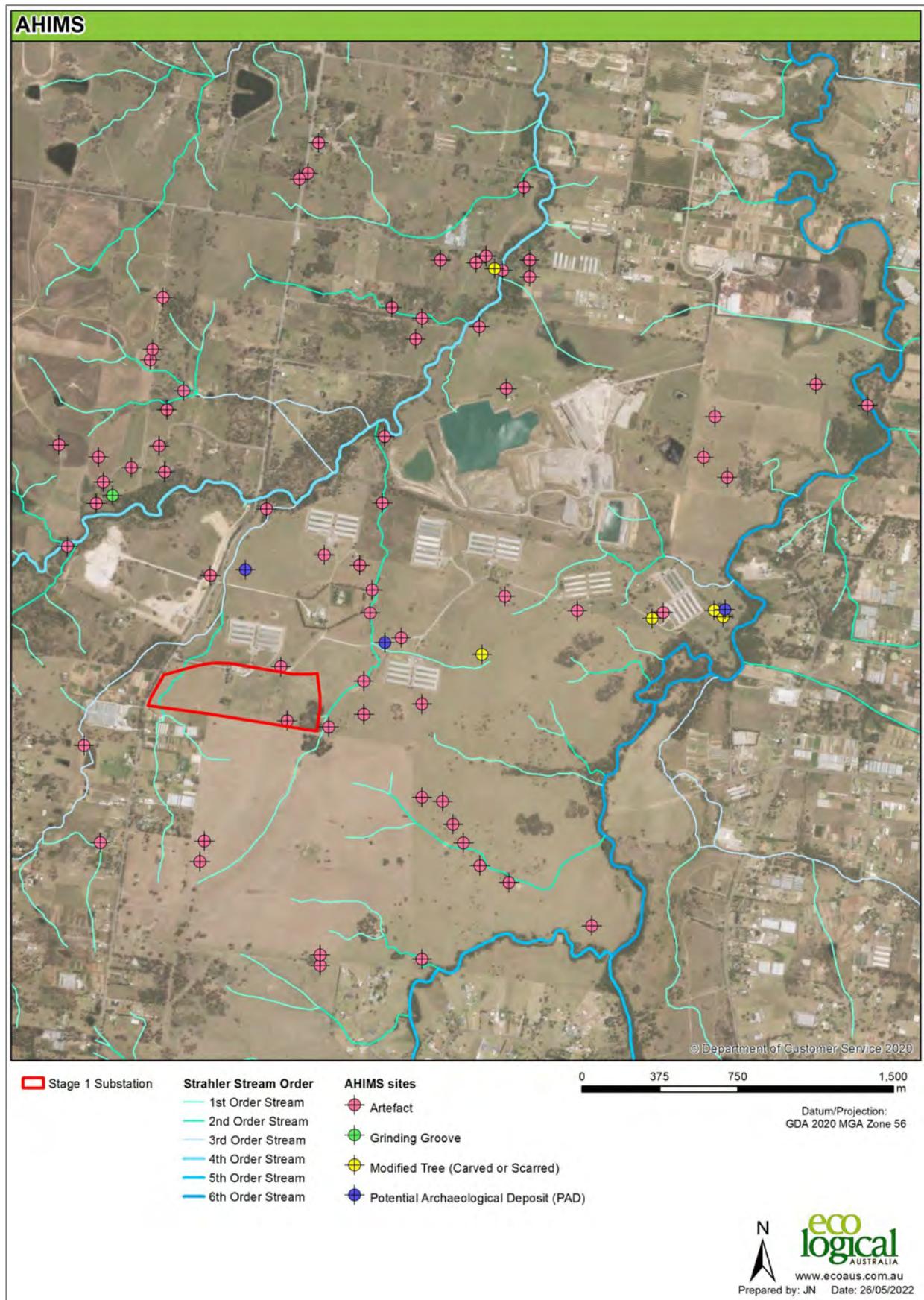


Figure 7: Regional overview of AHIMS sites surrounding the study area



Figure 8: AHIMS sites within the study area

3.3 Regional character and predictive model

3.3.1 Regional character

Previous archaeological assessments across the region provide important data on Aboriginal archaeological site distribution and typology from which an understanding of the archaeological landscape within the study area can be developed.

Aboriginal occupation in the Sydney region encompasses at least 20,000 years with dates of 13,000 Before Present (BP) at Shaws Creek in the Blue Mountain foothills; 11,000 BP for Mangrove Creek and Loggers Shelter and c. 20,000 BP at Burrill Lake on the South Coast (Attenbrow 2002). The majority of sites in the Sydney region have been dated to within the last 3,000 to 5,000 years, with many researchers proposing that occupation intensity increased from this period. This apparent intensity of occupation may have been influenced by rising sea levels which by about 6,500 years ago had risen to their present levels.

Open artefact sites and artefact scatters are the most common site types identified within the Cumberland Plain (Artefact 2012). These sites are most commonly found in landforms associated with permanent water sources, such as river banks and alluvial flats (White and McDonald 2010).

Large, concentrated assemblages are more likely to be located within resource rich areas (AMC 2014). Complex sites, containing multiple artefact types and archaeological features, are often located in close proximity (~150 m) to permanent water sources (Niche 2019). The confluence of creek lines could provide focal points for occupation and the size of the stream's Strahler order could influence the size of the assemblages present (Niche 2019). The crests of hills and ridge tops also have the potential to contain larger sites (AMBS 2012).

Low density assemblages of artefacts are also located in close proximity to reliable water sources. Whilst these sites can represent smaller or less frequent instances of occupation, disturbances from historic land use and erosion can also affect artefact count (Niche 2019).

The majority of artefact assemblages are comprised primarily of unretouched flakes and debitage, with a smaller percentage of formal tool types being present (AMBS 2012). The most common raw material used to manufacture tools is silcrete (Niche, 2019, Artefact 2012), followed by tuff/chert (AMC 2014). Silcrete sources are generally located in the north western Cumberland Plain.

Areas with few or no sites identified on the surface have often been shown to contain subsurface archaeological deposits and the distribution of surface artefacts is not a reliable indicator of an area's archaeological potential (Niche 2019). PADs are most likely to be located along valley floors and low slopes and ridgelines between flat landforms (GML 2020) and possess low-to-moderate density archaeological deposits (AMC 2014). Sites situated in the alluvial soils of the South Creek Soil Profile have the potential for stratified deposits (GML 2020), however; low-lying, flood prone areas are unlikely to have been used extensively for camping (Steele 2001 in AMC 2014).

Instances of old growth vegetation are present in the region and have the potential to contain culturally modified trees (Artefact 2010). However, such instances are rare as large-scale land clearance has removed the majority of old growth vegetation from the Cumberland plain (AMC 2014).

3.3.2 Predictive models

A commonly utilised tool in the planning and management of Aboriginal cultural heritage are predictive models. These models aim to identify specific landforms and places within the landscape which may contain archaeological material. They usually begin as geographically broad models, constructed through extensive reviews of the available literature to determine basic patterns of site distribution, before being refined according to the specific landform and environmental characteristics of the study area.

Predictive models are almost solely based upon a cultural ecological perspective of the landscape: landforms and environmental characteristics provided a distinct set of subsistence constraints, meaning the landscape could only be occupied in particular ways in order to minimise distance to potable water, maximise biodiversity, and provide shelter from the elements. Accordingly, there is an expectation that land use patterns vary between separate environmental zones due to differing constraints and that this will manifest in alternate spatial distributions of archaeological material. While some social factors may have influenced communities to venture through certain landscapes, other social factors may have resulted in the avoidance of landscapes, regardless of environmental conditions. Due to this, to understand the cultural context of a certain landscape consultation with local Aboriginal knowledge holders and community members is essential.

SITE TYPES

There are several common Aboriginal cultural heritage site types that may be found in the study area.

Open camp sites / stone artefact scatters represent past Aboriginal subsistence and stone knapping activities and may include archaeological remains such as stone artefacts and hearths. This site type usually appears as surface artefact scatters in areas where vegetation is limited, and ground surface visibility is high. They are also often exposed by erosion, agricultural events (such as ploughing), and the creation of informal, unsealed vehicle access tracks and walking paths. Open campsites are often located on dry, relatively flat land along or adjacent to rivers and creeks. Sites that contain surface or subsurface deposits resulting from repeated or continuous occupation are more likely to occur on elevated ground near permanent, reliable water sources. Flat, open areas associated with creeks and their resource-rich environments would have offered ideal camping areas to the Aboriginal inhabitants of the local area.

Isolated artefacts may represent a single item discard event or the result of limited stone knapping activity. The identification of isolated artefacts may indicate the presence of a more extensive, subsurface *in situ* archaeological deposit, or a larger deposit obscured by low ground visibility. Isolated artefacts are likely to be located on landforms associated with a range of activities, such as ridge lines that would have provided ease of movement through the area and level areas with access to a water source. Artefact scatters and isolated artefacts are the most common site types found in association with fresh water and/or food resource gathering areas.

Potential Archaeological Deposit (PAD) are areas where there is no surface expression of stone artefacts, but, due to a landscape feature or isolated artefact, there is a strong likelihood that the area will contain subsurface *in situ* archaeological deposits. Landscape features that may indicate a PAD include proximity to reliable water sources, particularly terraces and flats, ridge lines and ridge tops, and sand dune systems.

Culturally modified trees exhibit evidence of the deliberate removal of the *periderm* (outer bark), *phloem* (inner bark), and, in some cases, the sapwood. These materials can be used to manufacture a variety of items, including shields, Coolamon (bowls or trays), watercraft, containers, and a range of wooden tools and implements. Trees may also have been scarred in order to gain access to food resources (such as cutting toe-holds so as to climb the tree and catch possums or birds) or to mark locations (such as tribal territories). In some instances, Aboriginal people marked important features or locations (such as ceremonial grounds) by carving patterns or motifs into the sapwood of established trees or bending and grafting the branches of saplings to create rings.

Grinding grooves are the physical evidence of tool making or food processing activities undertaken by Aboriginal people. The manual rubbing of stones against other stones creates grooves in the rock; these are usually found on flat areas of abrasive rock such as sandstone in close proximity to water courses.

Bora grounds / ceremonial sites are locations that have spiritual or ceremonial values to Aboriginal people. Such sites may comprise natural or altered landforms and, in some cases, will also contain archaeological material. For example, bora grounds are a ceremonial site type usually consisting of a cleared area around one or more raised earth circles connected by a pathway. Bora grounds are often accompanied by ground drawings or mouldings of people, animals or deities, or geometrically carved designs on the surrounding trees.

Burials often took place in proximity to camp sites, as most people tended to die in or close to camp and it is difficult to move a body over a long distance. Soft, sandy soils on or close to rivers and creeks allowed for easier removal of earth for burial. Similarly, rock shelters or middens also provided accessible burial places. Burial sites may be marked by stone cairns, modified trees, or a natural landmark. They may also be identified through historic records or oral histories.

Contact / historical sites can include a wide variety of sites and may be identified through artefactual evidence or oral histories. Artefacts located at such sites may involve the use of introduced materials such as glass or ceramics or may have social significance regarding the interaction between Aboriginal people and European settlers.

SITE OCCURRENCE

Based on the results produced from the landscape assessment, searches of the AHIMS and state heritage registers, and examination of the regional and local Aboriginal archaeological context, the below predictive model (Table 7) has been designed for the study area.

Table 7: Predictive model for the occurrence of archaeological site types in the study area

Site Type	Description	Likelihood of occurrence
Open camp sites / stone artefact scatters / isolated finds	Artefact scatters and isolated artefacts are the most common site types found in association with fresh water, and/or food resource gathering areas. Artefact scatters and isolated finds are reported to be the most common archaeological site type in the study area.	High
Potential Archaeological Deposits	The study area is a landform that could be considered to be potentially archaeologically sensitive	Moderate
Culturally modified trees	Culturally modified trees may be present wherever tree specimens of an appropriate age are present. Widespread land clearing has been undertaken within the study area.	Low

Site Type	Description	Likelihood of occurrence
Axe grinding grooves	Although the study area is in proximity to a watercourse, the underlying geomorphology of the study area is not conducive to this site type, no naturally exposed bedrock	Low
Bora grounds / ceremonial sites	There is a low reported incidence of ceremonial sites in proximity to the study area.	Low
Burials	There is a low reported incidence of burial sites in proximity to the study area. The Blacktown soils are shallow, and it is unlikely that this site type would be present.	Low
Contact / historical sites	Contact sites may occur in any area where Aboriginal people encountered early European settlers.	Low

ARCHAEOLOGICAL ASSEMBLAGES

Kuskie (2009:81-82) describes an interpretive model for examining the archaeological assemblages that are expected to result from varying cultural, behavioural, and subsistence activities associated with the above site types (Table 7). Whilst this model is useful for making inferences concerning the activities that were likely occurring in a specific study area, the effects of taphonomic and depositional processes on a given assemblage must be considered. It is likely that Aboriginal people primarily worked with organic materials (such as wood, bark, resin, leaves, reeds, shell, and bone; Holdaway and Stern 2008:1-2). Resultingly, due to the durability of stone and the rare preservation of organic materials, the archaeological record of Aboriginal culture is incomplete. Hence, interpretations regarding the significance of certain sites and assemblages must be considered as based on incomplete data.

Table 8: Interpretive model for examining archaeological assemblages, after Kuskie (2009:81-82).

Activity	Likely associated archaeological assemblage
Ceremonial activities	Presence of ochre in sites; and Evidence of ceremonial sites (such as bora grounds, stone arrangements, carved trees, or rock engravings).
Spiritual, social, and other activities	Presence of ochre in sites; or Evidence of ceremonial sites (such as bora grounds, stone arrangements, carved trees, or rock engravings); and Rock art and engravings.
Food procurement	Stone artefacts (such as eloueras); or Wooden implements (such as digging sticks), where preserved; and Food refuse (such as shell or bone).
Food processing and consumption	Tools with specific use-wear/residues on cutting/chopping/pounding edges; or Specific tools that are related to processing certain foods (such as eloueras or seed grinding slabs); or Evidence associated with hearths or ovens; and Food refuse (such as shell or bone).
Production and maintenance of wooden implements	Stone and shell tools with design and/or use-wear/residues consistent with working wood; and Presence of wooden implements, where preserved.

Activity	Likely associated archaeological assemblage
Procurement of stone	Presence of stone sources; and Evidence for procurement activities.
Production of stone tools	Hammerstones and anvils; or Debitage (such as cores, flakes, flake portions, or microblades); and Finished tools.
Production of backed artefacts	Microliths (unused); or Bondi point preforms; or Backing flakes; or Hammerstones; and High quantities ofdebitage, including a high frequency of microblades.
Maintenance of stone tools	Cutting-edge rejuvenation flakes; or Portable whetstones; and Axe-grinding grooves.

4. Archaeological survey

4.1 Purpose

The purpose of the survey was to assess the current condition of the Aboriginal sites identified within the study area and to identify any unrecorded Aboriginal sites or objects. Areas of subsurface archaeological potential identified in the desktop assessment were also inspected.

4.2 Survey strategy

Archaeological survey of the study area was conducted on foot, in accordance with the *Code of Practice*. The overall strategy was to complete a full coverage survey, as the exact locations of the impacts are not yet known. A handheld Global Positioning System (GPS) was used to track the survey area covered and record the location of key features (disturbances, areas of archaeological sensitivity/potential). The coordinate system projection used for all site recording was GDA94 MGA 56.

The field survey methodology was as follows:

- Record the landform, general soil information, surface conditions and vegetation conditions encountered during the survey and how these impact on the visibility of objects
- Define the boundaries of any Aboriginal sites and areas of PAD based on landmarks and historical maps
- Reinspect previously identified Aboriginal sites and areas of archaeological potential within the study area
- Identify areas of disturbance which may have impacted the presence of intact soils and archaeological features
- Consultation with Aboriginal representatives to discuss the potential intangible cultural heritage values of the study area
- Collect information to ascertain whether further archaeological investigation is required.

All ground exposures were examined for Aboriginal objects (stone artefacts, imported shell, or other traces of Aboriginal occupation and old growth trees were examined for signs of cultural scarring and marking.

A photographic record was kept during the survey. Photographs were taken to record aspects of survey units including vegetation and disturbance. Scales were used for photographs where appropriate.

4.2.1 Site definition and recording

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees, or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

The Heritage NSW guidelines state, in regard to site definition, that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location.

- Obvious physical boundaries where present, e.g., mound site and middens (if visibility is good), a ceremonial ground.
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study an Aboriginal site would be defined by recording the spatial extent of visible traces or the direct evidence of their location.

4.2.2 Protocol for recording Potential Archaeological Deposits

Where areas of PAD were identified towards the margins of each survey unit, efforts were made by the survey team to delineate each area of potential beyond the survey unit. Where the extent of the PAD extends beyond the survey unit, the extent of that feature up to approximately 70m outside the survey unit was mapped. If it is likely that these PADs continue beyond that point, the survey team justified that the distance is adequate to provide an accurate representation of the PAD with regard to future planning and design for the project.

4.3 Survey results

The field survey was conducted on 18 November 2021 by ELA Archaeologists Jennifer Norfolk and Declan Coman and field officer Kirsty Lee Chalker from Cubbitch Barta Native Title Claimants Aboriginal Corporation. The study area was covered as a single survey unit and was sample surveyed due to the dense vegetation cover.

The study area is described as two landform units, sloping landform and flat landform. The flat landform is located in the western end of the study area and is in association with the unnamed drainage line that runs adjacent to Badgerys Creek Road. The landform slopes up towards the centre of the study area with a low lying crest and then slopes to the east to another unnamed drainage line.

The majority of study area is covered in dense grasses and has been cleared of native vegetation, there are a few stands of native trees (new growth) and introduced species around previous residences and outbuildings. This dense vegetation cover has limited the visibility across the study area (2%).

There was evidence of various degrees of disturbance across the study area. Minor disturbance from fencing, and land clearance has impacted the majority of the study area, there is moderate disturbance from potential irrigation, drainage mitigations and pastoral activities. There has been high disturbance along the northern boundary of the study area from the construction of property access tracks/ roads and from the former residence and outbuildings on the highest point of the study area. There was low exposure across the study area near the fencing, along the road verge and in patches across the sloping landform (2%). A soil exposure was observed in a disturbed context and a thin, orange-brown soil profile on a shallow clay layer was visible in the cross section.

AHIMS ID 45-5-2691 is recorded as being located along the fencing on the south eastern boundary of the study area, however the survey was unable to reidentify the site due to low visibility. The previous site survey conducted by GML (2020) was also unable to identify this Aboriginal object.

No further Aboriginal sites were identified during the survey but areas with the potential to contain Aboriginal objects were observed.



Figure 9: Drainage line/ flat landform in west of study area; view south-west.



Figure 10: Ground surfaces and vegetation cover in middle of creek line; view southwest



Figure 11: Visible ground surface and shallow soil exposure on bank of drainage line.



Figure 12: Limited visibility in patches across study area.



Figure 13: Gently sloping landform, dense grass cover and small stands of trees; view south east



Figure 14: Modified landform and surface disturbance from former residence in centre of study area; view south



Figure 15: Prior disturbance from pastoral infrastructure in north-east of study area



Figure 16: Prior disturbances from road along northern extent of study area; view west



Figure 17: Recorded location of registered AHIMS ID 45-5-2691, low visibility



Figure 18: Soil exposure on top of sloping landform; at southern extent of study area



Figure 19: Gentle sloping landform descending to the east of the study area; view north-east of unnamed drainage line and stand of new tree growth

4.3.1 Survey coverage

In accordance with Heritage NSW *Code of Practice* the study area was surveyed in relation to survey units, landforms, and landscapes.

Table 9: Survey coverage

Survey Unit	Landform	Survey Unit Area (m ²)	Visibility (%)	Exposure (%)	Effective coverage (ECA)	Effective coverage
Study area	Flat	8,215	2	2	3.2	<1%
	Slope	33,985	2	2	13.6	<1%

Table 10: Landform summary

Landform	Landform Area	Area effectively surveyed	% of landform effectively surveyed	Number of sites	Number of artefacts or features
Slope	33,985	13.6	<1	1	1 (PAD)
Flat	8,215	3.2	<1	1	1 (PAD)

The field survey confirmed that portions of the study area have undergone varying levels of disturbance, primarily due to the construction of residential buildings and outbuildings associated with pastoral activities, the construction of roads and installation of fences and irrigation. The entire study area has been impacted by land clearance.

Ground surfaces within the study area that comprised AHIMS ID 45-5-5370 were inspected, and additional areas that could potentially contain Aboriginal objects were observed.

4.4 Discussion

The study area contains sensitive landforms due to the proximity of two ephemeral drainage lines either side of a gentle, undulating landform. The exploitable resources that the creek lines would have represented are easily accessible from the undulating landform which also provides areas of flat even ground with good views of the surrounding landscape making it suitable for habitation.

AHIMS ID 45-5-5370 had low visibility and a few small soil exposures, the site has had low disturbance from previous land clearance. The soils are likely to be shallow but due to the low effective coverage of the study area the potential for aboriginal objects and intact archaeological deposits is unknown but due to the site's location within the landform and available water source there is potential for evidence of Aboriginal occupation.

The eastern boundary of the study area is adjacent to AHIMS ID 45-5-5371, a registered PAD that covers the ephemeral drainage line of the east. Aerial Imagery indicates the ground surface has had limited disturbance. Due to the location in the landform, the proximity to water source, registered AHIMs and low levels of disturbance there is the potential for further Aboriginal objects to be located in this area.

This is consistent with advice provided in the field by Kirsty Lee Chalker of Cubbitch Barta Native Title Claimants who was in attendance for the survey.

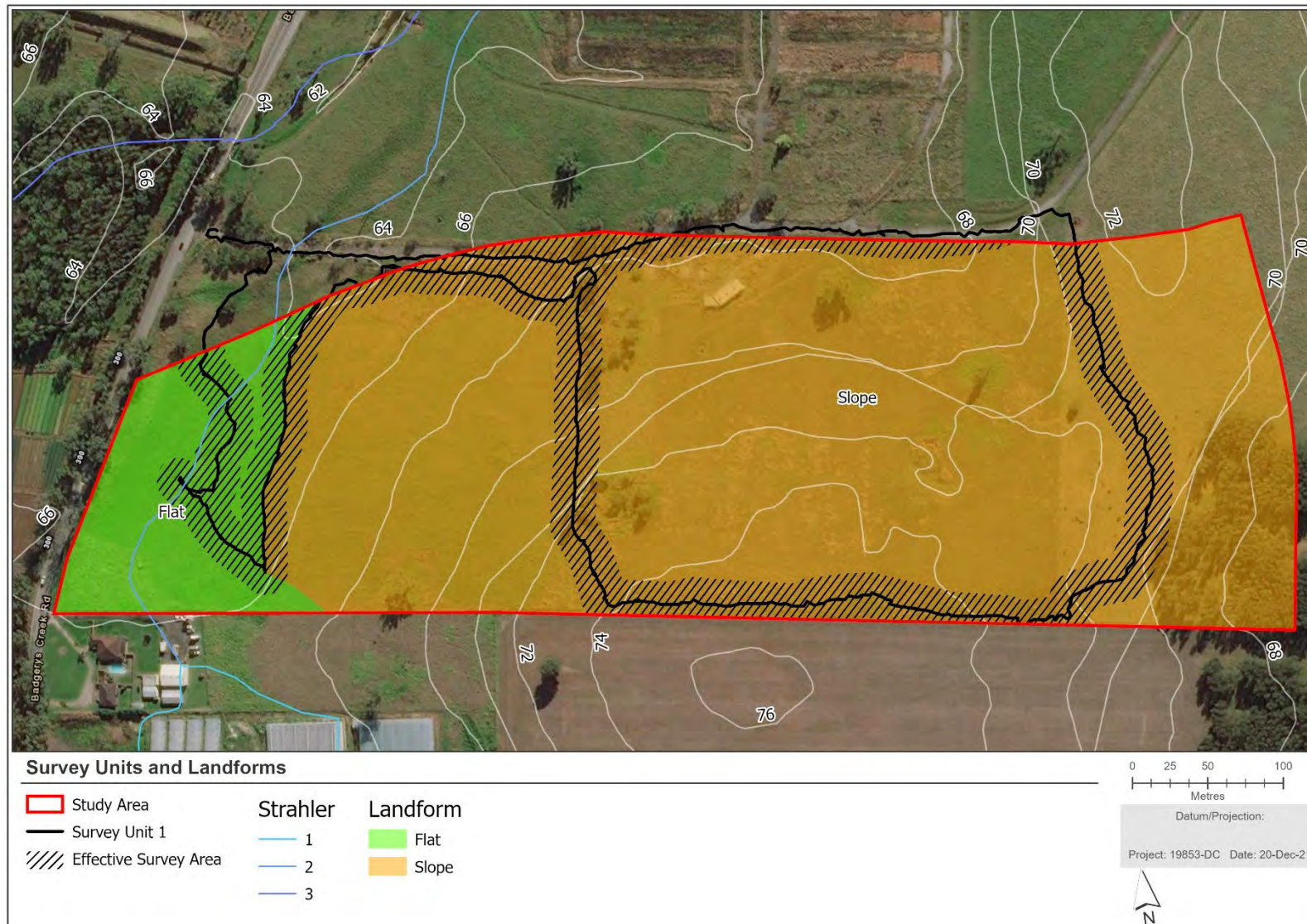


Figure 20: Survey Units, Contours and Landforms



Figure 21: Areas of Potential Archaeological Deposit; both previously registered and newly identified

5. Archaeological test excavations

5.1 Introduction

The purpose of the Archaeological Research Design (ARD) is two-fold: to provide and direct a reasonable foundation for management decisions for the archaeological resource as well as satisfying regulatory requirements through a standardised process. All related future archaeological studies and analyses stand to benefit if guided by clear linkage of study goals, relevant theory, methods, and data collection. The application of a research design is international best practice and plays a vital role in the planning and management of cultural heritage.

The aim of this research design is to assist in furthering our understanding of how Aboriginal people utilised the study area in the past. The archaeological investigation proposes to firstly, conduct archaeological survey of the areas of proposed development and secondly, undertake test excavations within the areas of proposed development. Testing programs are intended to understand the presence, nature, extent and inform significance of the archaeological resource.

5.2 Research design

The test excavation investigated the study area and collected information about the nature and extent of sub-surface Aboriginal objects, based on a sample gathered from sub-surface investigations. The research questions outlined below include broad questions that attempted to show the level of information the site might be expected to reveal as well as questions specifically related to the site:

- What was the distribution of evidence of past Aboriginal peoples use and occupation within the study area?
- What types of raw materials, artefact types and tool types are present within the assemblage?
- What types of stone tool technology are present within the site?
- Have the test excavations revealed other site types such as hearths, heating ovens, knapping floors or other foci or activity areas?
- Do the results of the test excavation demonstrate any evidence of disturbance within the study area?
- What can the artefact assemblage (or lack thereof) indicate about previous land use by Aboriginal people?
- How does the pattern of landscape use compare to previous studies in the region?

The research design questions developed to guide the testing program are not limited to the questions above and other pertinent questions may arise (or be fine-tuned) during the course of the work being undertaken.

5.3 Test Excavation methodology

ELA undertook archaeological test excavations under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a) in order to understand the presence, nature, extent, and significance of the Aboriginal archaeological resource and how best to manage it.

This section presents the methodology for the test excavation. The purpose of archaeological test excavations was to collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample gathered from sub-surface investigations. The work was undertaken by a team comprising archaeologists and representatives from the RAPs.

5.3.1 Test Excavation Area 1

Test Excavation Area 1 was investigated through the utilisation of a systemic grid of test excavation units (50 cm X 50 cm). The placement of the test excavation units were a minimum of 15 m and a maximum of 50 m distance from the nearest adjacent unit with the possibility to expand on units displaying high density assemblages to 1 m² in accordance with the Code of Practice.

Up to thirty four (34) test excavation units were placed in the test excavation area to ensure it is adequately assessed.

5.3.2 Test Excavation Area 2

Test Excavation Area 2 was investigated through the utilisation of a systemic grid of test excavation units (50 cm X 50 cm). The placement of the test excavation units were a minimum of 15 m and a maximum of 50 m distance from the nearest adjacent unit with the possibility to expand on units displaying high density assemblages to 1 m² in accordance with the Code of Practice.

Up to fifty (50) test excavation units were placed in the test excavation area to ensure the area is adequately assessed.

The test excavation methodology applied to both areas is outlined below:

5.3.3 Stage 1 test pits

- The test pits excavated by hand (inclusive of trowels, spades and other hand tools) and placed on a systematic grid appropriate to the scale of the area being investigated e.g., 10 m intervals, 20 m intervals, or other justifiable and regular spacing.
- The first test pit within a landform or PAD area is excavated in 5 cm spits; the subsequent test pits conducted within the landform or PAD area is excavated in either 10 cm spits or stratigraphic units (whichever is smaller) to the base of Aboriginal object-bearing units being the removal of the A-horizon soil deposit down to the sterile clay layer (B-horizon).
- Depending on the depth and in order to achieve this, additional adjacent 50 cm x 50 cm test pits may have been excavated (for example expanding the test pit to 50 cm x 1 m) to reach the sterile clay layer.

5.3.4 Stage 2 expansion pits

- If five or more stone artefacts or formal tools were located within a 50 cm x 50 cm test pit, or suspected features such as heat treatment pits, hearths, or evidence of knapping events were identified, the test pit may have been expanded into a 1 m x 1 m square at the discretion of the Excavation Director. The additional pits would have been excavated in 50 cm x 50 cm test pit units in order to further understand the archaeological resource.
- Alternately, if five or more artefacts or formal tools were located within a 50 cm x 50 cm test pit, up to four 50 cm x 50 cm test pits may have been placed at an interval of 5, 10, or 20 m (or other justifiable and regular spacing appropriate to the scale of the area being tested) from the

test pit to test further the immediate area for artefact concentrations and/or archaeological features, or to define a site boundary. These additional test pits would have been excavated until clay, or culturally sterile soils are reached.

- Expansion test pits may have been combined and excavated as necessary in 50 cm x 50 cm units for the purposes of further understanding site characteristics. Note that under the Code of Practice, the maximum area that can be excavated in any one continuous area is 3 m².

5.3.5 General procedures

- The Code of Practice dictates that the maximum surface area of all test excavation units must be no greater than 0.5% of the PAD or area being investigated.
- All excavated soil were sieved in 5 mm sieves. Artefacts were collected and bagged according to test pit location and spit or context number.
- Wet or dry sieving is employed depending on the nature of the soils. For example, dry sieving may be used for sandy soils.
- Each test pit is recorded using standardised recording forms, coordinates collected using a GPS, and photographed using a range pole.
- The stratigraphic / soil profile for each test pit will be recorded in scale drawings as required by Heritage NSW Code of Archaeological Practice recording requirements.
- Test excavation units are backfilled as soon as practicable, to be organised by the proponent.
- An AHIMS site card is prepared and submitted to the AHIMS Registrar for any new sites identified during test excavations.
- An AHIMS Site Impact Recording form completed and submitted to the AHIMS Registrar for any sites impacted during test excavations.
- In the unlikely event that suspected human remains are identified works immediately cease and the NSW Police and Heritage NSW notified.
- Test excavations cease when enough information* has been recovered to adequately characterise the objects present with regard to their nature and significance.

*Enough information is defined by Heritage NSW as meaning “that the sample of excavated material clearly and self-evidently demonstrates the deposit’s nature and significance. This may include things like locally or regionally high object density: presence of rare or representative objects: presence of archaeological features: or locally or regionally significant deposits stratified or not.” (DECCW 2010a).

5.3.6 Lithic Analysis

Collected materials are temporarily held at the ELA office, analysed and catalogued. Any artefacts that are of particularly interest or representative are photographed and included in report. Artefact analysis is done using *A Record in Stone* (Holdaway & Stern 2004).

5.4 Test excavation results

Archaeological excavations within the study area identified that there has been heavy disturbance from previous land use and vegetation clearance as identified through the archaeological assessment.

No Aboriginal objects were recovered from test excavation area 1 (AHIMS ID 45-5-5370) and no Aboriginal objects were recovered from test excavation area 2 (Figure 21). Enough information has been

gathered to understand the nature of the study area and the following section presents a summary of the test excavation results.

5.4.1 Soils and stratigraphy

TEST EXCAVATION AREA 1

Area 1 is located at the western extent of the study area, within the registered PAD (AHIMS ID 45-5-5370). The area was situated on gentle sloping landform that runs east-west with the low lying drainage line. The area had been cleared of all native vegetation and surface disturbance included minor fencing.

Soils across the testing area were generally shallow and consisted of a mixed brownish loam/ clay loam over a yellow-brown to red medium clay. Depths varied from 200-300 mm, and there were gravel inclusions (up to 70%) throughout. The test excavation units were saturated during excavation from the heavy rainfall, several test excavation units were abandoned due to flooding and from high disturbance witnessed during excavations. Representative sections and a summary of the soil profiles of test excavation units are presented and described below.

Table 11: Soil summaries for test pits 3-18 in Area 1

Stratigraphy	Description	
A Horizon	Depth	0 – 200 mm
	pH	5.5 - 7
	Munsell	10YR 2/2
	Friable brownish loam, root and grass inclusions throughout with minor gravel inclusions.	
B horizon	Depth	200 – 300 mm
	pH	4.5-6.5
	Munsell	2.5YR 3/3
	Transition to yellow brown medium clay and red medium clay between 200-300mm, gravel inclusions (up to 70%).	



Figure 22: Area 1 test pit 11 –View north west from test area towards the drainage line and Badgerys Creek



Figure 23: Area 1 test pit 11 – North profile – mixed brown clay loams, clear horizon orange medium clay



Figure 24: Area 1 test pit 5 – View across transect (TP 5-6)



Figure 25: Area 1 test pit 5 – North profile of test pit 5, flooding, ground saturated, mixed clay loams

TEST EXCAVATION AREA 2

Area 2 is located at the eastern extent of the study area, within the curtilage of the area of PAD that was identified by ELA during the archaeological survey. The PAD was identified as being on a relatively flat landform adjacent to AHIMS ID 45-5-5371, a PAD identified by GML 2020. The gentle sloping landform runs west-east towards a second-order tributary. The area had been partially cleared of native vegetation and surface disturbance included minor fencing.

Soils across the testing area were generally very shallow and consisted of a friable, brownish silty loam, with a clear horizon over compact, medium clay layer. Depths varied from 50-200 mm, and there were ironstone gravel inclusions (less than 10%) throughout. The test excavation units were saturated during excavation from the heavy rainfall, several test excavation units were abandoned due to flooding and from high disturbance witnessed during excavations. Representative sections and a summary of the soil profiles of test excavation units are presented and described below.

Table 12: Soil summaries for test pits 1-24 across Area 2

Stratigraphy		Description
A Horizon	Depth	0 – 100 mm
	pH	5.5-7
	Munsell	10YR 2/2
		Friable, moist brown silty loams. Some roots and grass inclusions, charcoal flecks, small ironstone gravels (<10%) throughout.
B Horizon	Depth	60 – 250 mm
	pH	4.5-6.5
	Munsell	5YR 3/2
		Orange medium clay at base, moist and compact.



Figure 26: North profile for test pit 9 – homogenous friable brown loams – clear horizon orange clays



Figure 27: North profile of test pit 21 showing shallow mixed soils – clay loam to medium orange clay.

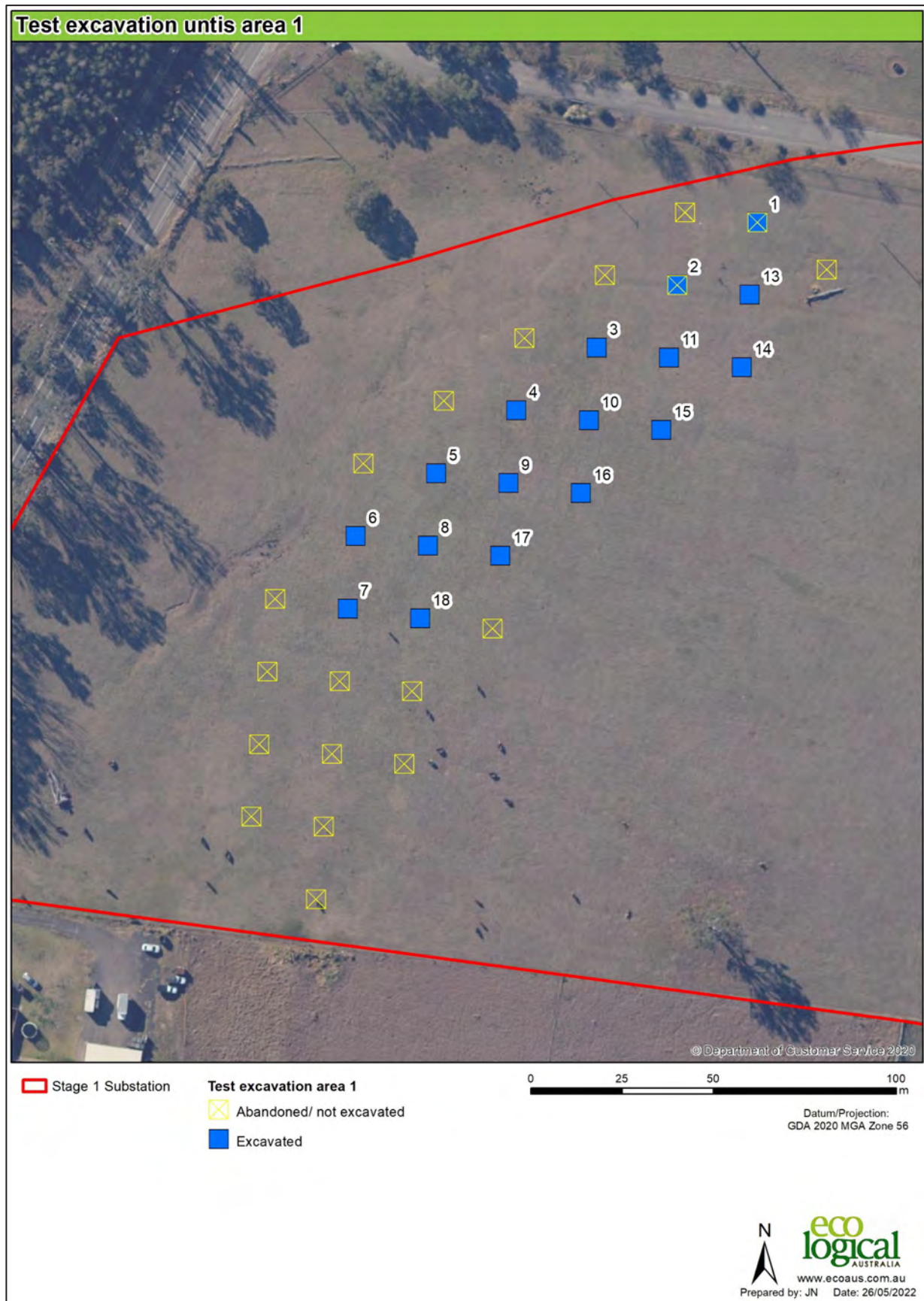


Figure 28: Results for test excavation area 1, units not excavated due to visible disturbance and flooding. Test pits 1 and 2 abandoned due to flooding.

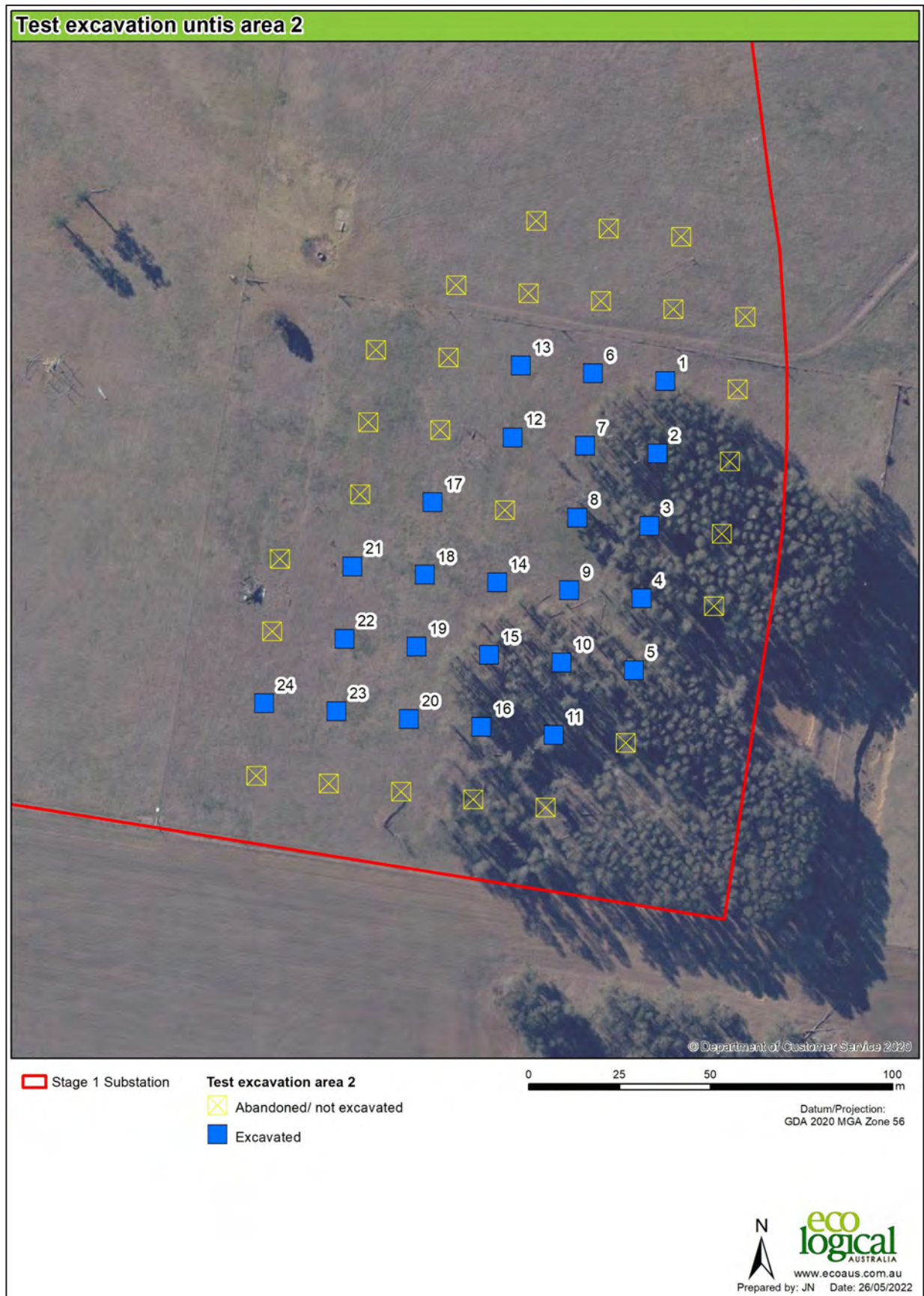


Figure 29: Results for test excavation area 2, units not excavated due to visible disturbance, shallow soils and flooding.

6. Analysis and discussion

WHAT IS THE DISTRIBUTION OF EVIDENCE OF PAST ABORIGINAL PEOPLES USE AND OCCUPATION WITHIN THE STUDY AREA?

No evidence of Aboriginal occupation or utilisation was identified within the Stage 1 portion of the wider study area of 475 Badgerys Creek Road. The majority of identified Aboriginal sites within the wider study area have been located in close proximity to the water sources. Isolated artefacts have been recorded on the minor crest and in highly disturbed contexts along the vehicle access tracks and the former chicken shed locations.

WHAT TYPES OF RAW MATERIALS, ARTEFACT TYPES AND TOOL TYPES ARE PRESENT WITHIN THE ASSEMBLAGE?

No artefacts or raw materials were identified within the Stage 1 study area.

WHAT TYPES OF STONE TOOL TECHNOLOGY ARE PRESENT WITHIN THE SITES?

No stone tool technology was present within the Stage 1 study area.

HAVE THE TEST EXCAVATIONS REVEALED OTHER SITE TYPES SUCH AS HEARTHES, HEATING OVENS, KNAPPING FLOORS OR OTHER FOCI OR ACTIVITIES AREAS?

The test excavation program did not reveal any hearths or heating ovens, knapping floors or other foci or activities areas.

DO THE RESULTS OF THE TEST EXCAVATION DEMONSTRATE ANY EVIDENCE OF DISTURBANCE WITHIN THE STUDY AREA?

Evidence of previous land disturbance was visible during the survey, the study area had been mostly cleared, and affected by agricultural and pastoral practices.

The majority of test excavations units exhibited mixed brown loams to clay loams with a homogenous structure and a clear horizon with the medium to heavy clay loam typical of Blacktown soil landscapes

Test excavation unit in area 2 had very shallow soils the likely result of a combination of disturbances of land clearance, pastoral and agricultural processes, increased erosion and the degree of slope.

WHAT CAN THE ARTEFACT ASSEMBLAGE (OR LACK THEREOF) INDICATE ABOUT PREVIOUS LAND USE BY ABORIGINAL PEOPLE?

The result of the archaeological investigation is not a true indication about the previous land use by Aboriginal people in the past. The lack of tangible evidence is likely due to Aboriginal people primarily working with organic materials such as wood, bark, resin, leaves, reeds, shell, and bone (Holdaway and Stern 2008:1-2). The durability of lithic material is the reason the artefact scatters or isolated finds are the dominant site type represented in the archaeological record of Aboriginal culture. Hence, interpretations regarding the significance of certain sites and assemblages must be considered as based on incomplete data.

The study area has a long history of disturbance of varying degrees which could be a reason for the absence of evidence of Aboriginal occupation. Aboriginal objects are often located within highly disturbed contexts so the lack of artefacts could indicate the unsuitable nature of the test excavation

area. Open artefact sites and artefact scatters are the most common site types identified within landforms associated with permanent water sources, such as river banks and alluvial flats (White and McDonald 2010). The study area may not have supported a permanent water source, rather a seasonal source. The current weather conditions have highlighted the flooding implications of the landform and the lack of drainage on the gentle slope created swamp like conditions. This could indicate that the upper slope or crest may have been the location of Aboriginal occupation. The crest was not investigated due to the heavy disturbance from residential buildings and agricultural practices.

HOW DOES THE PATTERN OF LANDSCAPE USE COMPARE TO PREVIOUS STUDIES IN THE REGION?

Low density assemblages of artefacts have been identified in close proximity to reliable water sources. Whilst these sites can represent smaller or less frequent instances of occupation, disturbances from historic land use and erosion can also affect artefact count (Niche 2019).

Artefact Heritage 2020 undertook test excavations to the north east of the study area adjacent Boral Bricks and South Creek. The results of their excavations also identified the lack of artefactual material in the low lying areas adjacent to the water sources. The artefactual material was, however, located on the higher elevations or raised areas in the vicinity of South Creek.

AECOM undertook excavations as a result of the proposed Boral Bricks expansion directly north of 475 Badgerys Creek Road. A series of transects were placed adjacent to Badgerys Creek to investigate the presence and distribution of Aboriginal objects. The result was a very low density background scatter identified, with no formal tools or technology evidence. It was identified that the Aboriginal heritage values of the assessment area pertained to low density artefact scatters or 'background scatter' occurring throughout the assessment area, which are considered to be of low archaeological (scientific) significance (AECOM 2010).

The lack of artefactual material retrieved could indicate the unsuitability of the landscape for Aboriginal occupation but also it could represent a very low density artefact scatter or background scatter that was missed by the excavation methodology. This low density artefact site type is of low significance and impact on this site type would not affect the overall cultural significance of the Aboriginal cultural heritage of the Badgerys Creek area.

7. Impact assessment

The desktop assessment identified two previously recorded AHIMS sites within the Stage 1 study area: AHIMS ID 45-5-5370 (BCLL PAD 03) and AHIMS ID 45-5-2691 (B06 an isolated artefact). AHIMS ID 45-5-2691 is an old site that was recorded for the initial investigation works for the Western Sydney Airport. The coordinates on AHIMS were incorrect and the site is located on the southern boundary fence outside the current Stage 1 study area. The AHIMS site card confirms that the site is located on the boundary of the study area, and it will not be impacted by the proposed substation works.

The archaeological survey concluded there was large scale disturbance, the majority of the registered PAD area (AHIMS ID 45-5-5370) was assessed as not having potential. The majority of the site is a low lying waterlogged area and the western portion has been impacted by the construction of Badgerys

Creek Road. A gentle rise on the eastern portion was recommended for testing to investigate the landform. An additional area of PAD was identified on the eastern boundary on a relatively flat to gentle sloping landform. This area was thought to have potential for Aboriginal objects due to the relatively intact nature of the site during the survey, its proximity to the watercourse and historical imagery.

The proposed substation works have not been specified at this stage and therefore this assessment assumes that all ground surfaces may be impacted. The likely impacts of such works will involve levelling of ground surfaces and associated utilities such as sewerage, water and electricity and access. Further archaeological investigations were required to identify the nature and extent of potential Aboriginal objects in areas of PAD in order to assess potential impacts.

Following test excavations of the two areas of PAD no Aboriginal objects were identified and the Stage 1 study area has been heavily impacted by previous land use and the likelihood of impacts to Aboriginal objects is low. There will be no impacts to Aboriginal cultural heritage values by the proposed substation works within Stage 1 study area.

8. Management and mitigation measures

8.1 AHIMS sites

AHIMS ID 45-5-2691 has been identified as being registered on the AHIMS database with the wrong coordinates. To ensure this site is properly managed in the future the AHIMS site card will be updated to reflect the true location.

No mitigation measures area required for this Aboriginal site being located outside the current assessment area.

AHIMS ID 45-5-5370 was registered without an adequate archaeological assessment being undertaken to address the historical impacts to the site. Following test excavations across a portion of the site no Aboriginal objects were identified and the soils exhibited significant disturbance due to the mixed nature of the A horizon and the clay B horizon.

An impact recording form will be completed for AHIMS ID 45-5-5370 to update the actual site boundary. This AHIMS site has been assessed as not being located within the Stage 1 study area, the areas of moderate to high potential for archaeological deposits is restricted to the northern portion adjacent to Badgerys Creek.

8.2 Unexpected finds

ABORIGINAL OBJECTS

Aboriginal objects are protected under the NPW Act even if they are not *in situ*. On the basis of the predictive model outlined in Section 3.3 it is likely Aboriginal objects are located within the study area in a disturbed context.

If suspected Aboriginal objects, such as stone artefacts are located during future works:

- works must cease in the affected area and an archaeologist called in to assess the finds.
- If the finds are found to be Aboriginal objects, Heritage NSW must be notified under section 89A of the NPW Act.
- Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.

HUMAN REMAINS

If suspected human skeletal remains are uncovered at any time throughout undertaking the proposed works, procedures outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010)* would be followed. In all cases, the special importance of Aboriginal ancestral remains must be acknowledged and respected and the wishes of the Aboriginal community must be respected when making decisions regarding ancestral remains. To avoid doubt, the precautionary principle must be applied to all physical remains suspected to be Aboriginal ancestral remains.

If any human remains are disturbed in, on or under the land, you must:

- not further disturb or move these remains
- immediately cease all work at the particular location
- notify NSW Police
- notify Heritage NSW Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location
- not recommence any work at the particular location unless authorised in writing by Heritage NSW.

9. Recommendations

The following recommendations are based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended
- The results of the Aboriginal technical report
- The interests of the Aboriginal stakeholder groups
- The assumed impacts of the proposed future works

It was found that:

- Desktop assessment identified two AHIMS sites (AHIMS ID 45-5-5370 and AHIMS ID 45-5-2691) being located within the study area. AHIMS ID 45-5-5370 is a PAD that covers a large portion of the Stage 1 study area along Badgerys Creek Road. AHIMS ID 45-5-2691 was an isolated find identified from previous assessment for the Western Sydney Airport, the site is old and was incorrectly recorded. The actual location of AHIMS ID 45-5-2691 is on the southern fence boundary outside the study area.
- Archaeological survey was undertaken to identify any Aboriginal objects and to assess the potential for archaeological deposits. No Aboriginal objects were identified during the course of the survey due to low visibility. AHIMS ID 45-5-5370 was assessed as being highly disturbed and

was reduced to a smaller portion for test excavations. An additional area of PAD was identified in the eastern portion.

- Test excavations were undertaken to investigate the areas of PAD, no Aboriginal objects were identified, and the soil were moderately to highly disturbed.
- No Aboriginal cultural values were identified, and it is unlikely Aboriginal objects will be impacted by the proposed substation works.

Based on the findings of this Aboriginal Heritage Assessment and the archaeological investigation the following is recommended:

Recommendation 1 – No further assessment required, works may proceed with caution

No further archaeological assessment is required for the study area. Although general measures will need to be undertaken. These general measures include:

- Management of AHIMS ID 45-5-2691 will be to update the registered information to reflect the actual location of the Aboriginal site.
- Management of AHIMS ID 45-5-5370 will be to submit an Aboriginal site impact form to AHIMS to update the Aboriginal site extent based on this assessment. The potential archaeological deposit site boundary will be updated to reflect the areas of moderate to high potential located along the boundary of Badgerys Creek in the north.

UNEXPECTED FINDS POLICY

- Aboriginal objects are protected under the NPW Act regardless of if they are registered on AHIMS or not. If suspected Aboriginal objects, such as stone artefacts are located during future works, works must cease in the affected area and an archaeologist called in to assess the finds.
- If the finds are found to be Aboriginal objects, the Heritage NSW must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.
- In the extremely unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, Heritage NSW may also be contacted at this time to assist in determining appropriate management of the human remains.

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Appendix A – AHIMS Search Results



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-2583	B 30	AGD	56	292370	6244490	Open site	Valid	Artefact :-	Open Camp Site	
	Contact	Recorders	Mr.Kelvin Officer							
45-5-2586	B3	AGD	56	290240	6247220	Open site	Valid	Artefact :-	Isolated Find	
	Contact	Recorders	Mr.Kelvin Officer							
45-5-0213	South Creek:	AGD	56	293700	6247000	Open site	Valid	Artefact :-	Open Camp Site	104106
	Contact	Recorders	Ms.Laila Haglund							
45-5-0517	Badgery's Creek / Longleys Road Badgery's Creek	AGD	56	291940	6247650	Open site	Valid	Artefact :-	Open Camp Site	1018
	Contact	Recorders	Mr.Allan Lance							
45-5-2658	B67	AGD	56	290150	6246700	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2659	B66	AGD	56	289990	6246750	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2660	B64	AGD	56	291300	6246000	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2661	B63	AGD	56	291450	6245880	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2662	B61	AGD	56	291100	6245450	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2666	B85	AGD	56	290000	6244893	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2669	B96	AGD	56	291270	6245670	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2672	B97	AGD	56	291270	6245510	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2673	B101	AGD	56	290320	6246980	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2674	B100	AGD	56	290870	6245740	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2675	B99	AGD	56	291950	6246080	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2676	B98	AGD	56	291840	6245800	Open site	Destroyed	Modified Tree (Carved or Scarred) :		
	Contact	Recorders	Hilton Naden							
45-5-2677	B16	AGD	56	291830	6244780	Open site	Valid	Artefact :-		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
45-5-2682	B75	AGD	56	291640	6247700	Open site	Valid	Artefact :-		102196

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 1 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2616	B 28	AGD	56	291700	6244980	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2683	B76	AGD	56	291860	6247720	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2684	B73	AGD	56	291080	6246280	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2686	B72	AGD	56	290800	6246500	Open site	Valid	Artefact : -		102196
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2656	B102	AGD	56	290400	6247070	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2690	B59	AGD	56	291550	6247420	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2691	B60	AGD	56	290900	6245480	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2693	B55	AGD	56	290310	6246680	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2694	B52	AGD	56	290550	6246580	Open site	Not a Site	Modified Tree (Carved or Scarred) :		103124
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd.Mr.James Hammond					Permits		
45-5-2695	B51	AGD	56	290150	6246420	Open site	Not a Site	Artefact : -		103124
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd.Mr.James Hammond					Permits		
45-5-2703	B12	AGD	56	289840	6246320	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2704	B13	AGD	56	291370	6246850	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2705	B15	AGD	56	291000	6248120	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2798	B27	AGD	56	291650	6245090	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2779	B17	AGD	56	291060	6244300	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2780	B65	AGD	56	291310	6246110	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
45-5-2619	B 29	AGD	56	291970	6244700	Open site	Valid	Artefact : -		
	Contact	Recorders	Kerry Navin					Permits		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 2 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-2623	B 68	AGD	56	289800	6246810	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2624	B 34	AGD	56	291750	6244890	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2625	B 35	AGD	56	291550	6244330	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2626	B 36	AGD	56	291060	6244350	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2627	B 37	AGD	56	290500	6244900	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2630	B 40	AGD	56	291900	6247660	Open site	Valid	Modified Tree (Carved or Scarred) :		
	Contact									Permits
45-5-2644	B 26	AGD	56	291550	6245110	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2785	B 107	AGD	56	291550	6245560	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2786	B 109	AGD	56	291360	6246530	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2787	B 110	AGD	56	291250	6246230	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2766	B108	AGD	56	292300	6246010	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2767	B53	AGD	56	292070	6247620	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2769	B-14	AGD	56	292070	6247700	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2772	B33	AGD	56	290480	6244800	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2812	b105	AGD	56	289920	6245360	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2813	B104	AGD	56	290300	6247520	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2814	B103	AGD	56	290250	6247270	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-3096	B58	AGD	56	290530	6246180	Open site	Destroyed	Artefact : 2		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 3 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	<u>Contact</u> T Russell	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd		<u>Permits</u>	3752	
45-5-2685	B74	AGD	56	291520	6247320	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd		<u>Permits</u>		
45-5-4098	BC-01-09	GDA	56	292062	6247272	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>				Mr.Geordie Oakes.AECOM Australia Pty Ltd - Sydney		<u>Permits</u>		
45-5-4099	BC-EX01-11	GDA	56	291932	6247569	Open site	Valid	Artefact : 11		
	<u>Contact</u>	<u>Recorders</u>				Mr.Geordie Oakes.AECOM Australia Pty Ltd - Sydney		<u>Permits</u>		
45-5-5067	B130	GDA	56	290085	6246717	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd,Mrs.Jo Dibden		<u>Permits</u>		
45-5-5090	B158	GDA	56	291916	6247879	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5081	B157	GDA	56	292146	6248243	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5083	B160	GDA	56	291510	6247663	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5084	B161	GDA	56	290387	6246994	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5085	B162	GDA	56	291157	6248456	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5162	BCBW18 AS 01	GDA	56	293069	6247136	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci		<u>Permits</u>		
45-5-5163	BCBW18 AS 03	GDA	56	293557	6247292	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci		<u>Permits</u>		
45-5-5164	BCBW18 AS 02	GDA	56	293128	6246842	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci		<u>Permits</u>		
45-5-5165	BCBW18 IF 01	GDA	56	293014	6246939	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci		<u>Permits</u>		
45-5-5175	B167	GDA	56	291064	6248281	Open site	Valid	Artefact : -		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Miss.Jasmine Fenyvesi		<u>Permits</u>		
45-5-5055	B118	GDA	56	290118	6246822	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Mrs.Jo Dibden		<u>Permits</u>		
45-5-5057	B120	GDA	56	290162	6246756	Open site	Valid	Grinding Groove : 1		
	<u>Contact</u>	<u>Recorders</u>				Navin Officer Heritage Consultants Pty Ltd, Mrs.Jo Dibden		<u>Permits</u>		
45-5-5370	BCLL PAD03	GDA	56	290804	6246398	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>	<u>Recorders</u>				GML Heritage Pty Ltd - Surry Hills, Miss.Hannah Morris		<u>Permits</u>		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 4 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-5371	BCLL PAD02	GDA	56	291476	6246047	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5372	BCLL PAD01	GDA	56	293117	6246205	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5373	BCLL IF01	GDA	56	292819	6246192	Open site	Valid	Artefact : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5374	BCLL ST01	GDA	56	292766	6246163	Open site	Valid	Modified Tree (Carved or Scarred) : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5375	BCLL RT01	GDA	56	293109	6246170	Open site	Valid	Modified Tree (Carved or Scarred) : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5376	BCLL RT02	GDA	56	293065	6246202	Open site	Valid	Modified Tree (Carved or Scarred) : -		
<u>Contact</u>		<u>Recorders</u>		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						

**** Site Status**

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

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

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

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

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0
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Page 5 of 5

Appendix B – Site Cards

open Artefact ☒ New recording ☐ Additional Info



National Parks and Wildlife Service

Box 1967, Hurstville NSW 2220. Tel: (02) 9585 6444
Standard Site Recording Form Revised 5/88


45-5-2691

1:250,000 map sheet: SYDNEY NPWS Code 45

Zone = 56

AMG Grid reference 2190900 mE 6245480 mN

Full reference - please include leading digits

Scale of map used for grid reference ☒ 25K, 50K (preferred) ☐ 100K ☐ 250K

Please use largest scale available

1:25K, 50K, 100K map name: WARRAGAMBA

HEAD OFFICE USE ONLY:

NPWS Site no: 45-5-2691

Site types:

Accessioned by: NSP Date: 31/05/02

Date entered by: NSP Date: 31/05/02

Owner/Manager:

Address:

Site name: B60 Locality/property name: Badgerys Creek

NPWS District: Region: Sydney

Reason for investigation: Second Sydney Airport EIS (1997) Assessment.

Portion no: Photos taken?

Parish: How many attached?

How to get to the site (refer to permanent features, give best approach to site eg. from above, below, along cliff (Draw diagram on separate sheet.)

refer topographic map and sketch plan (if attached)

Other sites in locality? yes. Site Types include: isolated finds, open artefact scatters and scarred trees.

Are sites in NPWS Register? yes.

Have artefacts been removed from site? no. When? Deposited where?

By whom? Deposited where?

Is site important to local Aborigines? yes - varying degrees of significance (refer report).

Give contact(s) name(s) + address(es)

Contacted for this recording? Gandangara L.A.L.C. (refer report).

(Attach additional information separately) If not, why not?

Verbal/written reference sources (including full title of accompanying report) NPWS Report Catalogue #

Navin Officer Heritage Consultants 1997 Aboriginal Cultural Heritage, Proposal for a Second Sydney Airport at Badgerys Creek or Holsworthy Military Area EIS, Technical Paper 11.

PPK Environment & Infrastructure, Dept. Transport and Regional Development.

Checklist Surface visibility Damage/disturbance Threat to site	Condition of site <u>refer report.</u>
--	--

Recommendations for management & protection (attach separate sheet if necessary)

refer report.

Site recorded by: NAVIN OFFICER

Address/institution: HERITAGE CONSULTANTS
102 JERVOIS ST
DEAKIN ACT 2600

Date: July 2000 (NPWS sitecard)
1996 (field recording)

ABORIGINAL SITE

FIELD DATA RECORDING FORM

45-5-

2ND SYD AIRPT B6C

Site Name/code TK69
 Recorder Tom Knight
 Date 9/12/18
 Photos

☒ map grid Waragamba 1:25000
☐ GPS
☒ mark map & plot later 29090624548

Site Type

- ☐ open artefact scatter ☐ rockshelter with:
☒ isolated find ☐ surface artefacts
☐ open midden ☐ arch'l deposit
☐ open grinding grooves ☐ midden deposit
☐ open engravings ☐ pigment art
☐ quarry ☐ engraved art
☐ procurement site ☐ grinding grooves
☐ burial ☐ rock surface pitting

Site measurements

length: width/depth: height:
 Gradient: ☒ gen. flat ☐ low ☐ mod. ☐ high
 Aspect: ☐ N ☒ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW
open

Visibility & Exposure

exposure type: turned earth (on fence line)
 soil/matrix type: grey loamy
 ground visibility in exposure 5%
 exposure dimensions 2 x 0.5 x
 visibility away from exposure 0

Large scale landform

- ☐ crest ☐ valley side/slopes ☐ flats ☒ plains

Small scale landform

- ☐ major ridge ☐ break-of-slope ☐ major escarpment
☒ spurline ☐ uppr slopes ☐ minor escarpment
☐ knoll ☒ mid slopes ☐ discontinuous outcrop
☐ shoulder ☐ basal slopes ☐ isolated tor/outcrop
☐ saddle ☐ rock platform
☐ valley floor ☐ colluvial fan
☐ terrace ☐ river bed/margin
☐ dune ☐ creek bed/margin
☒ sandstone ☐ sand sheet ☐ wetland margin
☒ shales? ☐ lake margin

Vegetation

- ☐ forest ☐ woodland ☐ shrubland ☒ grassland
 Canopy: ☐ closed ☐ open ☐ sparse
 Height: ☐ >30m ☐ 10-30m ☐ 4-2m
☐ 10-4m ☐ <2m
 main species

SITE CONTENTS

Artefact numbers

actual no:
 Estimate:
☒ 1-5 ☐ 16-50 ☐ 101-500
☐ 6-15 ☐ 50-100 ☐ >500

Artefact density

average (a/m²)
 max. (a/m²)

Artefact material types

	✓	no.	%
quartz	☐	.....	.....
quartzite	☐	.....	.....
silcrete	☐	.....	.....
chert	☒	1	100
rhyolite	☐	.....	.....
volcanic	☐	.....	.....
pet'd wood	☐	.....	.....
tuff	☐	.....	.....
other	.....	.....	.....

Other features

- ☐ shell: ☐ isolated/sparse
☐ low density
☐ mod density
☐ high density
☐ bone
☐ charcoal ☐ hearth
☐ evidence of Ab'l quarrying
 other:

Archaeological Potential to:

be larger than record'd area: ☐ low ☒ mod. ☐ high ☐ can't tell
 contain (more) artefacts: ☐ low ☒ mod. ☐ high ☐ can't tell
 have in situ subsurface mat'l ☒ low ☐ mod. ☐ high ☐ can't tell

Site Condition/impacts

General rating ☐ poor ☒ good ☐ v good ☐ excel. ☐ can't tell
 visitor/landuse impacts: ☐ low ☒ mod. ☐ high ☐ can't tell
 natural impacts: ☐ low ☐ mod. ☐ high ☐ can't tell
☐ graffiti ☐ rubbish ☐ camp'g ☐ vehicles ☐ fill ☐ animal digg'g
☐ veg. clear'g ☒ plough'g ☐ erosion ☐ quarry'g ☐ ordnance
 Other: stock trampling

Artefact descriptions

	✓	no.	percentage
flakes	☒	1	100
flaked pieces	☐	.....	.....
cores	☐	.....	.....
hatchet head/frag't	☐	.....	.....
secondary flaking	☐	.....	.....
use wear	☐	.....	.....
pebble cortex	☐	.....	.....
microliths	☐	.....	.....
backed blades	☐	.....	.....
geometric microliths	☐	.....	.....
microblade cores	☐	.....	.....
bipolar cores	☐	.....	.....
single platform cores	☐	.....	.....
multiplatform cores	☐	.....	.....
hammerstones	☐	.....	.....
anvil stones	☐	.....	.....
grinding stones	☐	.....	.....
hearth stones	☐	.....	.....
manuports	☐	.....	.....

Abraded/Pecked features

☐ grinding grooves: no. of grooves
 no. of groups
 groove length: max: min:
 groove width: max: min:
☐ channels: no.
☐ other:

(over for site sketch & individual artefact descriptions: art description on separate form)

Nevin Officer Heritage Consultants 1996

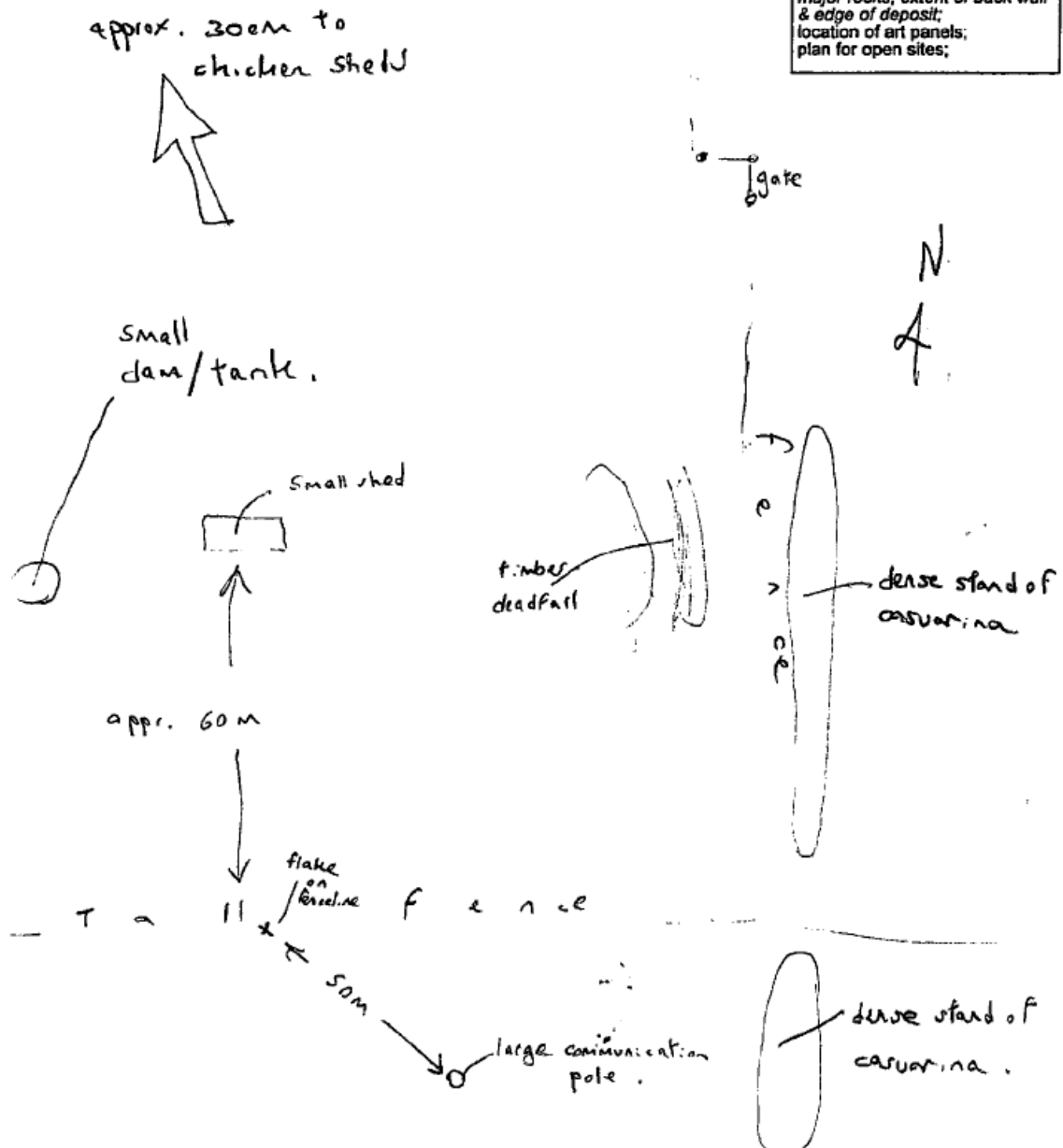
Individual artefact descriptions (up to 10) Notes:

Single grey banded chert flake. Step fracturing evident

L W T
26x18x9 mm.

SITE SKETCHES

Include:
north arrow;
rough scale or measurements;
plan & profile for rock shelters;
for shelters include overhang
extent, dripline (if different),
major rocks, extent of back wall
& edge of deposit;
location of art panels;
plan for open sites;





Office of
Environment
& Heritage

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID:	45-5-5370	Date recorded:	23-10-2020
----------------	-----------	----------------	------------

Site Location Information			
Site name:	BCLL PAD03		
Easting:	290804	Northing:	6246398
Coordinates must be in GDA (MGA)			
Horizontal Accuracy (m):	15		
Zone:	56	Location method:	Phone GPS

Recorder Information		
(The person responsible for the completion and submission of this form)		
Title	Surname	First name
Ms.	Morris	Hannah
Organisation:	GML Heritage	
Address:	372 Elizabeth Street Surry Hills	
Phone:	0452334339	E-mail: hannahm@gml.com.au

Site Context Information		
Land Form Pattern:	Undulating Plain	Land Use:
		Farming Low Intensity
Land Form Unit:	Flat	Vegetation:
		Isolated clumps of trees
Distance to Water (m):	5	Primary Report:
		Badgerys Creek Aboriginal Heritage Report
How to get to the site:	Enter site from Badgerys Creek Rd. Drive east to central creek.	
Other site information:	Heavily impacted area next two western boundary of study area to divert water from natural creek line. Heavily impacted area for the main gravel track.	

Site location map



Site contents information

open/closed site: Site condition:

Features:

1.

Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)
1	1200	200

Scarred Trees			
Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species

Description:

Following former creek on western boundary. Two raised terraces are possible focus for past Aboriginal activities. Possible concentration of Aboriginal objects. Identified on survey. Soil landscape South Creek Alluvium. Revegetated trees along Badgers Creek in the northern section.

Features:

2.

Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)

Scarred Trees			
Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species

Description:

2

Features: 3.	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Scarred Trees</th> </tr> <tr> <th>Scar Depth (cm)</th> <th>Regrowth (cm)</th> <th>Scar shape</th> <th>Tree Species</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </tbody> </table>	Scarred Trees				Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species				
Scarred Trees																
Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species													
Description: 																

Features: 4.	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Scarred Trees</th> </tr> <tr> <th>Scar Depth (cm)</th> <th>Regrowth (cm)</th> <th>Scar shape</th> <th>Tree Species</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> <td style="height: 20px;"></td> </tr> </tbody> </table>	Scarred Trees				Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species				
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Scarred Trees																
Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species													
Description: 																

Other Site Info:	Heavily impacted area next two western boundary of study area to divert water from natural creek line. Heavily impacted area for the main gravel track.
-------------------------	---

Site plan



3

Site photographs



Description: Southern raised terrace, facing east.



Description: Northern raised terrace, facing north



Description: Area of mostly uncleared vegetation along Badgerys Creek.



Description: Mid section of PAD

Site restrictions

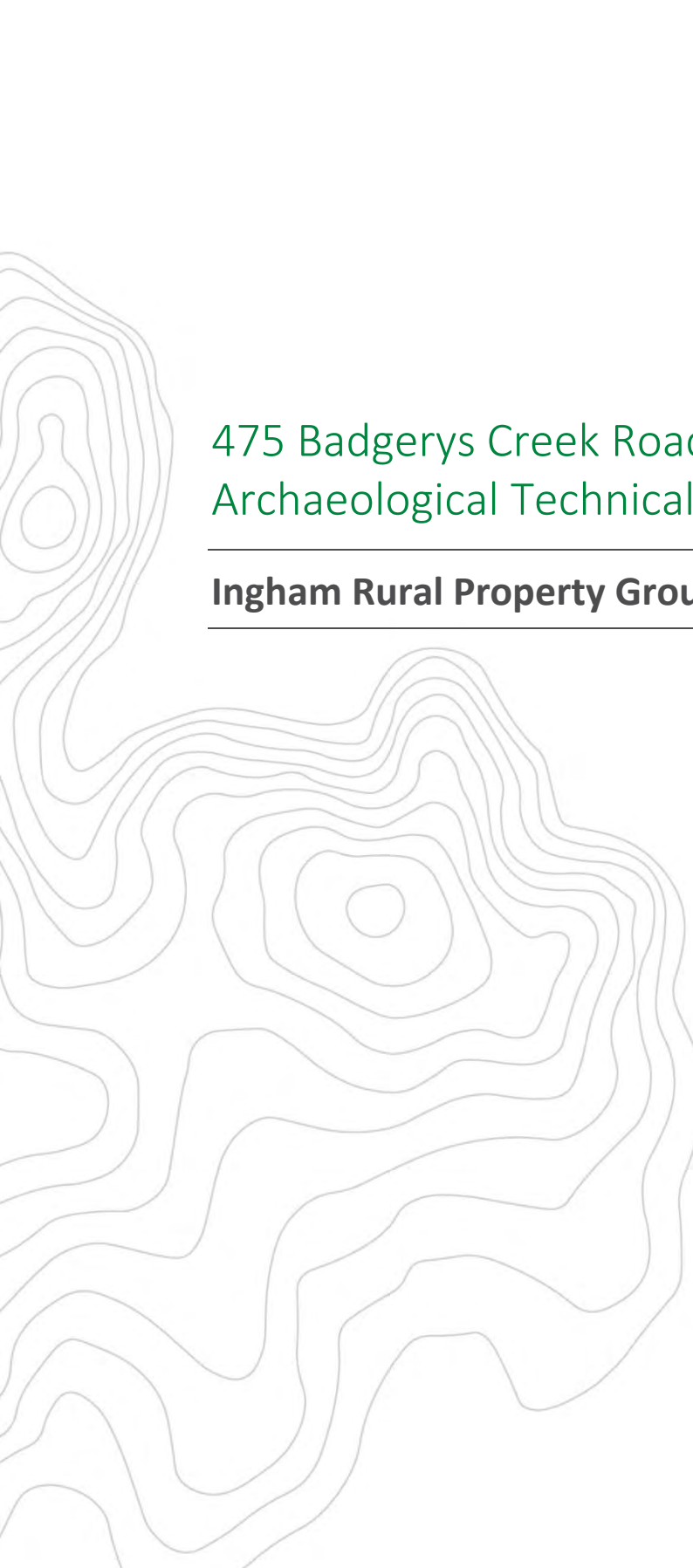
Do you want to Restrict this site?: ☐

Restriction type: Gender ☐ General ☐ Location ☐

Why is this site restricted?:

Further information contact

Title Surname First name
 Organisation:
 Address:
 Phone: E-mail:

A stylized topographic map with green contour lines is positioned on the left side of the page, extending from the top left towards the bottom left.

475 Badgerys Creek Road, NSW – Stage 2 Archaeological Technical Report

Ingham Rural Property Group Pty Limited

DOCUMENT TRACKING

Project Name	475 Badgerys Creek Road, NSW – Stage 2 Archaeological Technical Report
Project Number	SYD21 - 19853
Project Manager	Jennifer Norfolk
Prepared by	Jennifer Norfolk
Reviewed by	Karyn McLeod
Approved by	Karyn McLeod
Status	Final
Version Number	v3
Last saved on	23 November 2023

This report should be cited as ‘Eco Logical Australia, 2023. *475 Badgerys Creek Road, NSW – Stage 2 Archaeological Technical Report*. Prepared for Ingham Rural Property Group Pty Limited.’

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Michael Parkinson of Ingham Rural Property Group Pty Limited.

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Template 2.8.1

Contents

1. Introduction	1
1.1 Project background.....	1
1.2 Study area – Stage 2	1
1.3 Purpose and Objectives of the archaeological assessment	1
1.4 Legislative context	3
1.4.1 National Parks and Wildlife Act 1974	3
1.4.2 Aboriginal Land Rights Acts 1983.....	3
1.4.3 Environmental Planning & Assessment Act 1979	4
1.5 Investigators and contributors.....	4
2. Environmental context	7
2.1 Soil Landscapes	7
2.2 Hydrology	8
2.3 Vegetation	8
2.4 Land use history.....	8
2.5 Summary.....	9
3. Aboriginal context	13
3.1 Ethnohistory	13
3.2 Archaeological context	14
3.2.1 Previous archaeological investigations in the region.....	14
3.2.2 Previous archaeological investigations within the Study Area	16
3.2.3 Database searches	17
3.3 Regional character and predictive model	22
3.3.1 Regional character	22
3.3.2 Predictive models	23
4. Archaeological survey	27
4.1 Purpose.....	27
4.2 Survey strategy	27
4.2.1 Site definition and recording	27
4.2.2 Protocol for recording Potential Archaeological Deposits.....	28
4.3 Survey results	28
4.3.1 Survey coverage.....	34
4.4 Discussion	35
5. Archaeological test excavations	38

5.1 Introduction.....	38
5.2 Research design	38
5.3 Test Excavation methodology.....	38
5.3.1 Test Excavation Area 3.....	39
5.3.2 Test Excavation Area 4.....	39
5.3.3 Stage 1 test pits.....	39
5.3.4 Stage 2 expansion pits	39
5.3.5 General procedures	40
5.3.6 Lithic Analysis	40
5.4 Test excavation results	40
5.4.1 Lithics	43
6. Analysis and discussion	46
7. Scientific values and significance assessment.....	48
7.1 Assessment Criteria	48
7.2 Scientific Significance.....	48
8. Impact assessment	49
9. Mitigation and management	49
9.1 Guiding principles.....	49
9.1.1 Aboriginal Heritage Impact Permit	49
9.1.2 Long term management of test excavation artefact assemblage.....	49
10. Recommendations.....	50
References	51
Appendix A – AHIMS Search Results.....	53
Appendix B – Site Cards	58
Appendix C Artefact catalogue	59

List of Figures

Figure 1: The study area, Stage 2 proposed subdivision area for 475 Badgerys Creek Road.	2
Figure 2: Planning proposal for 475 Badgerys Creek Road (source: Urbis 2023)	6
Figure 3: Soils, hydrology, and elevation within the study area	10
Figure 4: 1961 aerial imagery – limited vegetation has been cleared.	11
Figure 5: 1975 aerial imagery – majority of study area has been cleared and modified for chicken farming.	12
Figure 6: Regional overview of AHIMS sites surrounding the study area	20
Figure 7: AHIMS sites within the study area	21
Figure 8: View south east of South Creek, elevated alluvial landform.	29
Figure 9: View north east open woodland on flat alluvial landform in eastern end of study area.	29

Figure 10: Minor drainage line of South Creek in north of study area.	29
Figure 11: Soil exposure in gully erosion of minor drainage line in the north eastern corner of study area.	29
Figure 12: Extensive disturbance from chicken sheds, view west.	29
Figure 13: Extensive disturbance from artificial drainage lines across the study area, view north.	29
Figure 14: AHIMS ID 45-5-5375, natural shape, no visible lines from any point across the study area ..	30
Figure 15: Open flat landform with AHIMS ID 45-5-5376 in background	30
Figure 16: Ground surfaces and vegetation on top of hill in centre of SU2, view west	30
Figure 17: Sloping landform view east towards South Creek. Low visibility no exposures	30
Figure 18: Soil exposure, shallow A horizon over medium clays with exposed shale bedrock. Surrounding landform has been cut down.	31
Figure 19: Disturbance from levelling from vehicle access and drainage mitigations in north of SU2 ...	31
Figure 20: AHIMS ID 45-5-5374, not culturally modified	31
Figure 21: Soil exposure at location of AHIMS ID 45-5-5373, Aboriginal object not found, soils mixed.	31
Figure 22: Typical surface visibility within study area to the southwest portion of SU3	32
Figure 23: Soil exposure and erosion within the drainage line immediately south of the AHIMS ID 45-5-2660.....	32
Figure 24: Ground surfaces, erosion, and vegetation in the drainage line, location of two artefacts (AHIMS ID 45-5-2660)	32
Figure 25: Red silcrete flakes eroding out of bank at location of AHIMS ID 45-5-2660.....	32
Figure 26: Badgerys Creek at north-western extent of study area, view north showing raised landform	33
Figure 27: View west at northern extent of study area showing sloping landform adjacent to Badgerys Creek	33
Figure 28: View north along western boundary showing heavy landscape modification for property drainage.....	33
Figure 29: Exposed soil profile of excavated drainage line, shallow A1 horizon over a clay rich A2 horizon.	33
Figure 30: Location of AHIMS ID 45-5-2787, view east.....	34
Figure 31: Location of AHIMS ID 45-5-2684, no visibility, view west.....	34
Figure 32: Survey unit and coverage map.....	36
Figure 33: Results of ELA 2021 Survey	37
Figure 33: View north over the testing area adjacent to minor drainage line.....	42
Figure 34: North profile of test pit 1 showing a mixed clay loam over brown friable silty loams and a medium yellow brown clay base.....	42
Figure 35: Area 4–View north west from test area towards Badgerys Creek.....	43
Figure 36: Test pit 7 – North profile – mixed brown clay loams, clear horizon orange medium clay	43
Figure 37: Area 4 test pit 9 – View across transect (TP 5-6)	43
Figure 38: Test pit 12 – North profile of test pit 12, mixed brown clay loams, clear horizon orange medium clay	43
Figure 39: Excavation results for AHIMS ID 45-5-5371	44
Figure 40: Excavation results for AHIMS ID 45-5-5370	45

List of Tables

Table 1: Test excavation field personnel.....	5
Table 2: Cumberland Plain subregion summary (source: NSW Department of Planning, Industry and Environment).....	7
Table 3: Parameters for the AHIMS database search and results	17
Table 4: Frequencies of site types.....	18
Table 5: AHIMS sites within the study area	18
Table 6: Predictive model for the occurrence of archaeological site types in the study area.....	24
Table 7: Interpretive model for examining archaeological assemblages, after Kuskie (2009:81-82).....	25
Table 8: Survey coverage	34
Table 9: Landform summary	34
Table 10: Soil summaries for test pits 1-8 across Area 3	41
Table 11: Soil summaries for test pits 1-20 in Area 4	42
Table 12: Scientific significance assessment	48

1. Introduction

1.1 Project background

Ingham Property Group (the proponent) are proposing to subdivide and develop 475 Badgerys Creek Road, Bradfield NSW. The proposed subdivision will be undertaken in two stages, this assessment will address requirements to inform the Stage 2 Masterplan for the proposed works across the majority of 475 Badgerys Creek Road, Bradfield (hence forth referred to as the study area), excluding the south west corner.

GML 2020 prepared a baseline Aboriginal Heritage Report to inform a master planning proposal for the property identified as Lot 1 DP 1123344. Thirteen sites had previously been recorded on the property comprising stone artefacts and Potential Archaeological Deposits (PAD). GML recorded one additional artefact site and 12 locations with potential cultural heritage values. Two zones for potential future conservation were identified as well as several locations that were considered as archaeologically sensitive.

Ingham Property Group engaged Eco Logical Australia (ELA) to conduct an Archaeological Assessment to document the archaeological values within the study area and to identify any known or unrecorded Aboriginal sites.

This assessment has been undertaken in accordance with Heritage NSW, Department of Premier and Cabinet (Heritage NSW) *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a).

1.2 Study area – Stage 2

This assessment Stage 2 study area comprises the majority of the 475 Badgerys Creek Road, Bradfield NSW (Lot 100, DP1287207) (Figure 1), excluding the south west corner which was assessed in 'Eco Logical Australia, 2022. 475 Badgerys Creek Road, NSW – Stage 1 (Substation) Archaeological Assessment. Prepared for Ingham Rural Property Group Pty Limited.'. The study area covers approximately 165 ha of the property and is on a gently undulating landform that lies between the water ways of Badgerys Creek and South Creek.

The study area is located in the Parish of Bringelly in the County of Cumberland, within the Liverpool Local Government Area (LGA). The study area falls within the Gandangara Local Aboriginal Land Council boundaries.

1.3 Purpose and Objectives of the archaeological assessment

The purpose of the archaeological investigation is to establish whether known or additional unrecorded Aboriginal objects are present within the study area and assess the likelihood of archaeological deposits within the study area and determine whether further archaeological investigation is required and inform the next stage.

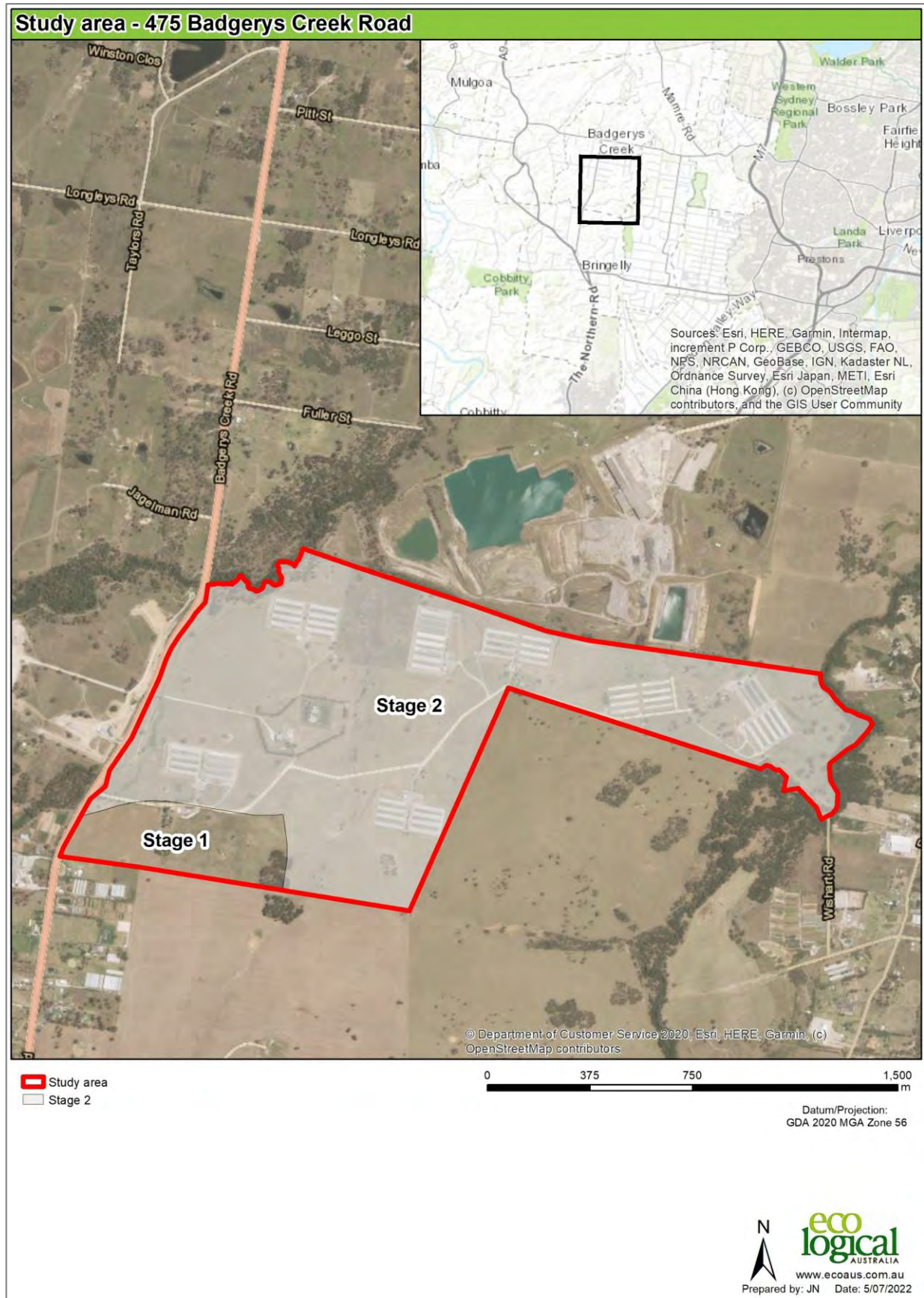


Figure 1: The study area, Stage 2 proposed subdivision area for 475 Badgerys Creek Road.

1.4 Legislative context

1.4.1 National Parks and Wildlife Act 1974

Aboriginal cultural heritage in NSW is afforded protection under the provisions of the *National Parks and Wildlife Act 1974* (NSW) [NPW Act]. The Act is administered by Heritage NSW, which has responsibilities under the legislation for the proper care, preservation, and protection of 'Aboriginal objects' and 'Aboriginal places'.

Under the provisions of the NPW Act, all Aboriginal objects are protected irrespective of their level of significance or issues of land tenure. Aboriginal objects are defined by the Act as, *any deposit, object or material evidence (that is not a handicraft made for sale) relating to Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains)*. Aboriginal objects are limited to physical evidence and may be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects can include scarred trees, artefact scatters, middens, rock art and engravings, as well as post-contact sites and activities such as fringe camps and stockyards. Heritage NSW must be notified about the discovery of Aboriginal objects under section 89A of the NPW Act.

Part 5 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to destroy, deface, damage, or move them from the land. *The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (CoP) (DECCW 2010b) as adopted by the and Wildlife Regulation 2019 (NPW Regulation) made under the NPW Act, provides guidance to individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects. The CoP also determines whether proponents should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the Act. The CoP can be used for all activities across all environments. The NPW Act provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP. However, if an Aboriginal object is encountered in the course of an activity work must cease and an application should be made for an AHIP.

The Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010a) assists in establishing the requirements for undertaking archaeological investigation without an AHIP or establishing the requirements that must be followed when carrying out archaeological investigation in NSW where an application for an AHIP is likely to be made. Heritage NSW recommends that the requirements of this Code also be followed where a proponent may be uncertain about whether or not their proposed activity may have the potential to harm Aboriginal objects or declared Aboriginal places.

1.4.2 Aboriginal Land Rights Acts 1983

The *Aboriginal Land Rights Act 1983* (ALR Act) established Aboriginal Land Councils (at State and Local levels). Division 1A outlines the functions of Local Aboriginal Land Councils and their statutory obligation under the ALR Act to:

- (a) take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and
- (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

The study area is within the boundary of the Gandangara Local Aboriginal Land Council (LALC).

1.4.3 Environmental Planning & Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (NSW) [EP&A Act] requires that consideration is given to environmental impacts as part of the land use planning process. In NSW, environmental impacts are interpreted as including cultural heritage impact. Proposed activities and development are considered under different parts of the EP&A Act, including:

- Major projects (State Significant Development under Part 4.1 and State Significant Infrastructure under Part 5.1), requiring the approval of the Minister for Planning.
- Minor or routine developments, requiring local council consent, are usually undertaken under Part 4. In limited circumstances, projects may require the Minister's consent; and
- Part 5 activities which do not require development consent. These are often infrastructure projects approved by local councils or the State agency undertaking the project.

The EP&A Act also controls the making of environmental planning instruments (EPIs) such as Local Environment Plans (LEPs) and State Environmental Planning Policies (SEPPs). The study area is within the Liverpool LGA and activities undertaken on this land are controlled by *the State Environmental Planning Policy (Western Sydney Aerotropolis) 2020*. SEPPs commonly identify and have provisions for the conservation archaeological sites, Aboriginal objects and Aboriginal places of heritage significance. SEPPs are prepared by the state government to guide planning and management decisions in the LGAs and establish the requirements for the use and development of land. Part 4 (28) of the SEPP *State Environmental Planning Policy* states.

(2) Requirement for consent. *Development consent is required for the following—*

- (c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- (d) disturbing or excavating an Aboriginal place of heritage significance,

1.5 Investigators and contributors

This report has been prepared by Jennifer Norfolk ELA Archaeologist, with review by Karyn McLeod, ELA Principal Archaeologist.

Jennifer Norfolk has an MSc. (Marine Archaeology) from Southampton University. Karyn McLeod has a BA Honours (Archaeology) from the University of Sydney and a MA (Cultural Heritage) from Deakin University.

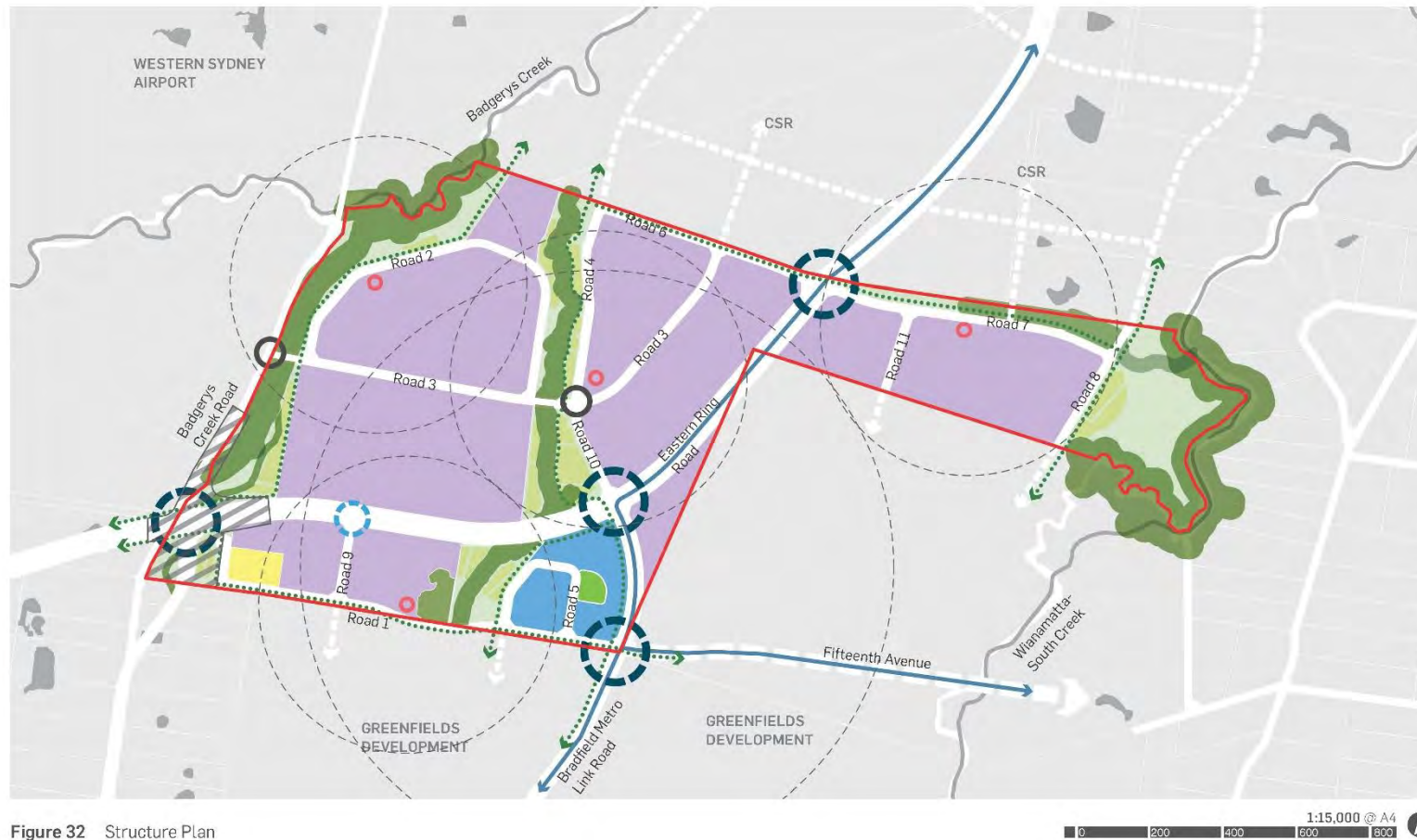
Aboriginal community consultation process is being undertaken in accordance with Heritage NSW *Aboriginal cultural heritage consultation requirements for proponents* 2010 (DECCW, 2010b). The field

survey was undertaken with Heritage Officer Kirsty Chalker of Cubbitch Barta Native Title Claimants Aboriginal Corporation in attendance. Kirsty Chalker provided a report of findings and recommendations from field survey (Appendix B).

Test excavations were conducted by ELA archaeologists with assistance from the following Aboriginal organisations (Table 1) over a period of 2 weeks. Test excavations were directed by Jennifer Norfolk, ELA Archaeologist.

Table 1: Test excavation field personnel

Organisation	Name
ELA Archaeologists	Jennifer Norfolk
	Charlotte Bradshaw
	Kate Storan
	Jessica Horton
Kamilaroi-Yankuntjatjarra Working Group	Ray Adams
	Jamie Currell
	Robert Hunter
Waawaar Awaa Aboriginal Corporation	Todd Hall
	Justin Kennedy



Prepared by Urbis for Ingham Property Group 67

Figure 2: Planning proposal for 475 Badgerys Creek Road (source: Urbis 2023)

2. Environmental context

Landscape, geomorphic history, and extent of disturbance within a given area all play a role in the presence and/or preservation of Aboriginal objects. As outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010a), this section aims to assist in the prediction of:

- The potential of the landscape to contain Aboriginal objects; and
- The ways Aboriginal people have used the landscape in the past, with reference to the presence of resource areas, surfaces for art and other focal points which may have been used for particular activities and settlement; and
- Disturbance, including historical land-use, which may have removed earlier archaeological evidence; and
- The likely distribution of the material traces of Aboriginal land use based on the above.

To investigate these elements, this section focusses on the environmental context of the current study area, including geomorphology and soils, vegetation, hydrology, and previous land use to identify potential disturbance.

The study area is situated within the Cumberland subregion of the NSW Sydney Basin bioregion of NSW. A summary of the geology, landforms, soils, and vegetation typical within this subregion is provided in Table 2 below:

Table 2: Cumberland Plain subregion summary (source: NSW Department of Planning, Industry and Environment)

Cumberland Subregion	
Geology	Triassic Wianamatta groups shales and sandstones. A down warped block on the coastal side of the Lapstone monocline. Intruded by a small number of volcanic vents and partly covered by Tertiary river gravels and sands. Quaternary alluvium along the mains streams.
Characteristic Landforms	Low rolling hills and wide valleys in a rain shadow area below the Blue Mountains. At least three terrace levels evident in the gravel splays. Volcanics from low hills in the shale landscapes. Swamps and lagoons on the floodplain of the Nepean River.
Typical Soils	Red and yellow texture contrast soils on slopes, becoming harsher and sometimes affected by salt in tributary valley floors. Pedal uniform red to brown clays on volcanics. Poor uniform stony soils, often with texture contrast profiles on older gravels, high quality loams on modern floodplain alluvium.
Vegetation	Grey box, forest red gum, narrow-leaved ironbark woodland with some spotted gum on the shale hills. Hard-leaved scribbly gum, rough-barked apple and old man banksia on alluvial sands and gravels. Broad-leaved apple, cabbage gum and forest red gum with abundant swamp oak on river flats. Tall spike rush, and juncus with Parramatta red gum in lagoons and swamps.

2.1 Soil Landscapes

Blacktown (residual) Soil Landscape, dominant soil types include friable greyish brown loam and hard setting brown clay loam overlying strongly pedal mottled brown light clay. Topsoils reach a depth of up to 300mm and contain significant sand and silt content overlying hard-setting clay subsoils. Shallow to moderately deep (<1.5m) soils occur on crests, upper slopes, and well-drained areas. These types of soils

are often shallow and can be significantly disturbed by historical and modern activities. This has significant implications for the survivability of historical and Aboriginal deposits, and it is rare for these types of soils to contain significantly deep, stratified, or old archaeological deposits.

South Creek Alluvial Soil Landscape typically occurs along creek lines associated with large drainage lines within the Cumberland Plain. Soils in this landscape consist of deep, loamy soils atop orange-brown clay. The landscape comprises flat to gently sloping floodplains and valley flats, drainage depressions with occasional terraces or levees. The soil landscape is an active floodplain that is presently reworked by fluvial processes, resulting in streambank and gully erosion periods. Due to consistent exposure to flooding and waterflow soils in this landscape are highly erodible, compromising the stratigraphic integrity of any artefact deposits within these soils.

2.2 Hydrology

The study area is situated between South Creek and Badgerys Creek, both high order systems that run south to north and feed into the Hawkesbury River. Minor tributaries of these two high order streams carve through the study area.

These minor drainage lines are unnamed, have been heavily modified from past land use and have likely been silted due to erosion from the surrounding landscape caused by widescale vegetation clearance. These minor drainage lines are not reliable water sources and are likely seasonal. Across the entire study area large scale drains have been carved into the landform due to the poor drainage characteristics of the study area.

2.3 Vegetation

Across a majority of the study area, native vegetation has been cleared like the rest of the Cumberland Plain since early occupation initially for agricultural and pastoral practices and more recently for residential subdivisions and commercial, and industrial land uses. Few stands of remnant native vegetation remain, and the majority of native vegetation left is from regrowth. Currently the study area is covered in various grass species and non-native shrub and ornamental tree species.

The elevated landscape would have been open woodland with dry sclerophyll forest, the native vegetation would have been dominated by tree species including Grey box (*E. moluccana*) and Forest red gum (*E. tereticornis*). Broad-leaved ironbark, narrow-leaved ironbark, Woollybutt and forest oak would have been less common. The understorey would have hosted various shrub and grass species.

On the floodplains and low lying poorly draining landscape common species would have included Broad-leaved Apple (*Angophora subvelutina*), Cabbage Gum (*E. amplifolia*) and Swamp Oak (*Casuarina glauca*), while tall shrublands of paperbarks and tea trees may occur on more elevated streambanks.

2.4 Land use history

These types of soils are often shallow and can be significantly disturbed by historical and modern activities. This has significant implications for the survivability of historical and Aboriginal deposits, and it is rare for these types of soils to contain significantly deep, stratified, or old archaeological deposits.

The study area was historically used for the grazing of livestock and has undergone localised disturbances. The earliest available aerial imagery from 1955 shows that the area was cleared of the majority of native vegetation and possibly used for pastoral activities. By 1965 the property has been extensively cleared and heavily modified with the construction of vehicle access track, large scale earth movement to form flat stands for chicken sheds. These large stands were raised flat areas to avoid flooding issues and to assist in drainage of the farm, large scale drains were carved across the study area. By 1989 the chicken farm had been established, permanent vehicle tracks and residential structures built. To further help with the poor drainage of the study area the minor tributary along Badgerys Creek Road has been channelised, requiring significant earth movement. The central minor tributary that runs the length through the middle of the study area has drastically changed due to landscape modification, vegetation clearance and siltation from erosion. The vehicle track crossing the central minor tributary has caused the southern area to become waterlogged/ swampy, whereas the northern portion has narrowed and infilled from erosion and destabilisation.

There has been significant disturbance from historical and recent land use.

2.5 Summary

Overall, the environmental characteristics of the study area present moderate sensitivity for evidence of Aboriginal occupation. There is the potential for archaeological deposits in discreet areas that have avoided high levels of disturbance on the relatively flat areas in close proximity to South Creek in the east, Badgerys Creek in the north west and along the minor tributary through the middle of the study area.

As a majority of the study area has been extensively cleared of vegetation, very few trees remain, none of which appear to be old enough to have been culturally modified or scarred. A majority of the study area has undergone moderate to high disturbances associated with the most recent land use as a chicken farm. There are discreet areas of potential for intact soils and sensitive landforms.

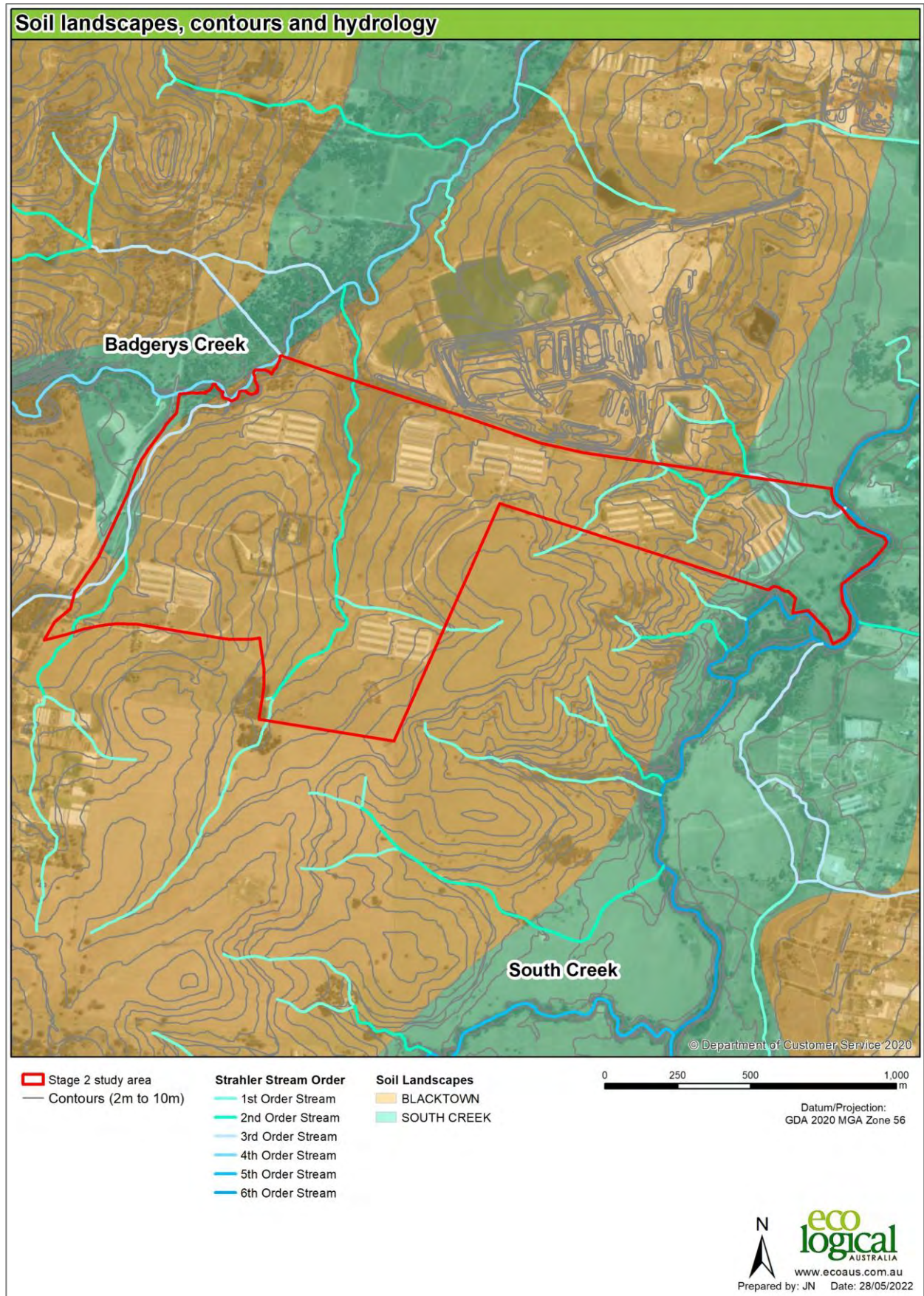


Figure 3: Soils, hydrology, and elevation within the study area

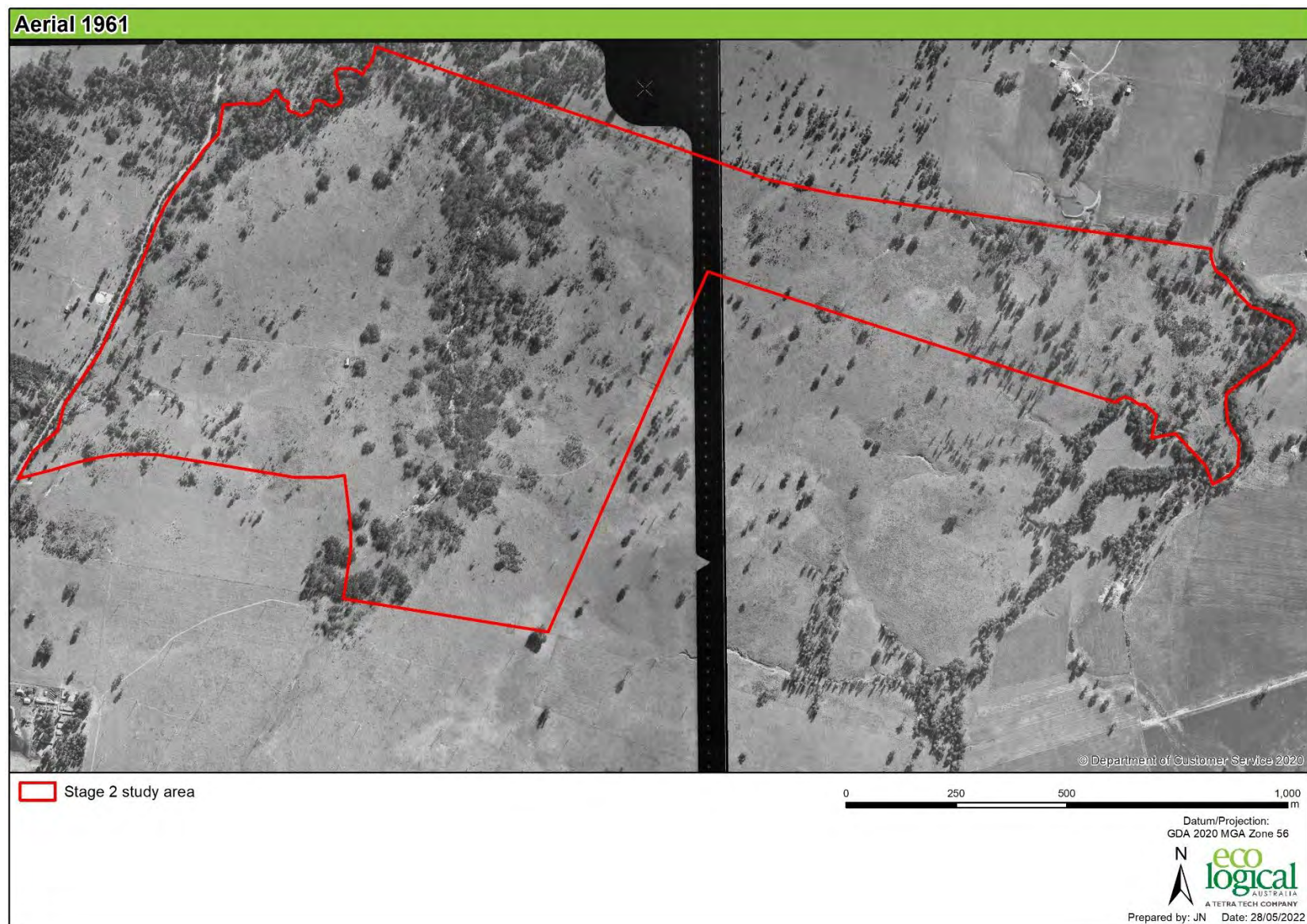


Figure 4: 1961 aerial imagery – limited vegetation has been cleared.



Figure 5: 1975 aerial imagery – majority of study area has been cleared and modified for chicken farming.

3. Aboriginal context

3.1 Ethnohistory

An accurate reconstruction of past lifeways, technologies and land-use patterns of the Aboriginal people who inhabited the Badgerys Creek region is often hindered by a lack of written records and an ethnocentric bias of European settlers. Oral histories by Aboriginal people provide valuable insights into the past, though these are not always available.

Aboriginal people have continuously occupied Australia for at least 65,000 years (Clarkson et al 2017), utilising the land and available resources. Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The earliest undisputed radiocarbon date from the Sydney region comes from a rock shelter site north of Penrith, Shaw's Creek, dated to around 14,700 BP (Attenbrow 2010). Alternate artefactual evidence found on the Nepean River suggests Aboriginal people have occupied the Sydney region for at least 40,000 years (Nanson *et al.* 1987; Stockton & Holland 1974).

Badgerys Creek lies within a transitional area between the tribal boundaries of the Dharug, Dharawal and Gundungurra language groups (Attenbrow, 2002). The precise geographical boundaries between these three groups cannot be clearly defined due to the limitations of historical records (Kohen and Lampert 1987), however the study area (present-day Penrith and Liverpool LGAs) is now generally considered to have been occupied by Darug-speaking clans (Attenbrow 2010). Anthropologist R.H. Matthews writes:

"The Dharukk speaking people adjoined the Thurrawal on the north, extending along the coast to the Hawkesbury River, and inland to what are now Windsor, Penrith, Campbelltown, and intervening towns." (Matthew, 1901d: 55 in Attenbrow, 2010: 32)

The Darug people were semi-nomadic hunter gatherers who utilised available resources, including the various animals and plants in the region. Aboriginal people hunted wallabies, kangaroos, possums, flying foxes, birds and fish and collected wild honey and yams, which also served as important food sources. Family groups belonged to clans who were united by languages and cultural affinities and had ties to specific areas of land.

The arrival of European settlers severely impacted the lives of the local Aboriginal populations as it led to a smallpox epidemic which spread to neighbouring regions and killed over half of the Aboriginal population in the Sydney Basin region (Organ, 1990) and led to significant social restructuring. In the Cumberland Plains region, European graziers slowly took over the traditional Aboriginal land, creating a competition for resources, widespread social disruption to traditional ways of life and ultimately led to a disconnection of local Aboriginal people from their traditional lands. Some Aboriginal people remained and continued to live a semi-traditional life on the peripheries of European settlements until at least the mid-1800s, despite the impacts to their traditional ways of being (Attenbrow, 2002).

3.2 Archaeological context

3.2.1 Previous archaeological investigations in the region

Several archaeological assessments have been carried out in the wider Greater Western Sydney region in recent years as there has been an increasing number of residential developments in the area. The most relevant investigations to this project will be summarised below.

AUSTRALIAN MUSEUM CONSULTING 2014, ENVIRONMENTAL SURVEY OF COMMONWEALTH LAND AT BADGERYS CREEK: ABORIGINAL HERITAGE. CONSULTANCY REPORT TO SMEC AUSTRALIA.

Australian Museum Consulting (AMC) prepared an environmental survey of Commonwealth owned land at Badgerys Creek for SMEC Australia Pty Ltd, on behalf of the Western Sydney Unit of the Department of Infrastructure and Regional Development. The report assessed the condition of specific environmental aspects with a particular focus on Aboriginal cultural heritage over a large area located immediately to the study areas southwest.

The report detailed the findings of previous environmental investigations undertaken during the 1980s and 1990s. These assessments had previously identified 60 Aboriginal heritage sites, comprising open artefact scatters, scarred trees, and isolated artefacts. Of these, 23 Aboriginal heritage sites were identified within areas of moderate and high archaeological potential, associated primarily with minor and secondary creek corridors. AMC 2014 conducted a targeted survey of these moderate and high potential sites and confirmed their condition and scientific potential.

The assessment made the follow recommendations:

- Aboriginal community consultation.
- An additional Aboriginal heritage survey to identify and record a representative sample of material traces and evidence of Aboriginal occupation within the Badgerys Creek area.
- Full archaeological survey of all landforms.
- A program of archaeological test and salvage excavations throughout impact areas.

AMBS, 2012. INDIGENOUS HERITAGE ASSESSMENT PROJECT: AUSTRAL AND LEPPINGTON NORTH PRECINCTS, SOUTH WEST GROWTH CENTRES. PREPARED FOR THE NSW DEPARTMENT OF PLANNING AND INFRASTRUCTURE.

Australian Museum Business Services (AMBS) was commissioned by the NSW Department of Planning and Infrastructure to prepare an Aboriginal heritage assessment for the Austral and Leppington North Precincts of the South West Growth Centres located 3 km to the west of the study area.

The AMBS study was important for the establishment of areas of archaeological potential in the Austral and Leppington North Precinct and its contribution to predictive modelling for artefact distribution and density within the area. This model is based primarily on proximity to water courses and the level of ground disturbance within an area. AMBS defined disturbance areas in Austral and North Leppington as:

- High disturbance – “road corridors, underground gas pipelines, dams, and properties classified as childcare centres, churches, commercial, community halls, industrial, market gardens,

poultry, Rebels club, residential/retirement village and schools, as well as the SWRL corridor which will be constructed in the near future”.

- Moderate disturbance – “Transmission lines and properties classified as dual occupancy/large residential”.
- Low disturbance - “Properties classified as parks, significant vegetation / bushland, and vacant / grazing/ developable.”

The AMBS report recommended that conservation zones be established for areas of moderate and high archaeological potential. Where this is not possible, detailed Aboriginal heritage impact assessments of site-specific development areas was recommended to be undertaken including, if necessary, archaeological test excavation.

ARTEFACT HERITAGE, 2012. THE NORTHERN ROAD UPGRADE FROM THE OLD NORTHERN ROAD, NARELLAN TO MERSEY RD, BRINGELLY – ABORIGINAL ASR. PREPARED FOR ROADS AND MARITIME SERVICES.

Artefact Heritage were previously engaged by Sinclair Knight Merz, on behalf of the NSW Roads and Maritime Services (RMS), to conduct an Aboriginal archaeological survey and assessment report for the proposed upgrade of the Northern Road. The proposed upgrade included 15km of the Northern Road between the Old Northern Road, Narellan and Mersey Road, Bringelly located 2.5km south of the study area.

An initial desktop assessment, including an extensive search of the AHIMS database, identified eighteen Aboriginal sites within the area of investigation. Fourteen previously unrecorded Aboriginal sites were identified during the site survey, with two of the sites being re-recordings of previous sites. Five of the sites were artefact scatters and nine were isolated finds. Four previously recorded sites and PADs within the study area were found to be either destroyed or disturbed and five were found to be subject to existing AHIPS.

The survey resulted in the identification of twenty four Aboriginal sites within the study area, with seven sites located more than 20m outside of the study area and two new sites more than 50m outside. Fifteen sites were identified as being directly impacted by the proposal. Ten sites were assessed as having a low archaeological significance and five were assessed as having a moderate archaeological significance.

Recommendations included that salvage excavations be conducted for the five sites with moderate archaeological significance that could not be avoided by the proposed works and that an Aboriginal Heritage Impact Permit (AHIP) be sought prior to any impacts.

NICHE ENVIRONMENT AND HERITAGE, 2019. ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT SOUTH CREEK WEST PRECINCT (SOUTH-WEST) RELEASE AREA REZONING, THE NORTHERN ROAD BRINGELLY, NSW. PREPARED FOR BHL GROUP.

Niche Environment and Heritage (Niche) was previously engaged by Boyuan Holdings Limited (BHL Group) to conduct an Aboriginal Cultural Heritage Assessment Report for the rezoning of the South Creek West Release Area (South-West) Precinct, 5km south of the study area. The report comprised five separate lots that were zoned for primary production and had been used for agriculture, primarily cattle grazing. Previous archaeological assessments, the desktop assessment and visual inspection that was completed for the report indicated that the proposed rezoning of the study area could potentially impact

five registered AHIMS sites (AHIMS ID 45-5-3359, AHIMS ID 45-5-5282, AHIMS ID 45-5-3542, AHIMS ID 45-5-4139 and AHIMS ID 45-5-3543).

A desktop assessment found several landscape features, including raised level creek terraces along tributaries of Cobbitty, South and Lowes Creek that had the potential to yield surface and or buried Aboriginal objects. Due to the proximity of permanent water sources and the landscape, the study area was considered to have a high archaeological potential. However, according to previous investigations and predictive models, the wider region was thought to have been sporadically used by past Aboriginal people.

3.2.2 Previous archaeological investigations within the Study Area

GML HERITAGE, 2020. *BADGERYS CREEK ABORIGINAL HERITAGE REPORT. UNPUBLISHED REPORT PREPARED FOR LEND LEASE*

In 2020, GML was commissioned by Lendlease to prepare a baseline Aboriginal heritage report that informed the master planning proposal for the future development of 475 Badgerys Creek Road, Badgerys Creek, of which the current study area occupies the southwest extent.

The desktop assessment identified 13 existing AHIMS sites within the study area, including isolated finds, open artefact sites and areas of associated PAD. An archaeological survey conducted with representatives of the registered Aboriginal party Cubbitch Barta identified 7 new Aboriginal sites including three areas of PAD, two ring trees, one scar tree and one isolated artefact. The survey also identified two terraces that formed part of the area of PAD as well as a viewpoint that provided views of the surrounding landscape and the Blue Mountains.

The assessment recommended that an ACHA be conducted for the property, including archaeological test excavation and the implementation of Aboriginal Culture and Heritage Interpretation into the final design of the development. The assessment also recommended two discrete areas of PAD be allocated as primary conservation zones in line with exiting riparian corridor and biobanking zones.

EXTENT HERITAGE 2020, *WESTERN SYDNEY AEROTROPOLIS INITIAL PRECINCTS DRAFT ABORIGINAL AND NON-ABORIGINAL CULTURAL HERITAGE ASSESSMENT PREPARED FOR WESTERN SYDNEY PLANNING PARTNERSHIP*

In 2020, Extent Heritage Pty Ltd was commissioned by the Western Sydney Planning Partnership to prepare an Aboriginal and non-Aboriginal Cultural Heritage Assessment for the initial precincts within the Western Sydney Aerotropolis. This high-level assessment of precincts within the Aerotropolis growth areas includes the current study area.

The report's desktop assessment includes a review of previous archaeological studies in the region, historical research, preliminary cultural values mapping, and desktop research. The report identified three registered Aboriginal sites that imposed specific constraints on the proposed works, and one that may impose specific constraints on the proposed design works, depending on the results of further investigation. Given their sensitive nature, details of the sites have been redacted.

Aboriginal community consultation undertaken as part of the report included the formation of a focus group of Elders and knowledge holders comprising the primary traditional owner representatives of Darug and Dharawal descendants as well as the Local Aboriginal Land Councils whose land includes portions of the

Aerotropolis study area. Consultation included a cultural values mapping workshop aimed at identifying and understanding key social, cultural and intangible values associated with the Aerotropolis region and to identify how the RAPs would like these values to be conserved, remembered and managed throughout this project and into the future. Key issues identified through consultation included:

- further archaeological investigations
- conservation of key well-preserved landforms, sites and scarred trees
- establishment of a repatriation area for recovered artefactual material
- Aboriginal naming of places within the Aerotropolis
- further consultation and workshops with a wider group of Aboriginal stakeholders
- Aboriginal stakeholder involvement in the development of interpretive stories and media for the precincts
- Additional on-site investigation and face-to-face consultation with Aboriginal stakeholders when the public health situation present at the time of the report would allow.

The assessment of Aboriginal heritage within the study area is an ongoing process that will require continuous consultation with the Aboriginal community and additional field survey and archaeological investigation.

3.2.3 Database searches

AHIMS SEARCH

The Aboriginal Heritage Information Management System (AHIMS) database is maintained by Heritage NSW and regulated under Section 90Q of the *National Parks and Wildlife Act 1974*. The AHIMS database holds information and records regarding the registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places that exist in NSW.

A search of the AHIMS database was conducted on 23 August 2021 (Search ID 615973) to identify if any registered Aboriginal sites were present within the study area (Appendix A). The search covered 4 km surrounding the study area to understand the known archaeological resource and provide an understanding of the types of features that might be present in the current landscape.

Table 3: Parameters for the AHIMS database search and results

Search Parameters		Search Result	
GDA Zone	56	Aboriginal sites recorded	76
Eastings	289875 - 293875	Aboriginal places declared	0
Northings	6244469 - 6248469		
Buffer	0m		

The extensive search identified a total of 76 Aboriginal sites within the search parameters. The vast majority of Aboriginal sites within the search parameters are artefact scatters or isolated finds (88%).

The distribution of recorded Aboriginal sites adjacent to the study area is shown in Figure 7. The frequencies of site types and contexts recorded within the AHIMS database search area are listed below.

Table 4: Frequencies of site types

Site Features	Number	%
Artefact	65	88
Modified Tree (Carved or Scarred)	5	6.7
Potential Archaeological Deposit (PAD)	3	4
Grinding Groove	1	1.3
Total	74	100

Eighteen (18) Aboriginal sites have been identified by the AHIMS search as located within the study area (Table 5) with an additional five (5) sites located in the immediate vicinity of the study area. Two AHIMS sites (AHIMS ID 45-5-2686 and AHIMS ID 45-5-2684) have the incorrect coordinates and are located north of the study area.

Table 5: AHIMS sites within the study area

AHIMS ID	Site name	Description
45-5-2660	B64	This site is an isolated artefact recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location of the isolated find is described as being embedded 50cm down in the soil profile of a creek bank of the drainage channel that runs north to south through the study area. The isolated find is described as a white chert core.
45-5-2661	B63	This site is an artefact scatter recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The artefact scatter includes three (3) quartz flakes.
45-5-2662	B61	This site is an isolated artefact recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location of the isolated find is described as approximately 300 m south of chicken sheds, within area of disturbance (burial pit for dead cow) east of a creek line.
45-5-2669	B96	This site is an artefact scatter recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location of the artefact scatter is described as within a watering place for stock adjacent to a creek line. The artefact scatter consists of two artefacts – one yellow/orange tuff flaked piece and one grey coarse granite flake. The scatter is located 2-5 cm below uneroded grassed creek bank.
45-5-2672	B97	This site is an artefact scatter recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The site card contains little information pertaining to the location of the scatter other than the coordinates. The scatter is comprised of two artefacts – one silcrete and one tuff. The artefact types are not specified; however, it is specified that one flake and one flaked piece represented in the scatter.
45-5-2674	B100	This site is an artefact scatter recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location of the scatter is described as being on a road verge within a gravelled road. The scatter is comprised of two artefacts – one cream chert fragment and one yellow mudstone fragment.
45-5-2780	B65	This site is an isolated artefact recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The site card identifies the site as being located within an exposed vehicle track north of a fence line and south of chicken sheds. The artefact is described as a light grey volcanic flake found approximately 30cm into the soil profile.

AHIMS ID	Site name	Description
45-5-2786	B 109	This site is an artefact scatter recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location of the scatter is described as being immediately west of a gravel road. The scatter consists of two red silcrete flakes.
45-5-2787	B 110	This site is an isolated artefact recorded by Navin Officer Heritage Consultants (1997) as part of an EIS for a second Sydney airport. The location is described as being in close proximity to a blue gum tree and south-east of the house located within the property. The isolated artefact was described as a red silcrete flaked piece.
45-5-5370	BCLL PAD03	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The PAD is described as being on a flat within an undulating plain within 5 m of water and located across two raised terraces noted as potential locations for past Aboriginal activity with possible concentrations of Aboriginal objects.
45-5-5371	BCLL PAD02	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The PAD is located across two sides of an unnamed creek line than runs through the centre of the study area. The site card notes one raised terrace as being a possible focus for past Aboriginal activities.
45-5-5372	BCLL PAD01	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The PAD is located on western side of South Creek within the study area with two raised terraces with old growth trees.
45-5-5373	BCLL IF01	This site is an isolated artefact recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The isolated find is described as being located on a slope next to disturbed land, approximately 5 m from west of track leading into former poultry shed. The site card does not include a description of the artefact.
45-5-5374 ***	BCLL ST01	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The modified tree is described as being located to the north of a gravel road in an area that has been predominately stripped. The scar is described as 80cm above the base of the tree, west-facing with straight sides with cut marks across the base. The species is listed as box and the condition of the tree is poor.
45-5-5375 ***	BCLL RT01	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The modified tree is described as being located near earth works on the western bank of South Creek. The 'ring' is with a red gum 4 m from base.
45-5-5376 ***	BCLL RT02	Recorded by GML (2020) as part of the Badgerys Creek Aboriginal Heritage Report. The modified tree is described as being located between two raised terraces in close proximity to South Creek. The modified tree is described as a 'ring tree' with two rings starting at 1.3m from base.

*** It was recommended that these sites be inspected by an arborist to ascertain the age of the trees. ELA engaged an Archaeologist and Arborist to inspect the trees and it was determined.

AHIMS ID 45-5-5374 - is not a culturally scarred tree. The arborist aged the tree between 80 to 100 years, the scar's regrowth was approximately 30 years.

AHIMS ID 45-5-5375 and AHIMS ID 45-5-5376 – these two trees have been registered as ring trees. They are not culturally modified (Carved or Scarred) trees. The naturally formed trees have young growth branches forming a space between fused limbs. The young growth branches are approximately 20 years old.

Through Aboriginal stakeholder consultation in the field, it was also confirmed the trees were not culturally modified and had no views to and from any landscape features.

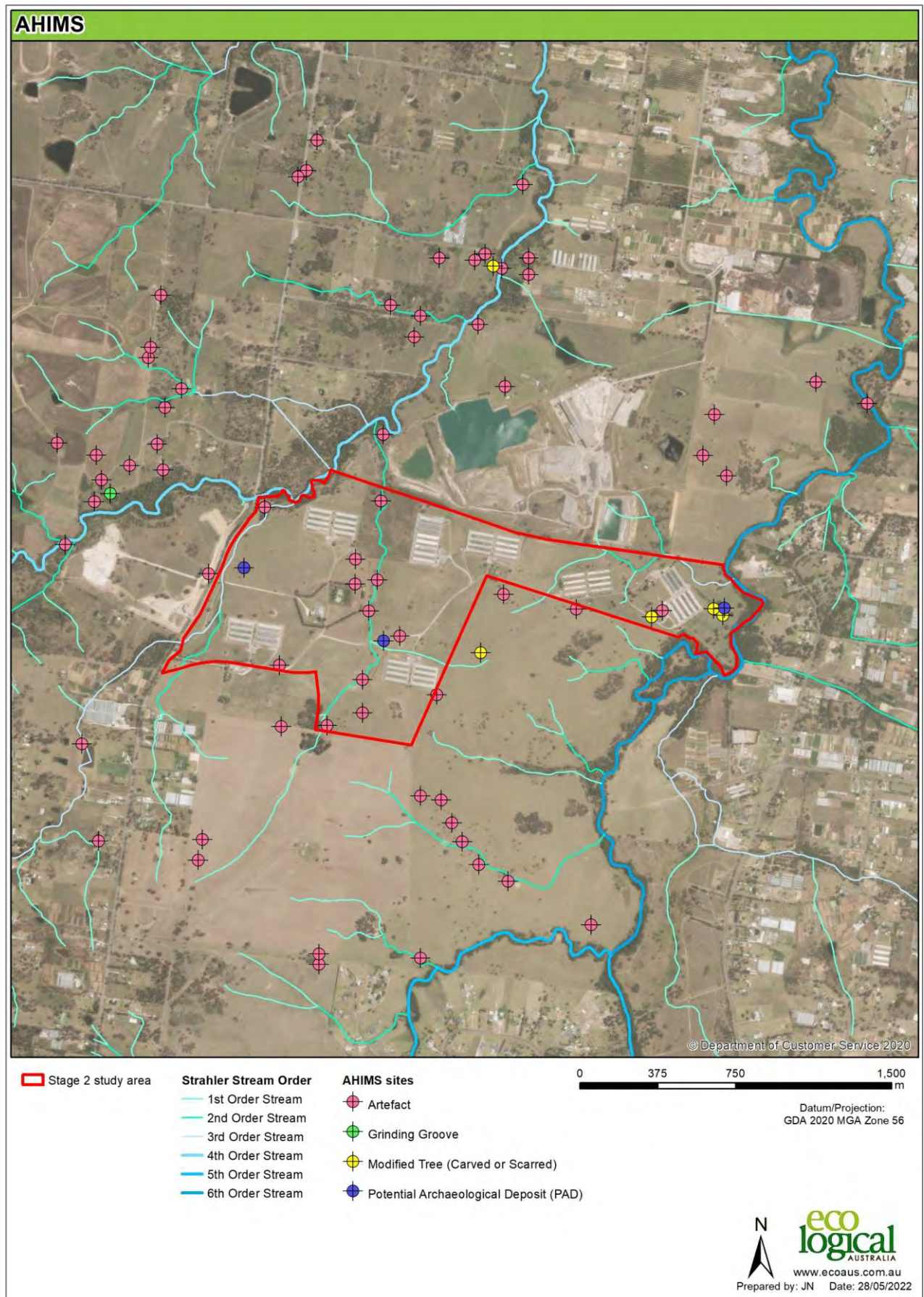


Figure 6: Regional overview of AHIMS sites surrounding the study area

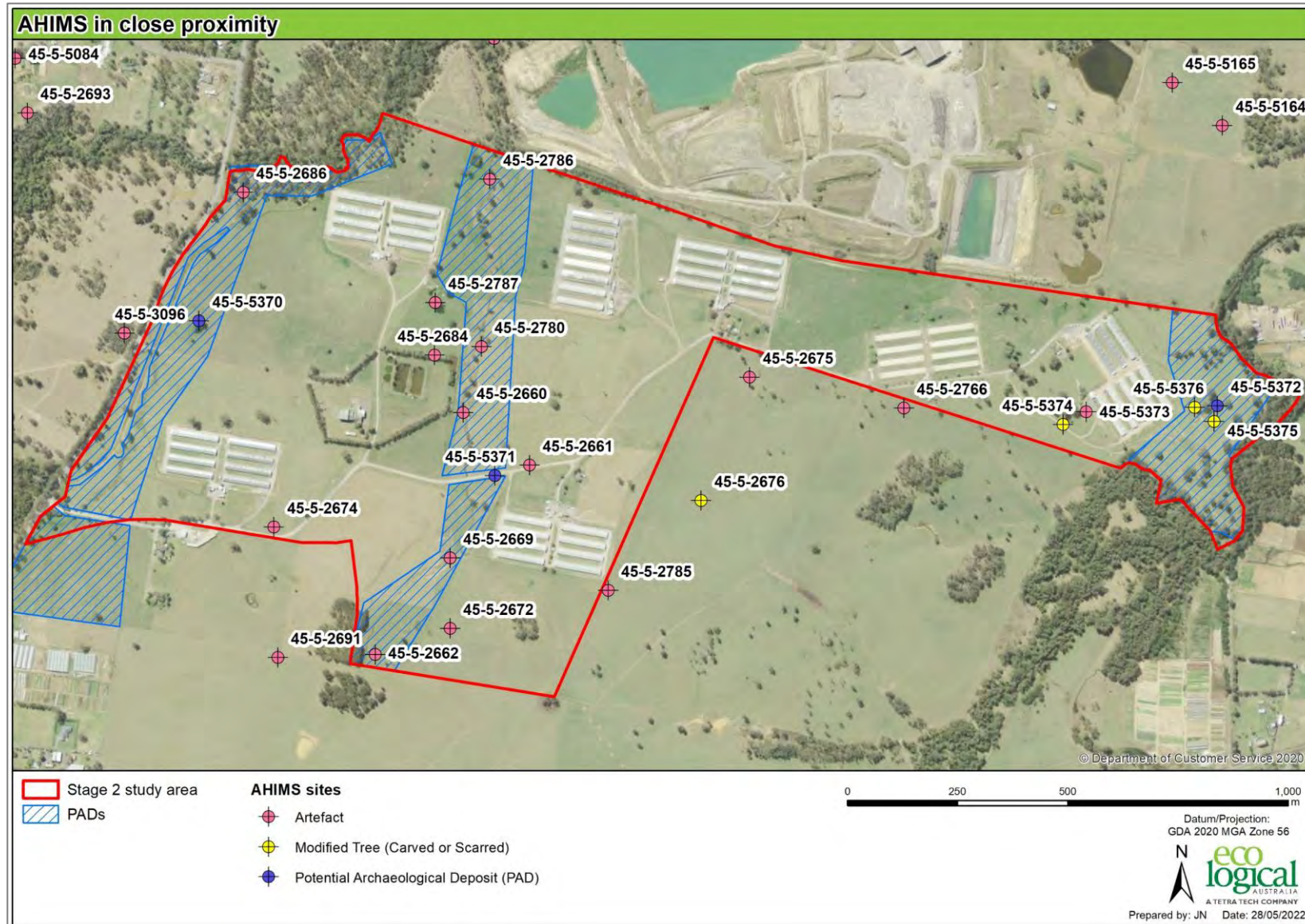


Figure 7: AHIMS sites within the study area

3.3 Regional character and predictive model

3.3.1 Regional character

Previous archaeological assessments across the region provide important data on Aboriginal archaeological site distribution and typology from which an understanding of the archaeological landscape within the study area can be developed.

Aboriginal occupation in the Sydney region encompasses at least 20,000 years with dates of 13,000 Before Present (BP) at Shaws Creek in the Blue Mountain foothills; 11,000 BP for Mangrove Creek and Loggers Shelter and c. 20,000 BP at Burrill Lake on the South Coast (Attenbrow 2002). The majority of sites in the Sydney region have been dated to within the last 3,000 to 5,000 years, with many researchers proposing that occupation intensity increased from this period. This apparent intensity of occupation may have been influenced by rising sea levels which by about 6,500 years ago had risen to their present levels.

Open artefact sites and artefact scatters are the most common site types identified within the Cumberland Plain (Artefact 2012). These sites are most commonly found in landforms associated with permanent water sources, such as river banks and alluvial flats (White and McDonald 2010).

Large, concentrated assemblages are more likely to be located within resource rich areas (AMC 2014). Complex sites, containing multiple artefact types and archaeological features, are often located in close proximity (~150m) to permanent water sources (Niche 2019). The confluence of creek lines could provide focal points for occupation and the size of the stream's Strahler order could influence the size of the assemblages present (Niche 2020). The crests of hills and ridge tops also have the potential to contain larger sites (AMBS 2012).

Low density assemblages of artefacts are also located in close proximity to reliable water sources. Whilst these sites can represent smaller or less frequent instances of occupation, disturbances from historic land use and erosion can also affect artefact count (Niche 2019).

The majority of artefact assemblages are comprised primarily of unretouched flakes and debitage, with a smaller percentage of formal tool types being present (AMBS 2012). The most common raw material used to manufacture tools is silcrete (Niche, 2019, Artefact 2012), followed by tuff/chert (AMC 2014). Silcrete sources are generally located in the north western Cumberland Plain.

Areas with few or no sites identified on the surface have often been shown to contain subsurface archaeological deposits and the distribution of surface artefacts is not a reliable indicator of an area's archaeological potential (Niche 2019). PADs are most likely to be located along valley floors and low slopes and ridgelines between flat landforms (GML 2020) and possess low-to-moderate density archaeological deposits (AMC 2014). Sites situated in the alluvial soils of the South Creek Soil Profile have the potential for stratified deposits (GML 2020), however; low-lying, flood prone areas are unlikely to have been used extensively for camping (Steele 2001 in AMC 2014).

Instances of old growth vegetation are present in the region and have the potential to contain culturally modified trees (Artefact 2010). However, such instances are rare as large-scale land clearance has removed the majority of old growth vegetation from the Cumberland plain (AMC 2014).

3.3.2 Predictive models

A commonly utilised tool in the planning and management of Aboriginal cultural heritage are predictive models. These models aim to identify specific landforms and places within the landscape which may contain archaeological material. They usually begin as geographically broad models, constructed through extensive reviews of the available literature to determine basic patterns of site distribution, before being refined according to the specific landform and environmental characteristics of the study area.

Predictive models are almost solely based upon a cultural ecological perspective of the landscape: landforms and environmental characteristics provided a distinct set of subsistence constraints, meaning the landscape could only be occupied in particular ways in order to minimise distance to potable water, maximise biodiversity, and provide shelter from the elements. Accordingly, there is an expectation that land use patterns vary between separate environmental zones due to differing constraints and that this will manifest in alternate spatial distributions of archaeological material. While some social factors may have influenced communities to venture through certain landscapes, other social factors may have resulted in the avoidance of landscapes, regardless of environmental conditions. Due to this, to understand the cultural context of a certain landscape consultation with local Aboriginal knowledge holders and community members is essential.

SITE TYPES

There are several common Aboriginal cultural heritage site types that may be found in the study area.

Open camp sites / stone artefact scatters represent past Aboriginal subsistence and stone knapping activities and may include archaeological remains such as stone artefacts and hearths. This site type usually appears as surface artefact scatters in areas where vegetation is limited, and ground surface visibility is high. They are also often exposed by erosion, agricultural events (such as ploughing), and the creation of informal, unsealed vehicle access tracks and walking paths. Open campsites are often located on dry, relatively flat land along or adjacent to rivers and creeks. Sites that contain surface or subsurface deposits resulting from repeated or continuous occupation are more likely to occur on elevated ground near permanent, reliable water sources. Flat, open areas associated with creeks and their resource-rich environments would have offered ideal camping areas to the Aboriginal inhabitants of the local area.

Isolated artefacts may represent a single item discard event or the result of limited stone knapping activity. The identification of isolated artefacts may indicate the presence of a more extensive, subsurface *in situ* archaeological deposit, or a larger deposit obscured by low ground visibility. Isolated artefacts are likely to be located on landforms associated with a range of activities, such as ridge lines that would have provided ease of movement through the area and level areas with access to a water source. Artefact scatters and isolated artefacts are the most common site types found in association with fresh water and/or food resource gathering areas.

Potential Archaeological Deposit (PAD) are areas where there is no surface expression of stone artefacts, but, due to a landscape feature or isolated artefact, there is a strong likelihood that the area will contain subsurface *in situ* archaeological deposits. Landscape features that may indicate a PAD include proximity to reliable water sources, particularly terraces and flats, ridge lines and ridge tops, and sand dune systems.

Culturally modified trees exhibit evidence of the deliberate removal of the *periderm* (outer bark), *phloem* (inner bark), and, in some cases, the sapwood. These materials can be used to manufacture a variety of items, including shields, Coolamon (bowls or trays), watercraft, containers, and a range of wooden tools and implements. Trees may also have been scarred in order to gain access to food resources (such as cutting toe-holds so as to climb the tree and catch possums or birds) or to mark locations (such as tribal territories). In some instances, Aboriginal people marked important features or locations (such as ceremonial grounds) by carving patterns or motifs into the sapwood of established trees or bending and grafting the branches of saplings to create rings.

Grinding grooves are the physical evidence of tool making or food processing activities undertaken by Aboriginal people. The manual rubbing of stones against other stones creates grooves in the rock; these are usually found on flat areas of abrasive rock such as sandstone in close proximity to water courses.

Bora grounds / ceremonial sites are locations that have spiritual or ceremonial values to Aboriginal people. Such sites may comprise natural or altered landforms and, in some cases, will also contain archaeological material. For example, bora grounds are a ceremonial site type usually consisting of a cleared area around one or more raised earth circles connected by a pathway. Bora grounds are often accompanied by ground drawings or mouldings of people, animals or deities, or geometrically carved designs on the surrounding trees.

Burials often took place in proximity to camp sites, as most people tended to die in or close to camp and it is difficult to move a body over a long distance. Soft, sandy soils on or close to rivers and creeks allowed for easier removal of earth for burial. Similarly, rock shelters or middens also provided accessible burial places. Burial sites may be marked by stone cairns, modified trees, or a natural landmark. They may also be identified through historic records or oral histories.

Contact / historical sites can include a wide variety of sites and may be identified through artefactual evidence or oral histories. Artefacts located at such sites may involve the use of introduced materials such as glass or ceramics or may have social significance regarding the interaction between Aboriginal people and European settlers.

SITE OCCURRENCE

Based on the results produced from the landscape assessment, searches of the AHIMS and state heritage registers, and examination of the regional and local Aboriginal archaeological context, the below predictive model (Table 6) has been designed for the study area.

Table 6: Predictive model for the occurrence of archaeological site types in the study area

Site Type	Description	Likelihood of occurrence
Open camp sites / stone artefact scatters / isolated finds	Artefact scatters and isolated artefacts are the most common site types found in association with fresh water, and/or food resource gathering areas. Artefact scatters and isolated finds are reported to be the most common archaeological site type in the study area.	High
Potential Archaeological Deposits	The study area is a landform that could be considered to be potentially archaeologically sensitive	Moderate
Culturally modified trees	Culturally modified trees may be present wherever tree specimens of an appropriate age are present. Widespread land clearing has been undertaken within the study area.	Low

Site Type	Description	Likelihood of occurrence
Axe grinding grooves	Although the study area is in proximity to a watercourse, the underlying geomorphology of the study area is not conducive to this site type, no naturally exposed bedrock	Low
Bora grounds / ceremonial sites	There is a low reported incidence of ceremonial sites in proximity to the study area.	Low
Burials	There is a low reported incidence of burial sites in proximity to the study area. The Blacktown soils are shallow, and it is unlikely that this site type would be present.	Low
Contact / historical sites	Contact sites may occur in any area where Aboriginal people encountered early European settlers.	Low

ARCHAEOLOGICAL ASSEMBLAGES

Kuskie (2009:81-82) describes an interpretive model for examining the archaeological assemblages that are expected to result from varying cultural, behavioural, and subsistence activities associated with the above site types (Table 7). Whilst this model is useful for making inferences concerning the activities that were likely occurring in a specific study area, the effects of taphonomic and depositional processes on a given assemblage must be considered. It is likely that Aboriginal people primarily worked with organic materials (such as wood, bark, resin, leaves, reeds, shell, and bone; Holdaway and Stern 2008:1-2). Resultingly, due to the durability of stone and the rare preservation of organic materials, the archaeological record of Aboriginal culture is incomplete. Hence, interpretations regarding the significance of certain sites and assemblages must be considered as based on incomplete data.

Table 7: Interpretive model for examining archaeological assemblages, after Kuskie (2009:81-82).

Activity	Likely associated archaeological assemblage
Ceremonial activities	Presence of ochre in sites; and Evidence of ceremonial sites (such as bora grounds, stone arrangements, carved trees, or rock engravings).
Spiritual, social, and other activities	Presence of ochre in sites; or Evidence of ceremonial sites (such as bora grounds, stone arrangements, carved trees, or rock engravings); and Rock art and engravings.
Food procurement	Stone artefacts (such as eloueras); or Wooden implements (such as digging sticks), where preserved; and Food refuse (such as shell or bone).
Food processing and consumption	Tools with specific use-wear/residues on cutting/chopping/pounding edges; or Specific tools that are related to processing certain foods (such as eloueras or seed grinding slabs); or Evidence associated with hearths or ovens; and Food refuse (such as shell or bone).
Production and maintenance of wooden implements	Stone and shell tools with design and/or use-wear/residues consistent with working wood; and Presence of wooden implements, where preserved.

Activity	Likely associated archaeological assemblage
Procurement of stone	Presence of stone sources; and Evidence for procurement activities.
Production of stone tools	Hammerstones and anvils; or Debitage (such as cores, flakes, flake portions, or microblades); and Finished tools.
Production of backed artefacts	Microliths (unused); or Bondi point preforms; or Backing flakes; or Hammerstones; and High quantities ofdebitage, including a high frequency of microblades.
Maintenance of stone tools	Cutting-edge rejuvenation flakes; or Portable whetstones; and Axe-grinding grooves.

4. Archaeological survey

4.1 Purpose

The purpose of the survey was to assess the current condition of the Aboriginal sites identified within the study area and to identify any unrecorded Aboriginal sites or objects. Areas of subsurface archaeological potential identified in the desktop assessment were also inspected.

4.2 Survey strategy

Archaeological survey of the study area was conducted on foot, in accordance with the *Code of Practice*. The overall strategy was to complete a full coverage survey, as the exact locations of the impacts are not yet known. A handheld Global Positioning System (GPS) was used to track the survey area covered and record the location of key features (disturbances, areas of archaeological sensitivity/potential). The coordinate system projection used for all site recording was GDA94 MGA 56.

The field survey methodology was as follows:

- Record the landform, general soil information, surface conditions and vegetation conditions encountered during the survey and how these impact on the visibility of objects
- Define the boundaries of any Aboriginal sites and areas of PAD based on landmarks and historical maps
- Reinspect previously identified Aboriginal sites and areas of archaeological potential within the study area
- Identify areas of disturbance which may have impacted the presence of intact soils and archaeological features
- Consultation with Aboriginal representatives to discuss the potential intangible cultural heritage values of the study area
- Collect information to ascertain whether further archaeological investigation is required.

All ground exposures were examined for Aboriginal objects (stone artefacts, imported shell, or other traces of Aboriginal occupation and old growth trees were examined for signs of cultural scarring and marking.

A photographic record was kept during the survey. Photographs were taken to record aspects of survey units including vegetation and disturbance. Scales were used for photographs where appropriate.

4.2.1 Site definition and recording

An Aboriginal site is generally defined as an Aboriginal object or place. An Aboriginal object is the material evidence of Aboriginal land use, such as stone tools, scarred trees, or rock art. Some sites, or Aboriginal places can also be intangible and although they might not be visible, these places have cultural significance to Aboriginal people.

The Heritage NSW guidelines state, in regard to site definition, that one or more of the following criteria must be used when recording material traces of Aboriginal land use:

- The spatial extent of the visible objects, or direct evidence of their location.

- Obvious physical boundaries where present, e.g., mound site and middens (if visibility is good), a ceremonial ground.
- Identification by the Aboriginal community on the basis of cultural information.

For the purposes of this study an Aboriginal site would be defined by recording the spatial extent of visible traces or the direct evidence of their location.

4.2.2 Protocol for recording Potential Archaeological Deposits

Where areas of PAD are identified towards the margins of each survey unit, efforts were made by the survey team to delineate each area of potential beyond the survey unit. Where the extent of the PAD extends beyond the survey unit, efforts were made to map the extent of that feature up to approximately 70m outside the survey unit. If it is likely that these PADs continue beyond that point, the survey team justified that the distance is adequate to provide an accurate representation of the PAD with regard to future planning and design for the project.

4.3 Survey results

The field survey was conducted on 18 November 2021 by ELA Archaeologists Jennifer Norfolk and Declan Coman and field officer Kirsty Lee Chalker from Cubbitch Barta Native Title Claimants Aboriginal Corporation. The survey area was divided into four (4) survey units and was sample surveyed due to the dense vegetation cover.

SURVEY UNIT 1

SU 1 comprised an alluvial flat landform adjacent to South Creek (Figure 8). The flat landform had sparse tree coverage, with dense grass cover offering low visibility and limited exposures (Figure 9).

A minor drainage line flows through the northern half of the survey unit (Figure 10), the minor drainage line was highly disturbed due to gully erosion (Figure 11). Inside the deeper gully, the soil exposures showed a soil profile consistent with the South Creek soil landscape. No artefacts were observed within this soil exposure.

Along the western extent of the survey unit, where the flat landform transition to a gentle slope, extensive disturbances from the construction of the chicken sheds is observable (Figure 12). This disturbance extends out into the flat landform in the form of artificial drainage lines that were likely excavated to drain water from the sheds (Figure 13). The landform location of the chicken sheds has been heavily modified with deep excavation, large scale earth movement and long term natural erosional affects.

AHIMS ID 45-5-5375 (Figure 14), was re assessed as being a natural growth and in consultation with site officer Kirsty Lee Chalker (Cubbitch Barta) confirmed the site was not a culturally modified tree.

AHIMS ID 45-5-5376 (Figure 15), was re assessed as being a natural growth and in consultation with site officer Kirsty Lee Chalker (Cubbitch Barta) confirmed the site was not a culturally modified tree.



Figure 8: View south east of South Creek, elevated alluvial landform.



Figure 9: View north east open woodland on flat alluvial landform in eastern end of study area.



Figure 10: Minor drainage line of South Creek in north of study area.



Figure 11: Soil exposure in gully erosion of minor drainage line in the north eastern corner of study area.



Figure 12: Extensive disturbance from chicken sheds, view west.



Figure 13: Extensive disturbance from artificial drainage lines across the study area, view north.



Figure 14: AHIMS ID 45-5-5375, natural shape, no visible lines from any point across the study area



Figure 15: Open flat landform with AHIMS ID 45-5-5376 in background

SURVEY UNIT 2

SU2 comprised the slope covered in low shrubs and scattered trees (Figure 16) and the landform sloped away to the east and the north with a moderate slope (Figure 17). Visibility ranged from low, in areas of consistent grass cover, to high with area of disturbance being cleared and large-scale landscaping works having exposed the soil profile (Figure 18). Disturbances from the chicken coops was confirmed to be extensive with large scale earthworks, paving of surfaces and the introduction of building debris and foreign materials into the soil profile (Figure 19). Along the western and southern side of SU2 an unsealed road surface had disturbed ground surfaces.

AHIMS ID 45-5-5373 could not be re identified during the survey, the location of the AHIMS site is highly disturbed with introduced gravels (Figure 21). The site is likely destroyed from natural erosional processes. AHIMS ID 45-5-5374 was re identified and was not considered culturally modified by Aboriginal representative. Scar is likely marking for the access road adjacent.



Figure 16: Ground surfaces and vegetation on top of hill in centre of SU2, view west



Figure 17: Sloping landform view east towards South Creek. Low visibility no exposures



Figure 18: Soil exposure, shallow A horizon over medium clays with exposed shale bedrock. Surrounding landform has been cut down.



Figure 19: Disturbance from levelling from vehicle access and drainage mitigations in north of SU2



Figure 20: AHIMS ID 45-5-5374, not culturally modified



Figure 21: Soil exposure at location of AHIMS ID 45-5-5373, Aboriginal object not found, soils mixed

SURVEY UNIT 3

SU3 covered the two man drainage lines that run through the centre of the study area and the western boundary parallel with Badgerys Creek Road. Both drainage lines run south north towards Badgerys Creek. The central drainage line has been impacted by fluvial erosion and grazing cattle.

AHIMS ID 45-5-2660 was reidentified, two red silcrete flakes were located in an erosion scour on the drainage line. The survey was also unable to reidentify AHIMS ID 45-5-2780, AHIMS sites are in highly eroded locations.

Further north along the central drainage line, an isolated artefact was identified. The isolated artefact is a white silcrete medial flake. The site was observed in situ and was located 440mm depth. Further downstream the survey observed significant disturbances in the form of building debris in the river and artificial drainage lines from the elevated chicken sheds to the east.

Within the north-western portion of SU3, the landform slopes south-east to north-west. Predominately cleared of vegetation, this landform transitioned into open woodland as it moved west towards the

banks of Badgerys Creek (Figure 26). As the sloping landform transitions into river bank at the north-western corner of the study area (Figure 27) it has been subject to erosion which has exposed the soil profile.

Along the western extent of the study area, the minor tributary of Badgerys Creek has been modified. The eastern creek bank is relatively flat with some evidence of minor disturbance from the creek re-alignment. Within the modified creek line, soil exposures showed a highly mixed profile, within this exposure, mixed deposits and disturbance is evident. Overall, surface visibility amounted to approximately 5% with extensive grass cover across a majority of SU3. Erosion scours and areas of disturbance account for most of the areas of surface visibility. There was approximately 5% of exposure, predominately within the walls of drainage channels.

AHIMS ID 45-5-2674 was recorded in the disturbed context of the road corridor but could not be reidentified during the survey.



Figure 22: Typical surface visibility within study area to the southwest portion of SU3



Figure 23: Soil exposure and erosion within the drainage line immediately south of the AHIMS ID 45-5-2660



Figure 24: Ground surfaces, erosion, and vegetation in the drainage line, location of two artefacts (AHIMS ID 45-5-2660)



Figure 25: Red silcrete flakes eroding out of bank at location of AHIMS ID 45-5-2660.



Figure 26: Badgerys Creek at north-western extent of study area, view north showing raised landform



Figure 27: View west at northern extent of study area showing sloping landform adjacent to Badgerys Creek



Figure 28: View north along western boundary showing heavy landscape modification for property drainage.



Figure 29: Exposed soil profile of excavated drainage line, shallow A1 horizon over a clay rich A2 horizon.

SURVEY UNIT 4

SU4 was located on the gentle, sloping landform that runs north south in the centre of the study area. The site survey was unable to reidentify AHIMS ID 45-5-2787 (Figure 30), the visibility was high, and the site has likely been lost to erosion. AHIMS ID 45-5-2684 (Figure 31) could also not be reidentified, the visibility was low with dense grass cover and vegetation overgrowth. The entire survey unit was heavily modified from the construction of the chicken sheds, large scale drainage works, vegetation clearance and various other modifications.

There was low visibility overall across the survey unit and low exposures. There is no potential for intact archaeological deposits.



Figure 30: Location of AHIMS ID 45-5-2787, view east



Figure 31: Location of AHIMS ID 45-5-2684, no visibility, view west

4.3.1 Survey coverage

In accordance with Heritage NSW *Code of Practice* the study area was surveyed in relation to survey units, landforms, and landscapes.

Table 8: Survey coverage

Survey Unit	Landform	Survey Unit Area (m ²)	Visibility (%)	Exposure (%)	Effective coverage (ECA)	Effective coverage
SU1	Alluvial	39,720	10	2	79.5	<1%
SU2	Slope	21,529	5	3	32.3	<1%
SU3	Alluvial	55,386	50	10	2,769	5%
	Slope	57,027	5	2	57	<1%
SU4	Slope	12,773	2	2	5	<1%

Table 9: Landform summary

Landform	Landform Area	Area effectively surveyed	% of landform effectively surveyed	Number of sites	Number of artefacts or features
Slope	91,398	94.3	<1	1	3 (PAD)
Alluvial	95,106	2,848	5	1	2 (PAD)

The field survey confirmed that the study area has undergone varying levels of disturbance, primarily due to the widescale vegetation clearance, construction of the chicken farms, buildings and outbuildings and the extensive drainage mitigation works across the poor draining landscape, the construction of roads and installation of fences and irrigation have caused minor impacts.

Areas of moderate to high potential for intact archaeological deposits have been identified, the large areas of PAD (AHIMS ID 45-5-5370 and AHIMS ID 45-5-5381) have been heavily modified and been impacted by past land use, the scientific significance of these PADs is low.

AHIMS ID 45-5-2660 was the only artefact site that was identified during the survey, within the study area the remaining artefact sites could not be identified due to the low visibility, the age of the sites and the likelihood of them being destroyed through past land use and natural erosion.

AHIMS ID 45-5-5374, AHIMS ID 45-5-5375 and AHIMS ID 45-5-5376 are not Aboriginal sites.

4.4 Discussion

The study area contains sensitive landforms in the proximity of two major creek lines of Badgerys Creek and South Creek, as well as the two smaller drainage lines that run through the property. The exploitable resources that the creek lines would have represented are easily accessible from the undulating landform which also provides areas of flat, terraced ground with good views of the surrounding landscape making it suitable for habitation.

Areas close to the major conjunction of streams would have likely been a focus for past occupation, with raised terraces being another indicator of increased potential. Disturbances varied across the study area but were most pronounced in the areas formerly used by the chicken farm and roads concentrated along ridgelines and on crests. The potential archaeological deposits (AHIMS ID 45-5-5370, AHIMS ID 45-5-5371 and AHIMS ID 45-5-5372) were reassessed and areas of moderate to high potential were confirmed and the remainder of the AHIMS sites area considered to be of low scientific significance due to the high disturbance levels.

AHIMS ID 45-5-2660 is of low scientific significance being a low density artefact scatter affected by gully erosion, AHIMS ID 45-5-2661, AHIMS ID 45-5-2662, AHIMS ID 45-5-2669, AHIMS ID 45-5-2672, AHIMS ID 45-5-2674, AHIMS ID 45-5-2684, AHIMS ID 45-5-2780, AHIMS ID 45-5-2786 and AHIMS ID 45-5-2787 could not be reidentified through survey by ELA in 2021, nor by GML in 2020. The visibility across the study area was low due to dense grass cover and several AHIMS sites in disturbed/ erosional locations may have been impacted. These AHIMS sites are likely destroyed and are of low scientific significance. AHIMS ID 45-5-5373 was identified by GML in 2020 but could not be reidentified through survey by ELA 2021. The site is located in a highly disturbed context and is of low scientific significance.

AHIMS ID 45-5-5376 and AHIMS ID 45-5-5375 were assessed by an Arborist and in consultation confirmed to be natural and not considerable age to be culturally modified, these two sites are not Aboriginal sites. AHIMS ID 45-5-5374 was assessed by an Arborist and in consultation confirmed as not a culturally modified tree, the tree age was assessed as being between 800-100 years and the scar age less than 50 years, this is most likely a scar marking the public access road due to the age and shape.

This is consistent with advice provided in the field by Kirsty Lee Chalker of Cubbitch Barta Native Title Claimants who was in attendance for the survey.

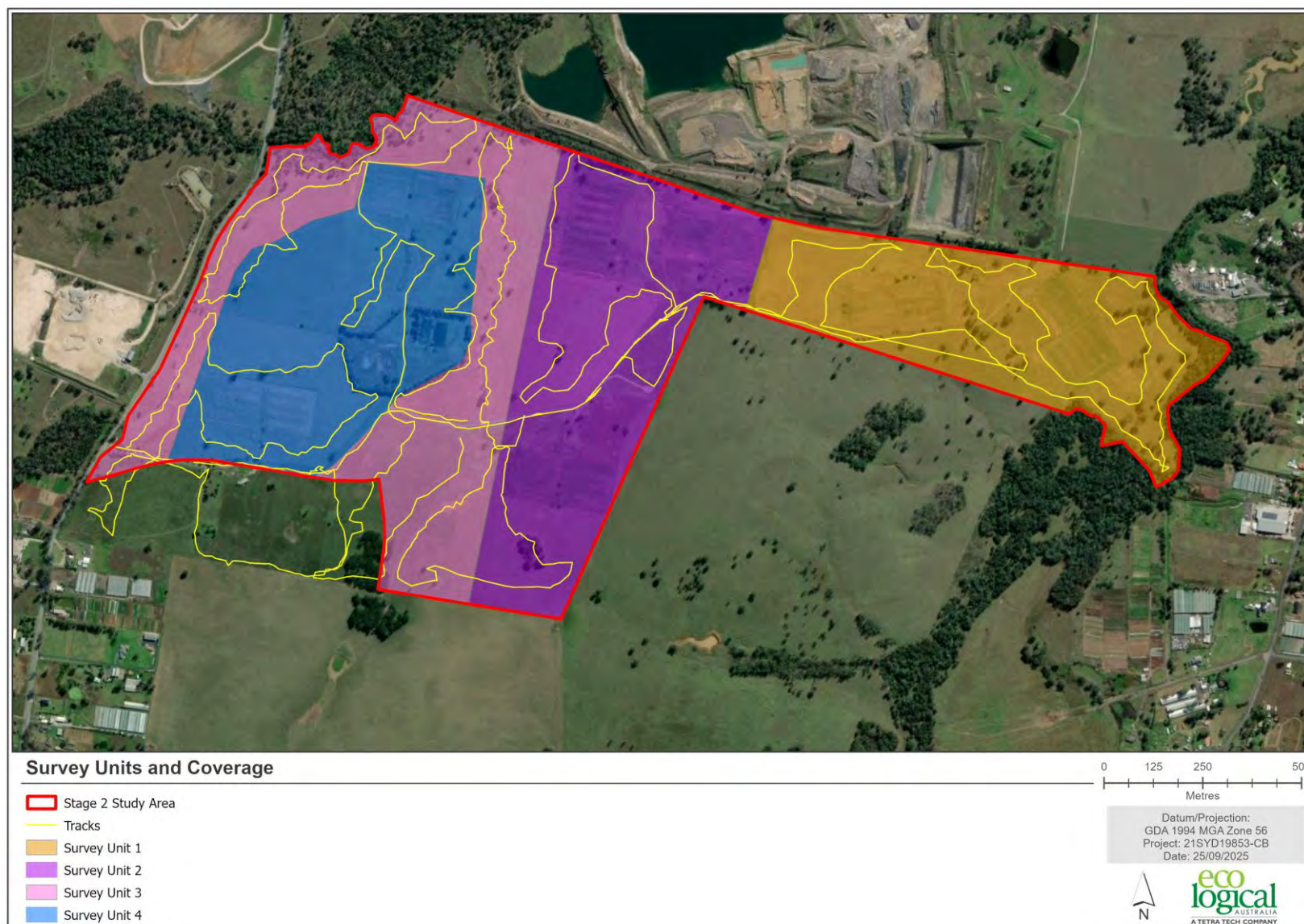


Figure 32: Survey unit and coverage map

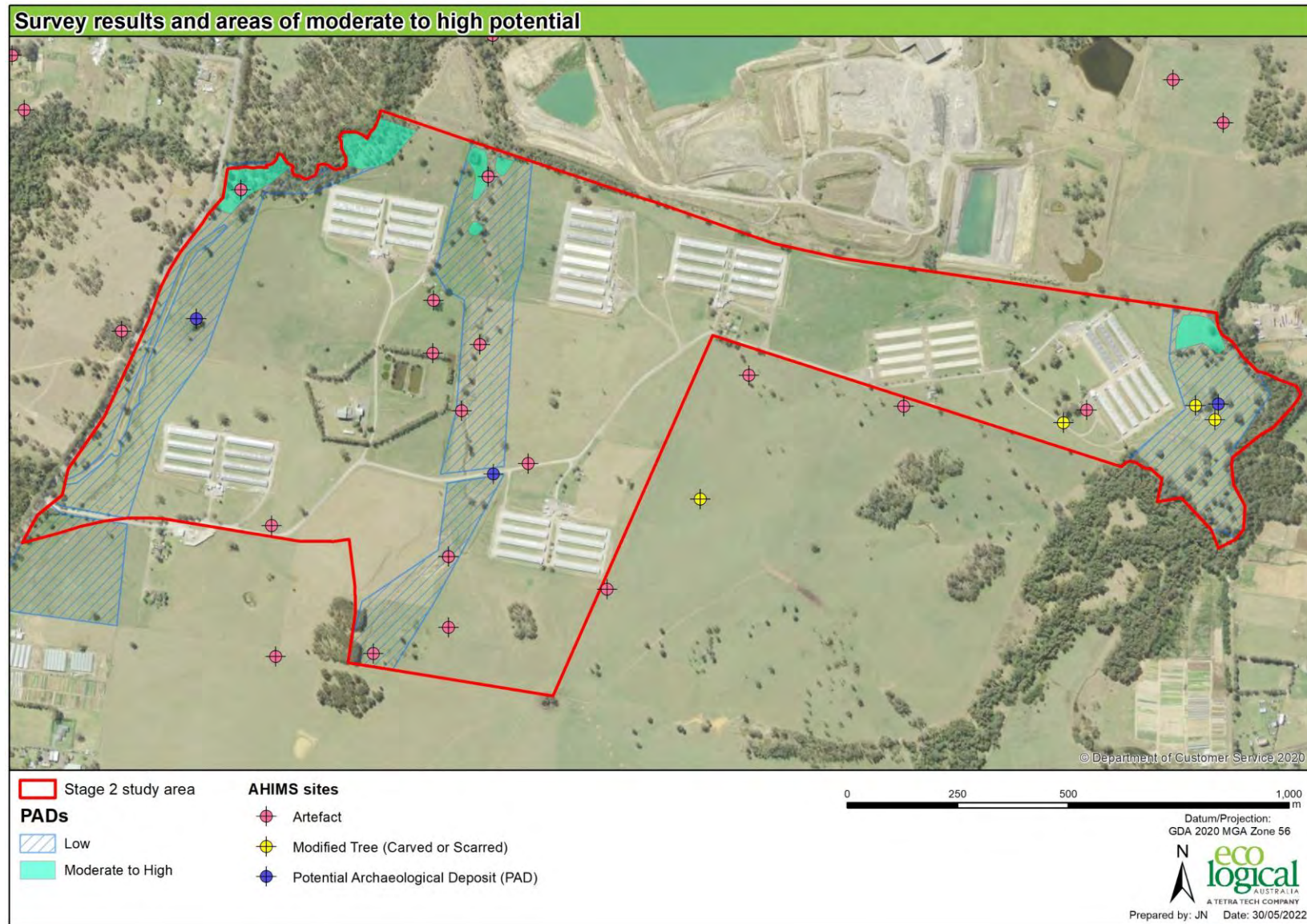


Figure 33: Results of ELA 2021 Survey

5. Archaeological test excavations

5.1 Introduction

The purpose of the Archaeological Research Design (ARD) is two-fold: to provide and direct a reasonable foundation for management decisions for the archaeological resource as well as satisfying regulatory requirements through a standardised process. All related future archaeological studies and analyses stand to benefit if guided by clear linkage of study goals, relevant theory, methods, and data collection. The application of a research design is international best practice and plays a vital role in the planning and management of cultural heritage.

The aim of this research design is to assist in furthering our understanding of how Aboriginal people utilised the study area in the past. The archaeological investigation proposes to firstly, conduct archaeological survey of the areas of proposed development and secondly, undertake test excavations within the areas of proposed development. Testing programs are intended to understand the presence, nature, extent and inform significance of the archaeological resource.

5.2 Research design

The test excavation investigated the study area and collected information about the nature and extent of sub-surface Aboriginal objects, based on a sample gathered from sub-surface investigations. The research questions outlined below include broad questions that attempted to show the level of information the site might be expected to reveal as well as questions specifically related to the site:

- What was the distribution of evidence of past Aboriginal peoples use and occupation within the study area?
- What types of raw materials, artefact types and tool types are present within the assemblage?
- What types of stone tool technology are present within the site?
- Have the test excavations revealed other site types such as hearths, heating ovens, knapping floors or other foci or activity areas?
- Do the results of the test excavation demonstrate any evidence of disturbance within the study area?
- What can the artefact assemblage (or lack thereof) indicate about previous land use by Aboriginal people?
- How does the pattern of landscape use compare to previous studies in the region?

The research design questions developed to guide the testing program are not limited to the questions above and other pertinent questions may arise (or be fine-tuned) during the course of the work being undertaken.

5.3 Test Excavation methodology

ELA undertook archaeological test excavations under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a) in order to understand the presence, nature, extent, and significance of the Aboriginal archaeological resource and how best to manage it.

This section presents the methodology for the test excavation. The purpose of archaeological test excavations was to collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample gathered from sub-surface investigations. The work was undertaken by a team comprising archaeologists and representatives from the RAPs.

5.3.1 Test Excavation Area 3

Test Excavation Area 3 was investigated through the utilisation of a systemic grid of test excavation units (50 cm X 50 cm). The placement of the test excavation units were a minimum of 10 m spacing with the possibility to expand on units displaying high density assemblages to 1 m² in accordance with the *Code of Practice*.

Up to twelve (12) test excavation units were proposed to ensure the areas is adequately assessed, the number of excavation units is at the discretion of the senior archaeologist.

5.3.2 Test Excavation Area 4

Test Excavation Area 4 was investigated through the utilisation of a systemic grid of test excavation units (50cm X 50cm). The placement of the test excavation units were a minimum of 10 m spacing and a maximum of 20 m distance from the nearest adjacent unit with the possibility to expand on units displaying high density assemblages to 1 m² in accordance with the *Code of Practice*.

Up to twenty five (25) test excavation units were proposed in the test excavation area to ensure the area is adequately assessed, the number of excavation units is at the discretion of the senior archaeologist.

The test excavation methodology which applied to each testing area is outlined below:

5.3.3 Stage 1 test pits

- The test pits excavated by hand (inclusive of trowels, spades and other hand tools) and placed on a systematic grid appropriate to the scale of the area being investigated e.g., 10 m intervals, 20 m intervals, or other justifiable and regular spacing.
- The first test pit within a landform or PAD area is excavated in 5 cm spits; the subsequent test pits conducted within the landform or PAD area is excavated in either 10 cm spits or stratigraphic units (whichever is smaller) to the base of Aboriginal object-bearing units being the removal of the A-horizon soil deposit down to the sterile clay layer (B-horizon).
- Depending on the depth and in order to achieve this, additional adjacent 50 cm x 50 cm test pits may have been excavated (for example expanding the test pit to 50 cm x 1 m) to reach the sterile clay layer.

5.3.4 Stage 2 expansion pits

- If five or more stone artefacts or formal tools were located within a 50 cm x 50 cm test pit, or suspected features such as heat treatment pits, hearths, or evidence of knapping events were identified, the test pit may have been expanded into a 1 m x 1 m square at the discretion of the Excavation Director. The additional pits would have been excavated in 50 cm x 50 cm test pit units in order to further understand the archaeological resource.
- Alternately, if five or more artefacts or formal tools were located within a 50 cm x 50 cm test pit, up to four 50 cm x 50 cm test pits may have been placed at an interval of 5, 10, or 20 m (or

other justifiable and regular spacing appropriate to the scale of the area being tested) from the test pit to test further the immediate area for artefact concentrations and/or archaeological features, or to define a site boundary. These additional test pits would have been excavated until clay, or culturally sterile soils are reached.

- Expansion test pits may have been combined and excavated as necessary in 50 cm x 50 cm units for the purposes of further understanding site characteristics. Note that under the Code of Practice, the maximum area that can be excavated in any one continuous area is 3 m².

5.3.5 General procedures

- The Code of Practice dictates that the maximum surface area of all test excavation units must be no greater than 0.5% of the PAD or area being investigated.
- All excavated soil were sieved in 5 mm sieves. Artefacts were collected and bagged according to test pit location and spit or context number.
- Wet or dry sieving is employed depending on the nature of the soils. For example, dry sieving may be used for sandy soils.
- Each test pit is recorded using standardised recording forms, coordinates collected using a GPS, and photographed using a range pole.
- The stratigraphic / soil profile for each test pit will be recorded in scale drawings as required by Heritage NSW Code of Archaeological Practice recording requirements.
- Test excavation units are backfilled as soon as practicable, to be organised by the proponent.
- An AHIMS site card is prepared and submitted to the AHIMS Registrar for any new sites identified during test excavations.
- An AHIMS Site Impact Recording form completed and submitted to the AHIMS Registrar for any sites impacted during test excavations.
- In the unlikely event that suspected human remains are identified works immediately cease and the NSW Police and Heritage NSW notified.
- Test excavations cease when enough information* has been recovered to adequately characterise the objects present with regard to their nature and significance.

*Enough information is defined by Heritage NSW as meaning “that the sample of excavated material clearly and self-evidently demonstrates the deposit’s nature and significance. This may include things like locally or regionally high object density: presence of rare or representative objects: presence of archaeological features: or locally or regionally significant deposits stratified or not.” (DECCW 2010a).

5.3.6 Lithic Analysis

Collected materials are temporarily held at the ELA office, where they have been analysed and catalogued by Jennifer Norfolk, ELA Archaeologist. Any artefacts that were particularly interesting or representative are photographed and included in the report. The collection was analysed using *A Record in Stone* (Holdaway & Stern 2004).

5.4 Test excavation results

Archaeological excavations within the study area identified that there has been heavy disturbance from previous land use and vegetation clearance as identified through the archaeological assessment.

No Aboriginal objects were recovered from test excavation area 3 (AHIMS ID 45-5-5371) and thirteen lithic pieces were recovered from test excavation area 4 (AHIMS ID 45-5-5370). Enough information has been gathered to understand the nature of the study area and the following section presents a summary of the test excavation results.

TEST EXCAVATION AREA 3

Area 3 is located on the central drainage line, 200m south of the study area boundary, within the extent of AHIMS ID 45-5-5371. The PAD was identified as being on a relatively intact landform adjacent to chicken shed platform and the proposed location of a road crossing. The area had minimal visible surface disturbance and remnant mature trees.

No Aboriginal objects or features were identified through excavations.

The excavation area was covered in a layer of redeposited clay loams, either by alluvial processes or from the erosion from the earth movement of the study area. Soils across the testing area were generally very shallow and consisted of a friable, brownish silty loam, with a clear horizon over compact, medium clay layer. Depths varied from 50-200mm, and there were ironstone gravel inclusions (less than 10%) throughout. The test excavation units were saturated during excavation from the heavy rainfall, several test excavation units were abandoned due to flooding and from high disturbance witnessed during excavations. The soils were similar to South Creek soil landscape rather than Blacktown soil Landscape. Representative sections and a summary of the soil profiles of test excavation units are presented and described below.

Table 10: Soil summaries for test pits 1-8 across Area 3

Stratigraphy	Description	
A Horizon	Depth	0 – 200 mm
	pH	7
	Munsell	10YR 5/6
	Friable, yellow brown clay loams. Some roots and grass inclusions, charcoal flecks, small ironstone gravels (<10%) throughout.	
B Horizon	Depth	50 – 500 mm
	pH	5.5-7
	Munsell	10YR 2/2
	Friable, moist brown silty loams. Some roots and grass inclusions, charcoal flecks, small ironstone gravels (<10%) throughout.	
C Horizon	Depth	550 – 600 mm
	pH	6.5
	Munsell	10YR 3/2
	Orange medium clay at base, moist and compact.	



Figure 34: View north over the testing area adjacent to minor drainage line.



Figure 35: North profile of test pit 1 showing a mixed clay loam over brown friable silty loams and a medium yellow brown clay base.

TEST EXCAVATION AREA 4

Area 4 is located at the north western extent of the study area, within the registered PAD (AHIMS ID 45-5-5370). A low density background scatter of lithic material was identified. The area was situated on a raised flat landform immediately adjacent to Badgerys Creek. There were trees but none of great age to predate vegetation clearance.

Soils across the testing area were generally shallow and consisted of a mixed brownish loam/ clay loam over an orange, brown to red medium clay. Depths varied from 200-300mm, and there were gravel inclusions (up to 70%) throughout. The test excavation units were saturated during excavation from the heavy rainfall. This excavation area appeared to be intact, however soils have exhibited mixing and is likely from vegetation clearance. Representative sections and a summary of the soil profiles of test excavation units are presented and described below.

Table 11: Soil summaries for test pits 1-20 in Area 4

Stratigraphy		Description
A Horizon	Depth	0 – 200 mm
	pH	5.5 - 7
	Munsell	10YR 2/2
	Friable brownish loam, root and grass inclusions throughout with minor gravel inclusions.	
B horizon	Depth	200 – 300 mm
	pH	4.5-6.5
	Munsell	2.5YR 3/3
	Transition to yellow brown medium clay and red medium clay between 200-300mm, gravel inclusions (up to 70%).	



Figure 36: Area 4—View north west from test area towards Badgerys Creek



Figure 37: Test pit 7 – North profile – mixed brown clay loams, clear horizon orange medium clay



Figure 38: Area 4 test pit 9 – View across transect (TP 5-6)



Figure 39: Test pit 12 – North profile of test pit 12, mixed brown clay loams, clear horizon orange medium clay

5.4.1 Lithics

Thirteen (13) lithic pieces were recovered artefacts were recovered from 8 of the 20 test pits within area 4 (AHIMS ID 45-5-5370) identified as having moderate potential for archaeological deposits, north west corner of study area. The majority of lithic material found during the test excavations was a red silcrete (90% n=12). Chert lithic material were 10% of the artefact assemblage recovered (Chert n=1). The predictive model identified through previous archaeological assessment that silcrete was the most predominant stone utilised in the region. Silcrete sources have been identified within the surrounding environment and is the most dominant lithic material associated with creek systems of the Hawkesbury catchment.

The reduction types recovered were broken flakes angular fragments and the level of reduction is secondary and tertiary with less than 4% primary reduction which indicates distance from lithic source. The majority of the lithic material was generally small in size, with the most common size being between 10-34mm (89%). The assemblage recovered is of good quality silcrete that has been totally or partially heat treated which is evident in its waxy lustre, few had rough texture inclusions and rough surfaces that had been flaked prior to heat treatment. The visible cortex was terrestrial, none had smooth riverine cortex which means the stone source was not from the two major watercourses but from local exposed source of naturally occurring silcrete.

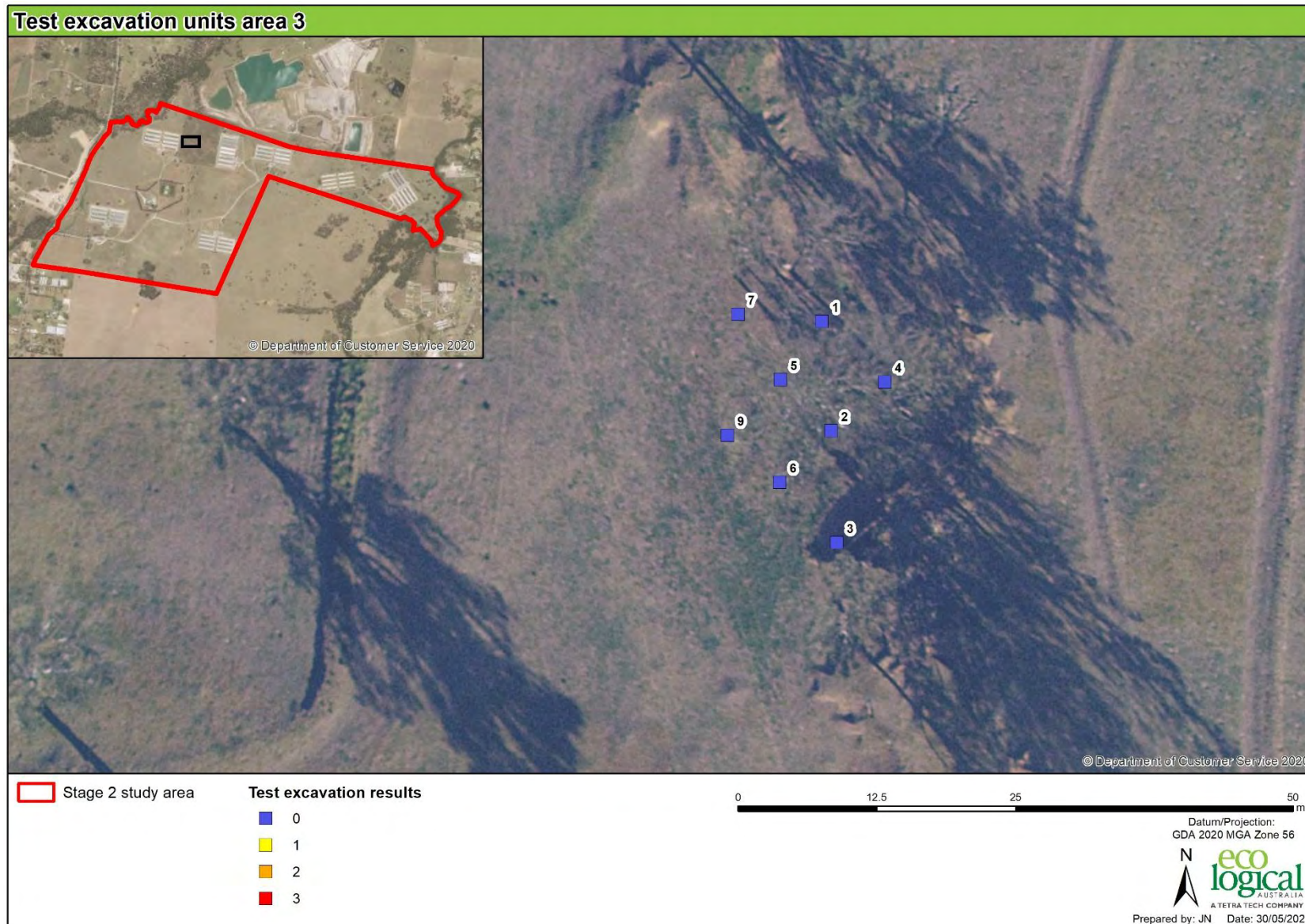


Figure 40: Excavation results for AHIMS ID 45-5-5371

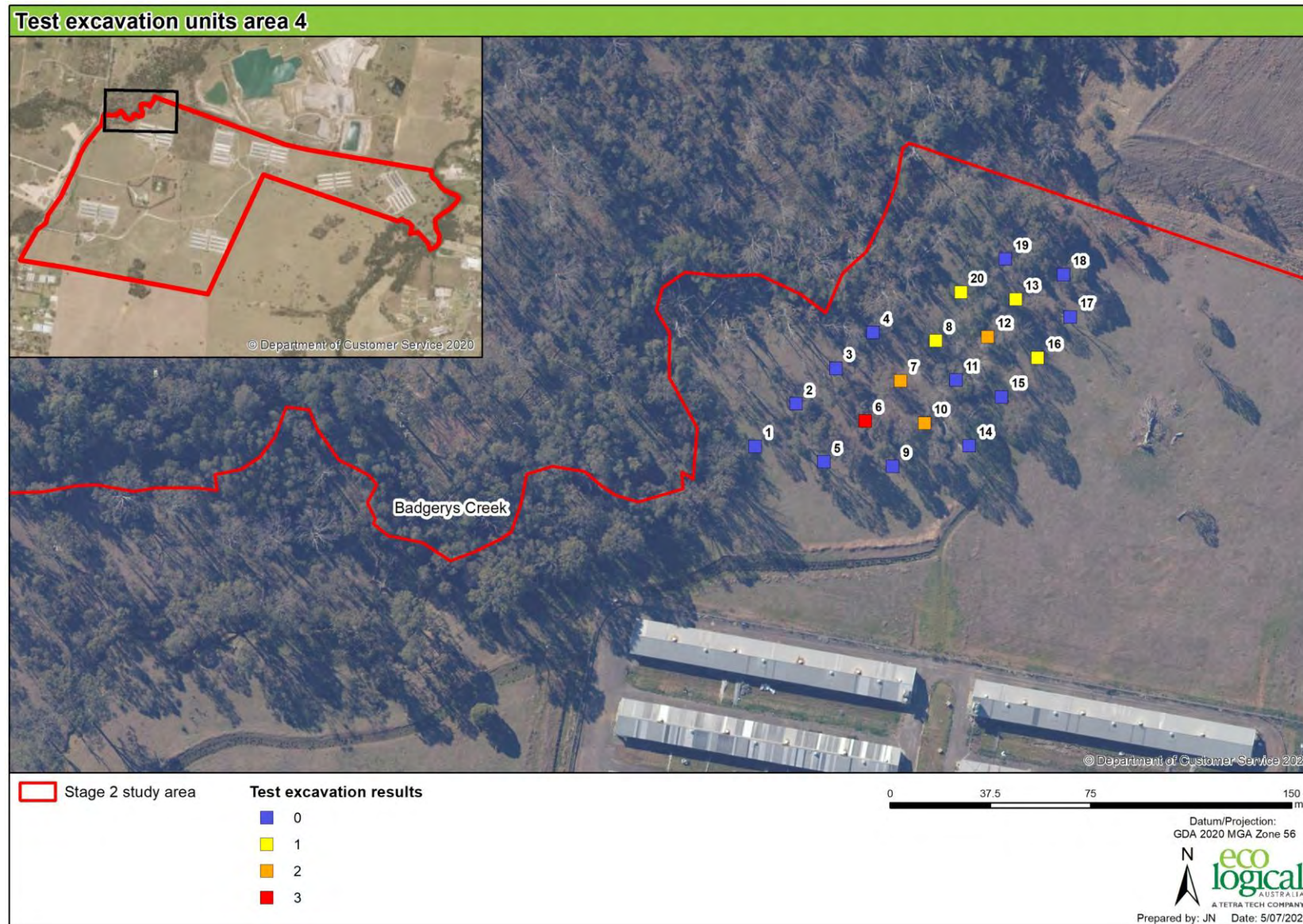


Figure 41: Excavation results for AHIMS ID 45-5-5370

6. Analysis and discussion

WHAT IS THE DISTRIBUTION OF EVIDENCE OF PAST ABORIGINAL PEOPLES USE AND OCCUPATION WITHIN THE STUDY AREA

Limited evidence of Aboriginal occupation or utilisation was identified within the Stage 2 portion of the wider study area of 475 Badgerys Creek Road. The majority of identified Aboriginal sites within the wider study area have been located in close proximity to the water sources. Isolated artefacts have been recorded on the minor crest and in highly disturbed contexts along the vehicle access tracks and the former chicken shed locations.

WHAT TYPES OF RAW MATERIALS, ARTEFACT TYPES AND TOOL TYPES ARE PRESENT WITHIN THE ASSEMBLAGE?

Red silcrete was the majority of lithic material identified (90%) and one of chert (10%) were identified within the stage 2 study area. All lithic pieces are broken flakes and or cortex material (rough). No tool types were present.

The lithic material present is typical of background scatter and is of low scientific value.

WHAT TYPES OF STONE TOOL TECHNOLOGY ARE PRESENT WITHIN THE SITES?

No stone tool technology was present within the stage 2 study area.

HAVE THE TEST EXCAVATIONS REVEALED OTHER SITE TYPES SUCH AS HEARTHES, HEATING OVENS, KNAPPING FLOORS OR OTHER FOCI OR ACTIVITIES AREAS?

The test excavation program did not reveal any hearths or heating ovens, knapping floors or other foci or activities areas.

DO THE RESULTS OF THE TEST EXCAVATION DEMONSTRATE ANY EVIDENCE OF DISTURBANCE WITHIN THE STUDY AREA?

Evidence of previous land disturbance was visible during the survey, the study area had been mostly cleared, and affected by agricultural and pastoral practices.

The majority of test excavations units exhibited mixed brown loams to clay loams with a homogenous structure and a clear horizon with the medium to heavy clay loam typical of Blacktown soil landscapes

Test excavation unit in area 4 was the only test excavation area that retrieved any type of evidence for Aboriginal occupation. Very shallow soils, likely result of a combination of disturbances of land clearance, pastoral and agricultural processes, increased erosion and the degree of slope.

WHAT CAN THE ARTEFACT ASSEMBLAGE (OR LACK THEREOF) INDICATE ABOUT PREVIOUS LAND USE BY ABORIGINAL PEOPLE?

The result of the archaeological investigations is not a true indication about the previous land use by Aboriginal people in the past. The lack of tangible evidence is likely due to Aboriginal people primarily working with organic materials such as wood, bark, resin, leaves, reeds, shell, and bone (Holdaway and Stern 2008:1-2). The durability of lithic material is the reason the artefact scatters or isolated finds are the dominant site type represented in the archaeological record of Aboriginal culture. Hence,

interpretations regarding the significance of certain sites and assemblages must be considered as based on incomplete data.

The study area has a long history of disturbance of varying degrees which could be a reason for the absence of evidence of Aboriginal occupation. Aboriginal objects are often located within highly disturbed contexts so the lack of artefacts could indicate the unsuitable nature of the test excavation area. Open artefact sites and artefact scatters are the most common site types identified within landforms associated with permanent water sources, such as river banks and alluvial flats (White and McDonald 2010). The study area may not have supported a permanent water source, rather a seasonal source. The current weather conditions have highlighted the flooding implications of the landform and the lack of drainage on the gentle slope created swamp like conditions. This could indicate that the upper slope or crest may have been the location of Aboriginal occupation. The crest was not investigated due to the heavy disturbance from residential buildings and agricultural practices.

HOW DOES THE PATTERN OF LANDSCAPE USE COMPARE TO PREVIOUS STUDIES IN THE REGION?

Low density assemblages of artefacts have been identified in close proximity to reliable water sources. Whilst these sites can represent smaller or less frequent instances of occupation, disturbances from historic land use and erosion can also affect artefact count (Niche 2020).

Artefact Heritage 2019 undertook test excavations to the north east of the study area adjacent Boral Bricks and South Creek. The results of their excavations also identified the lack of artefactual material in the low lying areas adjacent to the water sources. The artefactual material was however located on the higher elevations or raised areas in the vicinity of South Creek.

AECOM 2010 undertook excavations as a result of the proposed Boral Bricks expansion directly north of 475 Badgerys Creek Road. A series of transect were placed adjacent to Badgerys Creek to investigate the presence and distribution of Aboriginal objects. The result was a very low density background scatter identified, with no formal tools or technology evidence. It was identified that the Aboriginal heritage values of the assessment area pertained to low density artefact scatters or 'background scatter' occurring throughout the assessment area, which are considered to be of low archaeological (scientific) significance.

The lack of artefactual material retrieved could indicate the unsuitability of the landscape for Aboriginal occupation but also it could represent a very low density artefact scatter or background scatter that was missed by the excavation methodology. This low density artefact site type is of low significance and impact on this site type would not affect the overall cultural significance of the Aboriginal cultural heritage of the Badgerys Creek area.

7. Scientific values and significance assessment

7.1 Assessment Criteria

This significance assessment has been undertaken in accordance with the Guide to Investigating Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (OEH 2011). Archaeological significance refers to the archaeological or scientific importance of a landscape or area. This is characterised by using the archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/ or states natural and cultural history?
- Representativeness: how much variability (outside and/or inside the study area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the study area important to demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the study area contain teaching sites or sites that might have teaching potential?

7.2 Scientific Significance

The archaeological investigations within the study area identified twelve sites. Assessment of the scientific significance of the Aboriginal sites is based on the rarity, research potential the representativeness within the wider region and the educational potential.

A summary of the scientific significance of sites identified during archaeological investigations is presented in Table 11.

Table 12: Scientific significance assessment

Site name (AHIMS ID)	Research potential	Representative	Rarity	Education potential	Significance assessment
B63 (AHIMS ID 45-5-2661)	Low	Low	Low	Low	Low
B61 (AHIMS ID 45-5-2660)	Low	Low	Low	Low	Low
B96 (AHIMS ID 45-5-2669)	Low	Low	Low	Low	Low
B97 (AHIMS ID 45-5-2672)	Low	Low	Low	Low	Low
B100 (AHIMS ID 45-5-2674)	Low	Low	Low	Low	Low
B65 (AHIMS ID 45-5-2780)	Low	Low	Low	Low	Low
BCLL PAD02 (AHIMS ID 45-5-5371)	Low	Low	Low	Low	Low
B109 (AHIMS ID 45-5-2786)	Low	Low	Low	Low	Low
B110 (AHIMS ID 45-5-2787)	Low	Low	Low	Low	Low
BCLL AS1 (AHIMS ID 45-5-5370)	Low	Low	Low	Low	Low
BCLL PAD01 (AHIMS ID 45-5-5372)	Unknown	Unknown	Unknown	Unknown	Unknown
BCLL IF 01 (AHIMS ID 45-5-5373)	Low	Low	Low	Low	Low

8. Impact assessment

The current archaeological assessment and test excavation programme has provided evidence for the presence of Aboriginal objects in distinct areas of the study area. It is likely that most of the artefact sites will be impacted by the proposed works, all sites within areas designated an open space will not be impacted by development of the study area, few sections will be impacted by road corridors.

An Aboriginal Cultural Heritage Assessment will need to be undertaken to assess the potential impacts to the Aboriginal sites and the cultural heritage values for the study area. The assessment will identify the cultural significance of Aboriginal cultural values within the study area and provide management and mitigations measures prior to development.

9. Mitigation and management

9.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is based on the assessed significance of the sites. The final recommendations would also be informed by cultural significance, which will be discussed by the Aboriginal community in their responses during the next stage of consultation.

A detailed list of recommended mitigation and management measures for the sites will be outlined in the ACHAR.

9.1.1 Aboriginal Heritage Impact Permit

A total of twelve Aboriginal sites have been identified within the study area over the course of the current archaeological investigations and from previous investigations.

A targeted AHIP should be sought for sites identified within the study area that will be impacted by the proposed works. In accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), an ACHAR will need to accompany the AHIP application process.

9.1.2 Long term management of test excavation artefact assemblage

Further information on the long-term care and management of the retrieved artefact assemblage is included in the ACHAR.

10. Recommendations

The following recommendations are based on consideration of:

- Statutory requirements under the *National Parks and Wildlife Act 1974* as amended
- The results of the Aboriginal technical report
- The interests of the Aboriginal stakeholder groups
- The likely impacts of the proposed works.

It was found that:

- Desktop assessment identified (13) AHIMS sites located within the study area, AHIMS ID 45-5-2660, AHIMS ID 45-5-2661, AHIMS ID 45-5-2669, AHIMS ID 45-5-2672 AHIMS ID 45-5-2674, AHIMS ID 45-5-2684, AHIMS ID 45-5-2780, AHIMS ID 45-5-2786 AHIMS ID 45-5-2787, AHIMS ID 45-5-5373, 45-5-5370, AHIMS ID 45-5-5371 ad AHIMS ID 45-5-5372.
- Three modified trees had been registered with AHIMS located within the study area (AHIMS ID 45-5-5374, AHIMS ID 45-5-5375, and AHIMS ID 45-5-5376). Assessment by an Arborist and in consultation Cubbitch Barta, AHIMS ID 45-5-5374 has been identified as a non-cultural scar and AHIMS ID 45-5-5375 and AHIMS ID45-5-5376 are recent naturally occurring tree formations. No culturally modified trees are located within the study area.
- Archaeological investigations of AHIMS ID 45-5-5370 and AIMS ID 45-5-5371 have identified the majority of the PAD extent as being heavily disturbed due to past land use and a discreet low density artefact scatter was identified along Badgerys Creek. All three PADs (AHIMS ID 45-5-5370, AHIMS ID 45-5-5371 and AHIMS ID 45-5-5372) were assessed as low potential by GML. And by this investigation. The site cards will be amended to reflect the results.

It is therefore recommended that:

RECOMMENDATION 1 - ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Prior to proposed subdivision and development, an Aboriginal Cultural Heritage Assessment will need to be prepared to identify the intangible cultural heritage values of the study area and to assess the potential impacts to these cultural values and to support the application for an AHIP.

The Aboriginal Cultural Heritage Assessment will develop management and mitigation measures for Aboriginal cultural values within the study area and will be undertaken in accordance with the *Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

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Appendix A – AHIMS Search Results



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Eastings	Northings	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-2583	B 30	AGD	56	292370	6244490	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	Recorders		Mr.Kelvin Officer				Permits		
45-5-2586	B3	AGD	56	290240	6247220	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders		Mr.Kelvin Officer				Permits		
45-5-0213	South Creek:	AGD	56	293700	6247000	Open site	Valid	Artefact : -	Open Camp Site	104106
	Contact	Recorders		Ms.Laila Haglund				Permits		
45-5-0517	Badgery's Creek / Longleys Road Badgery's Creek	AGD	56	291940	6247650	Open site	Valid	Artefact : -	Open Camp Site	1018
	Contact	Recorders		Mr.Allan Lance				Permits		
45-5-2658	B67	AGD	56	290150	6246700	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2659	B66	AGD	56	289990	6246750	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2660	B64	AGD	56	291300	6246000	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2661	B63	AGD	56	291450	6245880	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2662	B61	AGD	56	291100	6245450	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2666	B85	AGD	56	290000	6244893	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2669	B96	AGD	56	291270	6245670	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2672	B97	AGD	56	291270	6245510	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2673	B101	AGD	56	290320	6246980	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2674	B100	AGD	56	290870	6245740	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2675	B99	AGD	56	291950	6246080	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2676	B98	AGD	56	291840	6245800	Open site	Destroyed	Modified Tree (Carved or Scarred) :		
	Contact	Recorders		Hilton Naden				Permits		
45-5-2677	B16	AGD	56	291830	6244780	Open site	Valid	Artefact : -		
	Contact	Recorders		Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-2682	B75	AGD	56	291640	6247700	Open site	Valid	Artefact : -		102196

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 1 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	Recorders						Permits		
45-5-2616	B 28	AGD	56	291700	6244980	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2683	B76	AGD	56	291860	6247720	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2684	B73	AGD	56	291080	6246280	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2686	B72	AGD	56	290800	6246500	Open site	Valid	Artefact : -		102196
	Contact	Recorders						Permits		
45-5-2656	B102	AGD	56	290400	6247070	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2690	B59	AGD	56	291550	6247420	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2691	B60	AGD	56	290900	6245480	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2693	B55	AGD	56	290310	6246680	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2694	B52	AGD	56	290550	6246580	Open site	Not a Site	Modified Tree (Carved or Scarred) :		103124
	Contact	Recorders						Permits		
45-5-2695	B51	AGD	56	290150	6246420	Open site	Not a Site	Artefact : -		103124
	Contact	Recorders						Permits		
45-5-2703	B12	AGD	56	289840	6246320	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2704	B13	AGD	56	291370	6246850	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2705	B15	AGD	56	291000	6248120	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2798	B27	AGD	56	291650	6245090	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2779	B17	AGD	56	291060	6244300	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2780	B65	AGD	56	291310	6246110	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		
45-5-2619	B 29	AGD	56	291970	6244700	Open site	Valid	Artefact : -		
	Contact	Recorders						Permits		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 2 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-2623	B 68	AGD	56	289800	6246810	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2624	B 34	AGD	56	291750	6244890	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2625	B 35	AGD	56	291550	6244330	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2626	B 36	AGD	56	291060	6244350	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2627	B 37	AGD	56	290500	6244900	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2630	B 40	AGD	56	291900	6247660	Open site	Valid	Modified Tree (Carved or Scarred) :		
	Contact									Permits
45-5-2644	B 26	AGD	56	291550	6245110	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2785	B 107	AGD	56	291550	6245560	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2786	B 109	AGD	56	291360	6246530	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2787	B 110	AGD	56	291250	6246230	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2766	B108	AGD	56	292300	6246010	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2767	B53	AGD	56	292070	6247620	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2769	B-14	AGD	56	292070	6247700	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2772	B33	AGD	56	290480	6244800	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2812	b105	AGD	56	289920	6245360	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2813	B104	AGD	56	290300	6247520	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-2814	B103	AGD	56	290250	6247270	Open site	Valid	Artefact : -		
	Contact									Permits
45-5-3096	B58	AGD	56	290530	6246180	Open site	Destroyed	Artefact : 2		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 3 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	T Russell	Recorders	Navin Officer Heritage Consultants Pty Ltd				Permits	3752	
45-5-2685	B74	AGD	56	291520	6247320	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd				Permits		
45-5-4098	BC-01-09	GDA	56	292062	6247272	Open site	Valid	Artefact : 1		
	Contact		Recorders	Mr.Geordie Oakes.AECOM Australia Pty Ltd - Sydney				Permits		
45-5-4099	BC-EX01-11	GDA	56	291932	6247569	Open site	Valid	Artefact : 11		
	Contact		Recorders	Mr.Geordie Oakes.AECOM Australia Pty Ltd - Sydney				Permits		
45-5-5067	B130	GDA	56	290085	6246717	Open site	Valid	Artefact : 1		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Mrs.Jo Dibden				Permits		
45-5-5090	B158	GDA	56	291916	6247879	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5081	B157	GDA	56	292146	6248243	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5083	B160	GDA	56	291510	6247663	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5084	B161	GDA	56	290387	6246994	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5085	B162	GDA	56	291157	6248456	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5162	BCBW18 AS 01	GDA	56	293069	6247136	Open site	Valid	Artefact : -		
	Contact		Recorders	Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci				Permits		
45-5-5163	BCBW18 AS 03	GDA	56	293557	6247292	Open site	Valid	Artefact : -		
	Contact		Recorders	Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci				Permits		
45-5-5164	BCBW18 AS 02	GDA	56	293128	6246842	Open site	Valid	Artefact : -		
	Contact		Recorders	Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci				Permits		
45-5-5165	BCBW18 IF 01	GDA	56	293014	6246939	Open site	Valid	Artefact : -		
	Contact		Recorders	Artefact - Cultural Heritage Management - Pyrmont.Mr.Ryan Taddeucci				Permits		
45-5-5175	B167	GDA	56	291064	6248281	Open site	Valid	Artefact : -		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Miss.Jasmine Fenyvesi				Permits		
45-5-5055	B118	GDA	56	290118	6246822	Open site	Valid	Artefact : 1		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Mrs.Jo Dibden				Permits		
45-5-5057	B120	GDA	56	290162	6246756	Open site	Valid	Grinding Groove : 1		
	Contact		Recorders	Navin Officer Heritage Consultants Pty Ltd.Mrs.Jo Dibden				Permits		
45-5-5370	BCLL PAD03	GDA	56	290804	6246398	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact		Recorders	GML Heritage Pty Ltd - Surry Hills.Miss.Hannah Morris				Permits		

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 4 of 5



AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 19853

Client Service ID : 615973

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-5-5371	BCLL PAD02	GDA	56	291476	6246047	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5372	BCLL PAD01	GDA	56	293117	6246205	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5373	BCLL IF01	GDA	56	292819	6246192	Open site	Valid	Artefact : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5374	BCLL ST01	GDA	56	292766	6246163	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5375	BCLL RT01	GDA	56	293109	6246170	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						
45-5-5376	BCLL RT02	GDA	56	293065	6246202	Open site	Valid	Modified Tree (Carved or Scarred) : -		
Contact		Recorders		GML Heritage Pty Ltd - Surry Hills, Miss. Hannah Morris						

**** Site Status**

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

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

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

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

Report generated by AHIMS Web Service on 23/08/2021 for Kate Storan for the following area at Datum :GDA, Zone : 56, Eastings : 289875.0 - 293875.0, Northings : 6244469.0 - 6248469.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 76

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Page 5 of 5

Appendix B – Site Cards

Appendix C Artefact catalogue

Artefact catalogue for lithic material recovered from Area 4

ID #	TP/ Depth	Material	Colour	Type	Platform/ Termination	Weight/g	L	W	Th	Comments
1	20/ Spit 1	Silcrete	Red	Split Flake	Simple	0.92	19	11	6	Left margin missing, possible backing started at proximal
2	16/ Spit 2	Chert	Grey	Medial Fragment		0.52	12	9	2	Could even be quartzite
3	13/ Spit 1	Silcrete	Red	Proximal Fragment	Simple	0.61	15	9	5	
4	12/ Spit 2	Silcrete	Red	Angular Fragment		0.29	32	25	10	Rough
5	12/ Spit 2	Silcrete	Red	Angular Fragment		0.07	32	17	7	
6	8/ Spit 1	Silcrete	Red	Distal Fragment	Feather	0.44	40	27	11	Feather termination
7	7/ Spit 1	Silcrete	Pink/grey	Medial Fragment		0.77	33	33	5	Rough with one margin missing
8	7/ Spit 1	Silcrete	Red	Proximal Fragment	Broad	0.51	18	12	3	
9	10/ Spit 1	Silcrete	Red	Angular Fragment		1.67	19	10	3	100% Cortex fragment, rough, terrestrial cortex
10	10/ Spit 1	Silcrete	Red	Distal Fragment	Feather	0.47	30	12	7	
11	6/ Spit 1	Silcrete	Red	Split Flake	Simple	4.5	18	17	9	Rough, feather termination, simple platform
12	6/ Spit 1	Silcrete	Red	Flake	Simple, Feather	3.64	17	21	11	Rough, not a proper bulb
13	6/ Spit 1	Silcrete	Red	Proximal Fragment	Focal	2.09	38	14	11	>70% smooth cortex or flat fault split

*Spit 1 (0-100mm), Spit 2 (100-200mm)



Appendix E – Continued consultation

Attached separately on the following pages.

From: [Bradshaw, Charlotte](#)
To: ["darrenjohnduncan@gmail.com"](#); [GLALC Culture&Heritage](#)
Bcc: ["corroboreecorp@bigpond.com"](#); ["wokacorp@yahoo.com"](#); ["kgchalkers@bigpond.com"](#); ["philipkhan.acn@live.com.au"](#); ["cal.slater61@gmail.com"](#); ["Cazadirect@live.com"](#); ["yurrandaali_cs@hotmail.com"](#); ["barrabyculturalservices@gmail.com"](#); ["Waawaar.awaa@gmail.com"](#); ["scott@tocomwall.com.au"](#); ["justinecoplin@optusnet.com.au"](#); ["gambaaculturalconnections@hotmail.com"](#); ["mundawari.hc@gmail.com"](#); ["darrenjohnduncan@gmail.com"](#); ["wenlissa01@hotmail.com"](#); ["yulayculturalservices@gmail.com"](#); ["clive.freeman@y7mail.com"](#); ["butuheritage@gmail.com"](#); ["wurrumay@hotmail.com"](#); ["didgengunawalclan@yahoo.com.au"](#); ["corroboreecorp@outlook.com"](#); ["wokacorp@yahoo.com"](#); ["kgchalkers@bigpond.com"](#); ["philipkhan.acn@live.com.au"](#); ["cal.slater61@gmail.com"](#); ["Cazadirect@live.com"](#); ["barrabyculturalservices@gmail.com"](#); ["yurrandaali_cs@hotmail.com"](#); ["Waawaar.awaa@gmail.com"](#); ["scott@yarrawalk.com.au"](#); ["justinecoplin@optusnet.com.au"](#); ["gambaaculturalconnections@hotmail.com"](#); ["mundawari.hc@gmail.com"](#); ["darrenjohnduncan@gmail.com"](#); ["wenlissa01@hotmail.com"](#); ["yulayculturalservices@gmail.com"](#); ["clive.freeman@y7mail.com"](#); ["butuheritage@gmail.com"](#); ["wurrumay@hotmail.com"](#); ["didgengunawalclan@yahoo.com.au"](#)
Subject: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology
Date: Thursday, 30 October 2025 3:49:00 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[19853 Badgerys Creek AHIMS ID 45-5-5371 Test Excavation Methodology V2.pdf](#)

Dears RAPs,

I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

The last correspondence you would have received was from my colleague Jennifer Norfolk, providing the final version of the draft ACHA in April 2025, which also included the findings of the test excavation program undertaken in March 2022. In July 2025, the Masterplan (WSA-MP01) was approved. It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371.

Please find attached the proposed methodology for test excavation to further investigate the nature and extent of AHIMS ID 45-5-5371. If you wish to provide comment or request changes to this methodology, please send your feedback to me on the details listed below. Please provide all comments before 27 November 2025.

Kind regards,



Charlotte Bradshaw (She/her/hers)
Heritage Consultant

P: +61 2 9259 3794
W: [ecoaus.com.au](#)

Level 13, 420 George Street, Sydney, NSW 2000 | Australia



Eco Logical Australia acknowledges Traditional Custodians of Gadigal Country and recognises the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. Through this acknowledgement we commit to ongoing learning and understanding on our journey to reconciliation.

This message, including any attachments, may include privileged, confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

30 October 2025

Our ref: 21SYD-19853

To whom it may concern,

Re: Project information and sampling methodology for AHIMS ID 45-5-5371 – 475 Badgerys Creek Road ACHA.

Thank you for registering your interest in the Aboriginal Cultural Heritage Assessment (ACHA) for the Masterplan for 475 Badgerys Creek Road, Badgerys Creek, NSW.

The purpose of this methodology and test excavation is to investigate the nature and extent of AHIMS ID 45-5-5371 which is a Potential Archaeological Deposit (PAD) site. AHIMS ID 45-5-5371, GML (2020) registered this PAD. Subsequently, ELA (2021) undertook additional archaeological surveys and a test excavation program which resulted in the AHIMS ID 45-5-5371 PAD extent reduced to areas associated with surface artefacts and locations with evident *in situ* soils. A test excavation program was undertaken in areas of PAD proposed to be impacted under the Masterplan (2021). Due to amendments to the impact footprint, it has been flagged that a remnant area of PAD will be impacted and thus additional test excavation is required.

The project information and testing information are presented on the following pages. If you have any questions regarding the methodology or project, please don't hesitate to contact me on 02 9259 3794 or email charlotteb@ecoaus.com.au.

Thank you for your continued involvement in this ongoing project.

Regards,



Charlotte Bradshaw
Archaeologist

1. Project Information

1.1 Background

Ingham Property Group (the proponent) are proposing works involving an enterprise development and new road alignment within the entirety of 475 Badgerys Creek Road, Badgerys Creek, NSW ('the Project Area'; Figure 1). ELA were engaged to undertake an Aboriginal Cultural Heritage Assessment (ACHA) and test excavation program to inform the Masterplan. The final ACHA and Archaeological Technical Report (ATR) was provided to RAPs on 18 April 2025 which included the final Masterplan layout and infrastructure works. On July 11 2025, the Masterplan (WSA-MP01) was approved.

It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371 ('the Investigation Area'; Figure 1). The ACHA identified this area as possessing low scientific significance due to the very thin upper deposit and disturbance present. However, the possibility of subsurface artefacts exists, and the nature and extent of the PAD needs to be fully investigated and understood.

If Aboriginal objects are identified, then an addendum Aboriginal Cultural Heritage Assessment (ACHA) will be required to support an application for an Aboriginal Heritage Impact Permit (AHIP). If no Aboriginal objects are identified, the findings will be summarised into a Test Excavation Report and will support the development approvals.

1.2 Study area

The wider Project Area comprises 475 Badgerys Creek Road, Badgerys Creek NSW (Lot 1, DP1123344) (Figure 1) which covers approximately 182 ha and is situated on a gently undulating landform that lies between the water ways of Badgerys Creek and South Creek. The Project Area is located in the Parish of Bringelly in the County of Cumberland, within the Liverpool Local Government Area (LGA), and falls within the Gandangara Local Aboriginal Land Council boundaries.

The Investigation Area is restricted to the portions of the AHIMS ID 45-5-5371 PAD extent that have not been previously archaeologically investigated.

1.3 Name and contact details of proponent

The proponent for the works is the Ingham Rural Property Group.

Contact Details:

Michael Parkinson
Suite 1.02, 4F Huntley Street, Alexandria, NSW
2015
michaelp@inghamproperty.com.au
Email: michaelp@inghamproperty.com.au
Mobile: 0419638337

C/-: Eco Logical Australia
Level 13, 420 George Street, Sydney NSW,
2000.
Project manager: Charlotte Bradshaw
Email: charlotteb@ecoaus.com.au
Telephone: 02 9259 3792

1.4 Purpose

The purpose of this document is twofold; to provide Registered Aboriginal Parties (RAPs) with information about the scope of the proposed project, and to provide a methodology for the proposed cultural heritage assessment process (if required) and requested test excavations. This methodology also aims to develop, in consultation with RAPs, a test excavation sampling strategy which will ensure the identification of Aboriginal objects within the area of sensitivity. The steps to ensure these goals are achieved include:

1. To conduct archaeological test excavations under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).
2. If required, prepare a cultural heritage assessment in consultation with Aboriginal people who represent the area to understand the cultural values of identified Aboriginal objects.

1.5 Scope of works

Ingham Property Group have developed a Masterplan (WSA-MP01) to facilitate a streamlined development process for the subdivision. Ingham Property Group will be undertaking the initial civil works in stages, and a Complying Development application will be completed for each stage. Complying Development Certificate 4 (CDC4) is pertinent to this current investigation. The specific works of relevance to this investigation is a proposed road alignment ('Road 03') which overlaps with AHIMS ID 45-5-5371.



Figure 1: The Project Area and Investigation Area

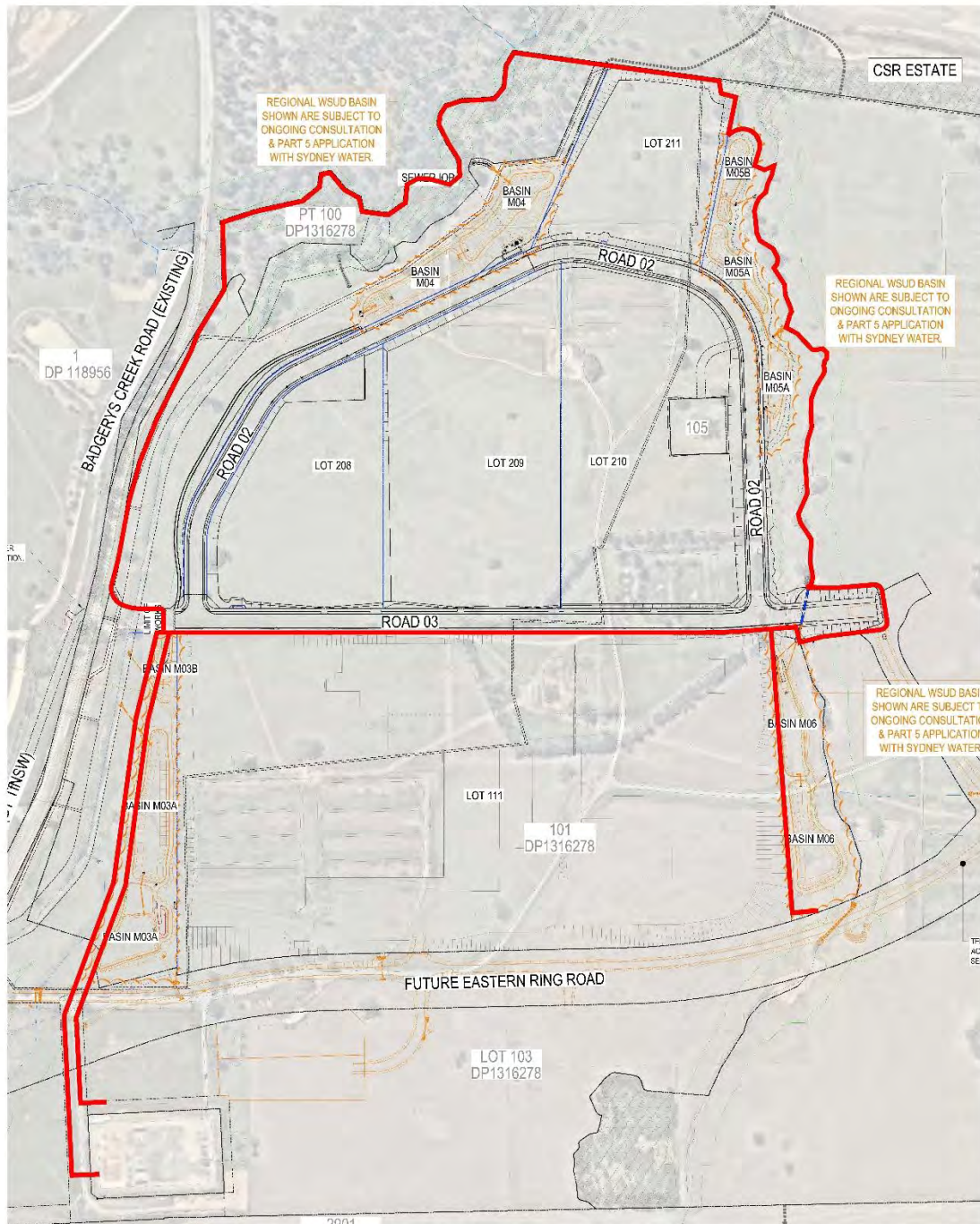


Figure 2: Extent of CDC 4 works and location of 'Road 03'

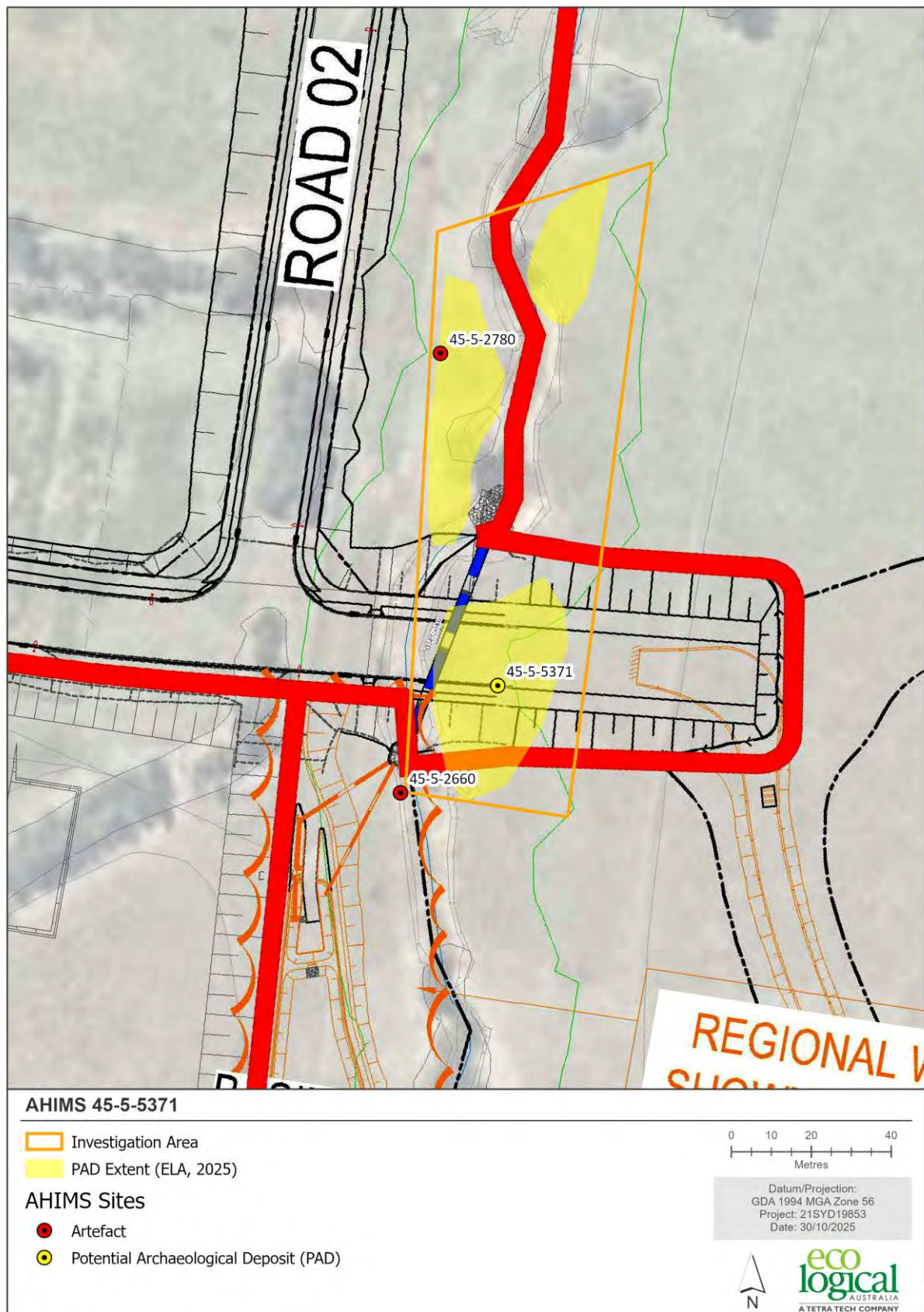


Figure 3: Location of AHIMS ID 45-5-5371

2. Methodology

The test excavation methodology outlines the approach to identifying Aboriginal Objects by Heritage NSW and in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010):

2.1. Stage 1 test pits

- The test pits will be excavated by hand (inclusive of trowels, spades and other hand tools) and placed on a systematic grid appropriate to the scale of the area being investigated e.g. 10 m intervals, 20 m intervals, or other justifiable and regular spacing.
- The first test pit within a landform or PAD area will be excavated in 5 cm spits; the subsequent test pits conducted within the landform or PAD area can then be excavated in either 10 cm spits or stratigraphic units (whichever is smaller) to the base of Aboriginal object-bearing units being the removal of the A-horizon soil deposit down to the sterile clay layer (B-horizon).
- Depending on the depth, and in order to achieve this, additional adjacent 50 cm x 50 cm test pits may be excavated (for example expanding the test pit to 50 cm x 1 m) to reach the sterile clay layer.

2.2. Stage 2 expansion pits

- If five or more stone artefacts or formal tools are located within a 50 cm x 50 cm test pit, or suspected features such as heat treatment pits, hearths, or evidence of knapping events are identified, the test pit may be expanded into a 1 m x 1 m square at the discretion of the Excavation Director. The additional pits would be excavated in 50 cm x 50 cm test pit units in order to further understand the archaeological resource.
- Alternately, if five or more artefacts or formal tools are located within a 50 cm x 50 cm test pit, up to four 50 cm x 50 cm test pits may be placed at an interval of 5, 10, or 20 m (or other justifiable and regular spacing appropriate to the scale of the area being tested) from the test pit to test further the immediate area for artefact concentrations and/or archaeological features, or to define a site boundary. These additional test pits will be excavated until clay, or culturally sterile soils are reached.
- Expansion test pits may be combined and excavated as necessary in 50 cm x 50 cm units for the purposes of further understanding site characteristics. Note that under the Code of Practice, the maximum area that can be excavated in any one continuous area is 3 m².

2.3. General procedures

- The Code of Practice dictates that the maximum surface area of all test excavation units must be no greater than 0.5% of the PAD or area being investigated.
- All excavated soil will be sieved in 5 mm sieves. Artefacts will be collected and bagged according to test pit location and spit or context number.
- Wet or dry sieving may be employed depending on the nature of the soils. For example, dry sieving may be used for sandy soils.
- Each test pit will be recorded using standardised recording forms, coordinates collected using a GPS, and photographed using a range pole.

- The stratigraphic / soil profile for each test pit will be recorded in scale drawings as required by Heritage NSW *Code of Archaeological Practice* recording requirements.
- Test excavation units will be backfilled as soon as practicable, to be organised by the proponent.
- An AHIMS site card will be prepared and submitted to the AHIMS Registrar for any new sites identified during test excavations.
- An AHIMS Site Impact Recording form will be completed and submitted to the AHIMS Registrar for any sites impacted during test excavations.
- In the unlikely event that suspected human remains are identified works will immediately cease and the NSW Police and OEH will be notified.
- Test excavations will cease when enough information* has been recovered to adequately characterise the objects present with regard to their nature and significance.

*Enough information is defined by Heritage NSW as meaning “that the sample of excavated material clearly and self-evidently demonstrates the deposit’s nature and significance. This may include things like locally or regionally high object density: presence of rare or representative objects: presence of archaeological features: or locally or regionally significant deposits stratified or not.” (DECCW 2010a).

2.4. Field team

To be confirmed prior to commencement of test excavation program. ELA propose a team of two ELA archaeologists and two RAPs.

2.5. Test excavation timing

The timing of the test excavation is dependent on suitable weather, property access and availability of Aboriginal representatives, staff and contractors, as such the commencement and completion dates should remain flexible.

The proposed test excavation will be done over two days in November 2025.

2.6. Reporting

ELA proposes to undertake archaeological test excavations under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a) in order to understand the presence, nature, extent and significance of the Aboriginal archaeological resource and how best to manage it.

ELA proposes to prepare an accompanying Test Excavation Report to support any approvals. The report would document the archaeological values within the investigation area. This information will be used to guide and manage the archaeological and cultural heritage resource.

If Aboriginal objects are identified, then an Aboriginal Cultural Heritage Assessment (ACHA) will be required to support an Aboriginal Heritage Impact Permit (AHIP) application. If no Aboriginal objects are identified, the findings will be summarised into a Test Excavation Report and the AHIMS ID 45-5-5371 site card will be updated accordingly in the AHIMS database.

2.7. Management of artefacts

A strategy for management of Aboriginal artefacts recovered from the site would be developed through consultation with the RAPs.

Any artefacts collected during test excavations will be temporarily held at the ELA office (Level 13, 420 George Street, Sydney NSW 2000) where they will be catalogued and analysed by ELA.

Following the completion of artefact cataloguing and analysis any artefacts recovered during test excavations, future storage and management of artefacts will be determined following Aboriginal community consultation.



Figure 4: Proposed test pit location

References

Australian Heritage Commission, 2002. *Ask First: A Guide to Respecting Indigenous Heritage Places and Values*.

Department of Environment, Climate Change and Water, 2010a. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

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

eSpade, *Blacktown Soil Landscape*, accessed 2 August 2021, <https://www.environment.nsw.gov.au/Salis5app/resources/spade/reports/9030bt.pdf>

New South Wales Heritage Office. 2015. *Assessing Heritage Significance*.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013.

GML Heritage, 2020. *Badgerys Creek Aboriginal Heritage Report*. Unpublished report prepared for Lend Lease

Office of Environment and Heritage, 2011. *Guide to Investigating, Assessing, and Reporting on Aboriginal Cultural Heritage in New South Wales*.

From: [Wendy Morgan](#)
To: [Bradshaw, Charlotte](#); michaelp@inghamproperty.com.au
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology
Date: Monday, 3 November 2025 4:27:24 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Hi Charlotte,

Thanks for the information about 475 Badgerys Creek Road, Bradfield -test excavation methodology, Guntawang Aboriginal Resources Incorporated agrees and supports the recommendation from the report.

(not for publication our hourly rates are \$110.00 per hour)

We look forward to working with you on this project.

kind regards

Wendy Morgan
CEO GARI
0414 964 657

From: Bradshaw, Charlotte <CharlotteB@ecoaus.com.au>
Sent: Thursday, October 30, 2025 3:51 PM
To: darrenjohnduncan@gmail.com <darrenjohnduncan@gmail.com>; GLALC Culture&Heritage <culture&heritage@glalc.org.au>
Subject: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology

Dears RAPs,
I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

The last correspondence you would have received was from my colleague Jennifer Norfolk, providing the final version of the draft ACHA in April 2025, which also included the findings of the test excavation program undertaken in March 2022. In July 2025, the Masterplan (WSA-MP01) was approved. It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371.

Please find attached the proposed methodology for test excavation to further investigate the nature and extent of AHIMS ID 45-5-5371. If you wish to provide comment or request changes to this methodology, please send your feedback to me on the details listed below. Please provide all comments before 27 November 2025.

Kind regards,

Charlotte Bradshaw (She/her/hers)
Heritage Consultant

From: [lilly.carroll](#)
To: [Bradshaw, Charlotte](#)
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology
Date: Thursday, 30 October 2025 4:33:24 PM
Attachments: [image003.png](#)
[image004.png](#)
[image001.png](#)
[image002.png](#)

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Hi Charlotte

We agree with everything and we hope to be a part of the team that's required of two at your subject area.

It's been a long time Since we worked with Declan, which is now moved on, I'm writing to you to pick us!

Kind regards
Paul boyd and Lilly Carroll
Directors DNC
0426 823 944

[Sent from Yahoo Mail for iPhone](#)

On Thursday, October 30, 2025, 15:51, Bradshaw, Charlotte <CharlotteB@ecoaus.com.au> wrote:

Dears RAPs,
I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

The last correspondence you would have received was from my colleague Jennifer Norfolk, providing the final version of the draft ACHA in April 2025, which also included the findings of the test excavation program undertaken in March 2022. In July 2025, the Masterplan (WSA-MP01) was approved. It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371.

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Kind regards,



Charlotte Bradshaw (She/her/hers)
Heritage Consultant

P: +61 2 9259 3794
W: ecoaus.com.au

Level 13, 420 George Street, Sydney, NSW 2000 | Australia



Eco Logical Australia acknowledges Traditional Custodians of Gadigal Country and recognises the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. Through this acknowledgement we commit to ongoing learning and understanding on our journey to reconciliation.

This message, including any attachments, may include privileged, confidential and/or inside information. Any distribution or use of this communication by anyone other than the intended recipient is strictly prohibited and may be unlawful. If you are not the intended recipient, please notify the sender by replying to this message and then delete it from your system.

Jorgensen, Nicola

From: Phil Khan <philipkhan.acn@live.com.au>
Sent: Friday, 7 November 2025 8:54 AM
To: Bradshaw, Charlotte
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology

Follow Up Flag: Follow up
Flag Status: Flagged

⚠ CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Good Morning Charlotte,

Thank you for providing the methodology for the additional test excavations at 475 Badgerys Creek Road, Bradfield. We agree and support your methodology.

We express our interest to be part of the fieldwork.

We look forward to working alongside you on this project.

Kinds Regards

Phil Khan

P 0451068480

Email: philipkhan.acn@live.com.au

ABN 26 637 314 384



From: Bradshaw, Charlotte <CharlotteB@ecoaus.com.au>
Sent: Thursday, 30 October 2025 3:51 PM
To: darrenjohnduncan@gmail.com <darrenjohnduncan@gmail.com>; GLALC Culture&Heritage <culture&heritage@glalc.org.au>
Subject: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology

Dears RAPs,

I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

From: [Wendy Morgan](#)
To: [Bradshaw, Charlotte](#)
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology
Date: Thursday, 30 October 2025 4:28:27 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

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Hi charlotte,

Guntawang support and is happy with the report we would like to participate in the test excavation methodology.

Kind regards

Wendy Morgan

Sent from my iPhone

On 30 Oct 2025, at 3:52 pm, Bradshaw, Charlotte
<CharlotteB@ecoaus.com.au> wrote:

Dears RAPs,

I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

The last correspondence you would have received was from my colleague Jennifer Norfolk, providing the final version of the draft ACHA in April 2025, which also included the findings of the test excavation program undertaken in March 2022. In July 2025, the Masterplan (WSA-MP01) was approved. It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371.

Please find attached the proposed methodology for test excavation to further investigate the nature and extent of AHIMS ID 45-5-5371. If you wish to provide comment or request changes to this methodology, please send your feedback to me on the details listed below. Please provide all comments before 27 November 2025.

Kind regards,

<image001.png>

Charlotte Bradshaw (She/her/hers)

Heritage Consultant

P: +61 2 9259 3794

W: ecoaus.com.au

Level 13, 420 George Street, Sydney, NSW 2000 | Australia

[<image002.png>](#) [<image003.png>](#) [<image004.png>](#)

the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. Through this acknowledgement we commit to ongoing learning and understanding on our journey to reconciliation.

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<19853 Badgerys Creek AHIMS ID 45-5-5371 Test Excavation Methodology V2.pdf>

Jorgensen, Nicola

From: [REDACTED]
Sent: Sunday, 16 November 2025 11:53 PM
To: Bradshaw, Charlotte
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology

Follow Up Flag: Follow up
Flag Status: Flagged

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Hi Charlotte
We support the implementation of did the test excavations
Kind regards

[REDACTED]

We respectfully acknowledge the Traditional Owners of the lands upon which we work and pay our deep respect to Elders past, present and emerging

On 30 Oct 2025, at 3:52 pm, Bradshaw, Charlotte <CharlotteB@ecoaus.com.au> wrote:

Dears RAPs,
I am writing to you as you have registered your interest as a stakeholder in the 475 Badgerys Creek Road Masterplan Project in Bradfield (formerly Badgerys Creek), NSW. This project has been ongoing since 2021.

The last correspondence you would have received was from my colleague Jennifer Norfolk, providing the final version of the draft ACHA in April 2025, which also included the findings of the test excavation program undertaken in March 2022. In July 2025, the Masterplan (WSA-MP01) was approved. It has since been flagged that additional test excavation is required in a discrete area proposed for a road alignment, which overlaps with the remnant PAD extent of AHIMS ID 45-5-5371.

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Kind regards,

<image001.png>

Charlotte Bradshaw (She/her/hers)
Heritage Consultant

P: +61 2 9259 3794
W: ecoaus.com.au

Level 13, 420 George Street, Sydney, NSW 2000 | Australia

From: [Carolyn .H](#)
To: [Bradshaw, Charlotte](#)
Subject: Re: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology
Date: Saturday, 1 November 2025 8:33:08 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
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[image.png](#)
[Outlook-4exkjbca.png](#)
[paste.png](#)
[A1.WC.2026.pdf](#)
[A1.PL.2026.pdf](#)

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Contact: Carolyn Hickey
Mobile: 0411650057
Email: Cazadirect@live.com
Address: 73 Russell St, Emu Plains, NSW 2750
ABN: 20 616 970 327

Dear Charlotte,

Thank you for your email and the attached proposed methodology for the additional test excavation at 475 Badgerys Creek Road. I have reviewed the document and fully support the Information and Methodology.

I would like to be included in the fieldwork.

About Carolyn Hickey

I am a Traditional Owner and a Deerubbin land council member with over 25 years of experience and a preserving Aboriginal cultural heritage.

My extensive cultural knowledge is essential in determining the significance of Aboriginal objects and values within the project area.

I have attached A1 Indigenous Services Insurances.

A1 INDIGENOUS SERVICES, Represents over 100 Indigenous Locals

I agree to my details being shared with OEH and the LALC. Please feel free to contact me using the details provided above.

Kind regards,
Carolyn Hickey



Deerubbin LALC
Member

A1 Indigenous Services is a 100% Indigenous-owned Australian company offering a range of services to the construction industry. Our mission is to commit to an innovative approach for a better future for Indigenous employment and community, while improving ways to close the gap in Aboriginal participation in the construction industry. We are dedicated to building

strength in Aboriginal communities and our Indigenous labour force.



A1 Indigenous Services is a member of the NSW Indigenous Chamber of Commerce (NSWICC). A business or enterprise carrying the NSWICC Assured logo has met national policy requirements as upheld by FACCI, ensuring that it is identified as a First Nations business owner or entrepreneur and that it demonstrates compliance with government and industry regulators.



From: Bradshaw, Charlotte <CharlotteB@ecoaus.com.au>

Sent: Thursday, 30 October 2025 3:51 PM

To: darrenjohnduncan@gmail.com <darrenjohnduncan@gmail.com>; GLALC Culture&Heritage <culture&heritage@glalc.org.au>

Subject: 475 Badgerys Creek Road, Bradfield - Test Excavation Methodology

Dears RAPs,

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Please find attached the proposed methodology for test excavation to further investigate the nature and extent of AHIMS ID 45-5-5371. If you wish to provide comment or request changes to this methodology, please send your feedback to me on the details listed below. Please provide all comments before 27 November 2025.

Kind regards,



Charlotte Bradshaw (She/her/hers)
Heritage Consultant

P: +61 2 9259 3794

W: ecoaus.com.au

Level 13, 420 George Street, Sydney, NSW 2000 | Australia



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Jorgensen, Nicola

From: Bradshaw, Charlotte
Sent: Wednesday, 11 March 2026 10:59 AM
To: darrenjohnduncan@gmail.com; GLALC Culture&Heritage
Subject: Issue of AHIP 5532 - 475 Badgerys Creek Road, Bradfield, NSW
Attachments: AHIP 5532 - Approval Letter and Permit - Masterplan WSA -MP01 staged civil works (475 Badgerys Creek Road, Bradfield) - 6 March 2026.pdf

Dear RAPs,
Thank you for your involvement in the 475 Badgerys Creek Road Masterplan Project.

I am writing to inform you that an AHIP has been approved for the Masterplan area (see attached). Per condition 4 of AHIP 5532, a copy of the AHIP must be provided to each RAP within 14 days.

If you have any questions in regard to the AHIP, please don't hesitate to reach out.

Kind regards,



Charlotte Bradshaw (She/her/hers)
Senior Heritage Consultant

P: +61 2 9259 3794
W: ecoaus.com.au

Level 13, 420 George Street, Sydney, NSW 2000 | Australia



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Jorgensen, Nicola

From: Bradshaw, Charlotte
Sent: Monday, 23 March 2026 3:11 PM
To: 'darrenjohnduncan@gmail.com'; 'GLALC Culture&Heritage'
Subject: RE: Issue of AHIP 5532 - 475 Badgerys Creek Road, Bradfield, NSW
Attachments: 475 Badgerys Creek Road Heritage Induction Sheet v0a.pdf

Dear RAPs,
Following on from the previous email, we are fulfilling Condition 11 and Condition 12 of AHIP 5532 by providing heritage induction documentation for all workers.

Please note that the AHIP permits harm to the Aboriginal sites (listed in Schedule C), it does not permit harm to the areas mapped as conservation areas or Aboriginal objects not anticipated to be located within the site. This heritage induction is to provide workers with the steps to follow in the event of an unanticipated find (including human remains) that is not covered under the AHIP.

If you have any comment or input you would like to offer for the heritage induction and Aboriginal cultural awareness training, please do so by responding to this email.

Kind regards,



Charlotte Bradshaw (She/her/hers)
Senior Heritage Consultant
P: +61 2 9259 3794

Eco Logical Australia acknowledges Traditional Custodians of Gadigal Country and recognises the continuing connection to lands, waters and communities. We pay our respect to Aboriginal and Torres Strait Islander cultures; and to Elders past and present. Through this acknowledgement we commit to ongoing learning and understanding on our journey to reconciliation.

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From: Bradshaw, Charlotte
Sent: Wednesday, 11 March 2026 10:59 AM
To: darrenjohnduncan@gmail.com; GLALC Culture&Heritage <culture&heritage@glalc.org.au>
Subject: Issue of AHIP 5532 - 475 Badgerys Creek Road, Bradfield, NSW

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If you have any questions in regard to the AHIP, please don't hesitate to reach out.

Kind regards,



Charlotte Bradshaw (She/her/hers)
Senior Heritage Consultant

P: +61 2 9259 3794
W: ecoaus.com.au



475 Badgerys Creek Road, Bradfield

Unexpected Finds Protocol

On behalf of Ingham Property Group

Contents

CONTACT LIST	1
1. Aboriginal Heritage Impact Permit (AHIP 5532)	2
2. Unexpected finds overview: Aboriginal and historical heritage	3
2.1. Aboriginal objects	3
2.2. Historical heritage items	3
3. Unexpected finds procedure: Aboriginal heritage	4
3.1. Discovery.....	5
3.2. Notification	6
3.3. Next steps	6
4. Unexpected finds procedure: historical heritage	8
4.1. Discovery.....	8
4.2. Notification	8
4.3. Next steps	8
5. Unexpected finds procedure: human skeletal remains	10
5.1. Discovery.....	10
5.2. Notification and confirmation.....	10
5.3. Next steps – Aboriginal ancestral human remains.....	10
5.4. Next steps – non-Aboriginal human remains	11

List of Figures

Figure 1: Stone artefacts (flakes)	4
Figure 2: Example of stone artefacts (flakes)	4
Figure 3: Example of culturally scarred trees.....	4
Figure 4: Example of grinding stone	4
Figure 5: Example of a ground-edge axe found on Walbanga Country.....	5
Figure 6: Example of flaked stone axe	5
Figure 7: Example of worked shell artefacts – fish hooks from Worimi Country (Worimi Conservation Lands).....	5
Figure 8: Example of hammerstones	5
Figure 9: Procedure for unexpected finds (Aboriginal heritage).....	7
Figure 10: Procedure for unexpected finds (historical heritage)	9
Figure 11: Procedure for unexpected finds (human skeletal remains)	12

CONTACT LIST

Contact	Contact Details
Project Archaeologist: Nicola Jorgensen (Eco Logical Australia Pty Ltd)	(02) 9259 3703 nicola.jorgensen@ecoaus.com.au
Heritage Council of NSW	(02) 9873 8500
Heritage NSW (Environment Line)	131 555
NSW Police	(02) 9765 9499 (Liverpool Police Station) or 131 444
Gandangara Local Aboriginal Land Council	(02) 9602 5280

1. **Aboriginal Heritage Impact Permit (AHIP 5532)**

Works undertaken within the Badgerys Creek Masterplan Area are undertaken under an Aboriginal Heritage Impact Permit (AHIP 5532 – Appendix A). The AHIP holder is Ingham Property Group (IPG) who are responsible for the conditions of AHIP 5532 being met. The purpose of this heritage induction document is to meet Condition 11 of AHIP 5532 by providing workers Aboriginal cultural awareness when working on site and understand their obligations working under the AHIP.

Under AHIP 5532, harm is permitted to Aboriginal sites (listed in Schedule C of AHIP 5532, Appendix A). There are two areas designated as 'no harm areas' or 'conservation areas'. These areas must be clearly marked as 'no harm areas' and all workers are to be made aware of these areas and their obligations to avoid and protect these areas from harm associated with the works, such as laydown areas, overburden, run-off or vehicular damage.

2. Unexpected finds overview: Aboriginal and historical heritage

An 'unexpected heritage find' means any unanticipated archaeological discovery of an actual or potential heritage object, for which the Proponent does not have approval to disturb under the *Heritage Act 1977 (Heritage Act)* [NSW] or the *National Parks and Wildlife Act 1974 (NPW Act)* [NSW]. These discoveries are categorised as:

- a) Aboriginal objects (e.g. stone tools)
- b) Historical (non-Aboriginal) heritage items (e.g. historical artefacts, or moveable objects)
- c) Human skeletal remains.

As the works are being undertaken under AHIP 5532, harm is permitted to Aboriginal sites as listed in Schedule C of AHIP 5532 (Appendix A). Therefore, there are Aboriginal objects expected to be impacted within the works area. See Section 3 for examples of Aboriginal objects not anticipated to be located within the site and the procedure to follow in the event of identified such an object.

2.1. Aboriginal objects

The *NPW Act* protects Aboriginal objects which are defined as:

"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains".

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials, and scarred trees. All Aboriginal objects, regardless of significance, or whether they are recorded on a heritage register, are protected under the *NPW Act*.

2.2. Historical heritage items

Historical heritage usually consists of places, structures and items that were used by people in the past. It can include buildings, archaeological sites (relics), works, landscapes, movable items, stories and shipwrecks.

Archaeological features and deposits are afforded statutory protection by the '*relics provision*'; Section 139 of the Act (as amended in 1999). Under this Section it is illegal to disturb or excavate any land knowing or suspecting that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. In such cases, an excavation permit under Section 140 (local significance) or Section 60 (state significance) is required.

3. Unexpected finds procedure: Aboriginal heritage

Impacts to Aboriginal objects associated with the sites listed in Schedule C of AHIP 5532 (Appendix A) is permitted. The objects associated with these sites are flaked stone artefacts (also known as 'flakes' or 'lithic flakes'). The most common raw material in the local region is red silcrete, which ranges in maroon red to deep red in colour. An example of flaked stone artefacts is shown in Figure 1. An example of silcrete flakes, identified within the Badgerys Creek site, is shown in Figure 2 below.



Figure 1: Stone artefacts (flakes)



Figure 2: Example of stone artefacts (flakes)

Examples of Aboriginal objects not anticipated to be associated with the sites listed in Schedule C of AHIP 5532 (Appendix A), include stone axes (Figure 4 and Figure 5), grinding stones (Figure 4), culturally modified trees (Figure 3), hammerstones (Figure 8) and worked shell or bone artefacts (Figure 7).



Figure 3: Example of culturally scarred trees



Figure 4: Example of grinding stone



Figure 5: Example of a ground-edge axe found on Walbanga Country



Figure 6: Example of flaked stone axe



Figure 7: Example of worked shell artefacts – fish hooks from Worimi Country (Worimi Conservation Lands)



Figure 8: Example of hammerstones

If, during works, objects similar to those shown in Figure 3 - Figure 8 are identified, the steps outlined in Section 3.1 to Section 3.3 and Figure 9 must be followed.

3.1. Discovery

- Stop all work in the immediate area of the find/s and notify the site manager (or equivalent).
- Establish a 'no-go zone' 10 m surrounding the find/s. Use high-visibility fencing where practical.
- Inform all site personnel about the no-go zone. No further interference, including works, ground disturbance, touching or moving the find/s must occur within the no-go zone.
- Contact the Project Archaeologist to assess the find/s and arrange a site inspection, if required. In some cases, the Project Archaeologist may determine from photographs that no site inspection is required, and the find/s are not Aboriginal objects.
- If it is assessed that the find/s are not Aboriginal objects and no archaeological constraint exists for the project, advice should be provided to this effect in writing (e.g., via email), from the Project Archaeologist. Once written advice has been received, works may proceed with caution.

3.2. Notification

- If it is assessed that the find/s are Aboriginal objects, the Proponent must notify Heritage NSW as soon as practicable under Section 89A of the *NPW Act* through the Environment Line (131 555). The Gandangara Local Aboriginal Land Council (LALC) should also be notified.

3.3. Next steps

- The Project Archaeologist should formally record the find/s and provide recommendations for heritage mitigation or management measures.
- If additional investigation such as excavation, salvage and/or community collection is required, the Proponent must arrange for the Project Archaeologist to undertake those works and obtain any relevant approvals prior to the works proceeding.
- All reporting and documentation associated with the find/s and any additional investigations are to be submitted to Heritage NSW.
- Works can recommence once the find/s are fully recorded, any additional investigations have been completed, management and mitigation measures have been implemented, and approval in writing has been received from Heritage NSW.
- In the event that Aboriginal objects are collected, they will be temporarily stored in an appropriate manner in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water NSW [DECCW] 2010). A strategy for permanent storage or disposition would be facilitated by the Project Archaeologist in consultation with the Gandangara LALC and/or Registered Aboriginal Parties for the project.

A summary of the procedure for unexpected finds (Aboriginal heritage) is provided in Figure 9 below.

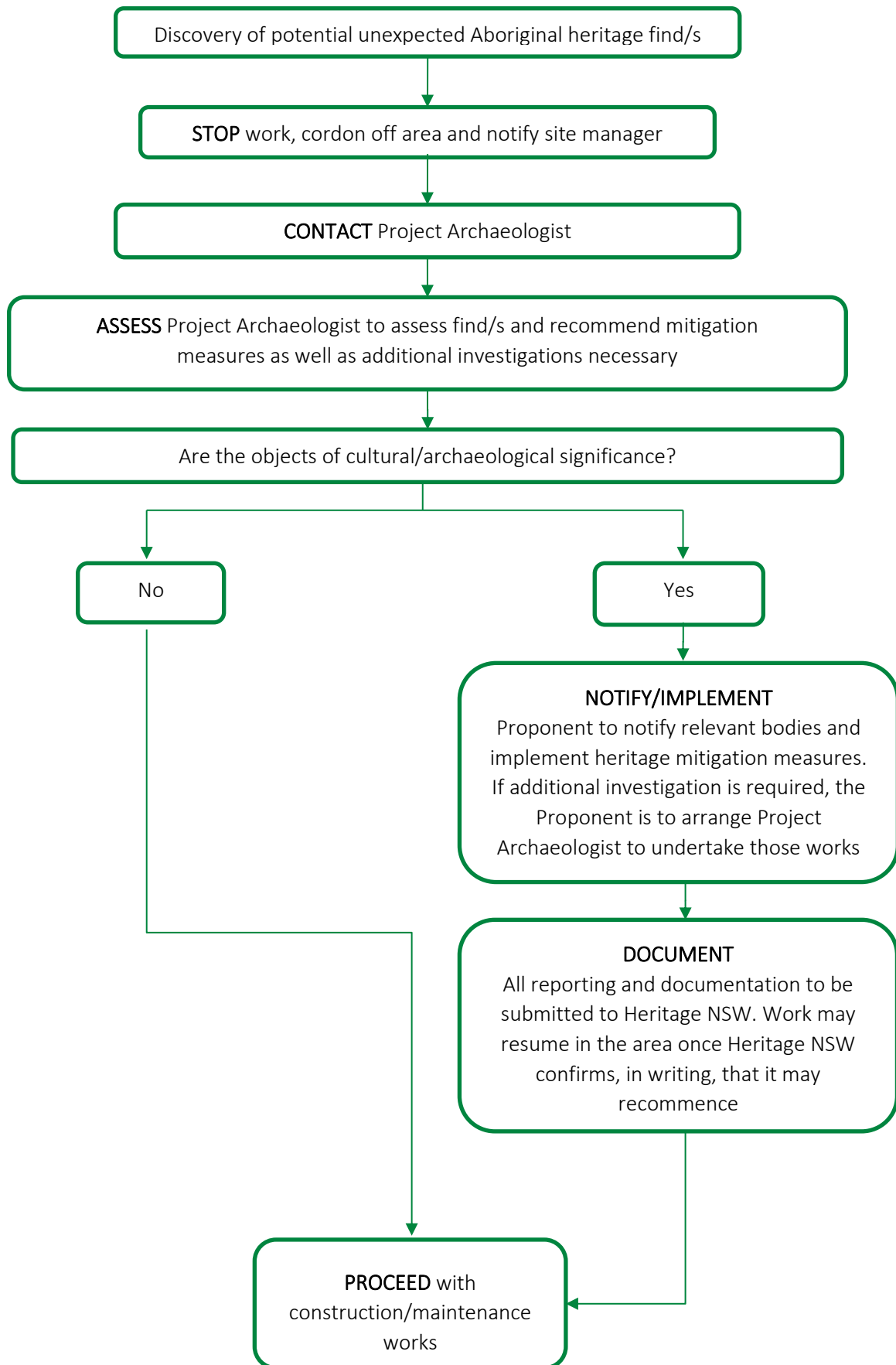


Figure 9: Procedure for unexpected finds (Aboriginal heritage)

4. Unexpected finds procedure: historical heritage

4.1. Discovery

- Stop all work in the immediate area of the find/s and notify the site manager (or equivalent).
- Establish a 'no-go zone' 10 m surrounding the find/s. Use high-visibility fencing where practical.
- Inform all site personnel about the no-go zone. No further interference, including works, ground disturbance, touching or moving the find/s must occur within the no-go zone.
- Contact the Project Archaeologist to assess the find/s and arrange a site inspection, if required. In some cases, the Project Archaeologist may determine from photographs that no site inspection is required, and the find/s are not heritage items or relics.
- If it is assessed that the find/s are not heritage items or relics, and no archaeological constraint exists for the project, advice should be provided to this effect in writing (e.g., via email), from the Project Archaeologist. Once written advice has been received, works may continue with caution.

4.2. Notification

- If it is assessed that the find/s of local or state significance, the Heritage Council of NSW must be notified via phone on (02) 9873 8500. Additional approvals will be required before works can recommence on site.

4.3. Next steps

- The Project Archaeologist should formally record the find/s and provide recommendations for heritage mitigation or management measures.
- If additional investigation such as excavation, salvage and/or community collection is required, the Proponent must arrange for the Project Archaeologist to undertake those works and obtain any relevant approvals prior to the works proceeding.
- All reporting and documentation associated with the find/s and any additional investigations are to be completed in accordance with the relevant guidelines.
- Works can recommence once the find/s are fully recorded, any additional investigations have been completed, management and mitigation measures have been implemented, and approval in writing has been received from the Project Archaeologist and/or any relevant statutory bodies.

A summary of the procedure for unexpected finds (historical heritage) is provided in Figure 10.

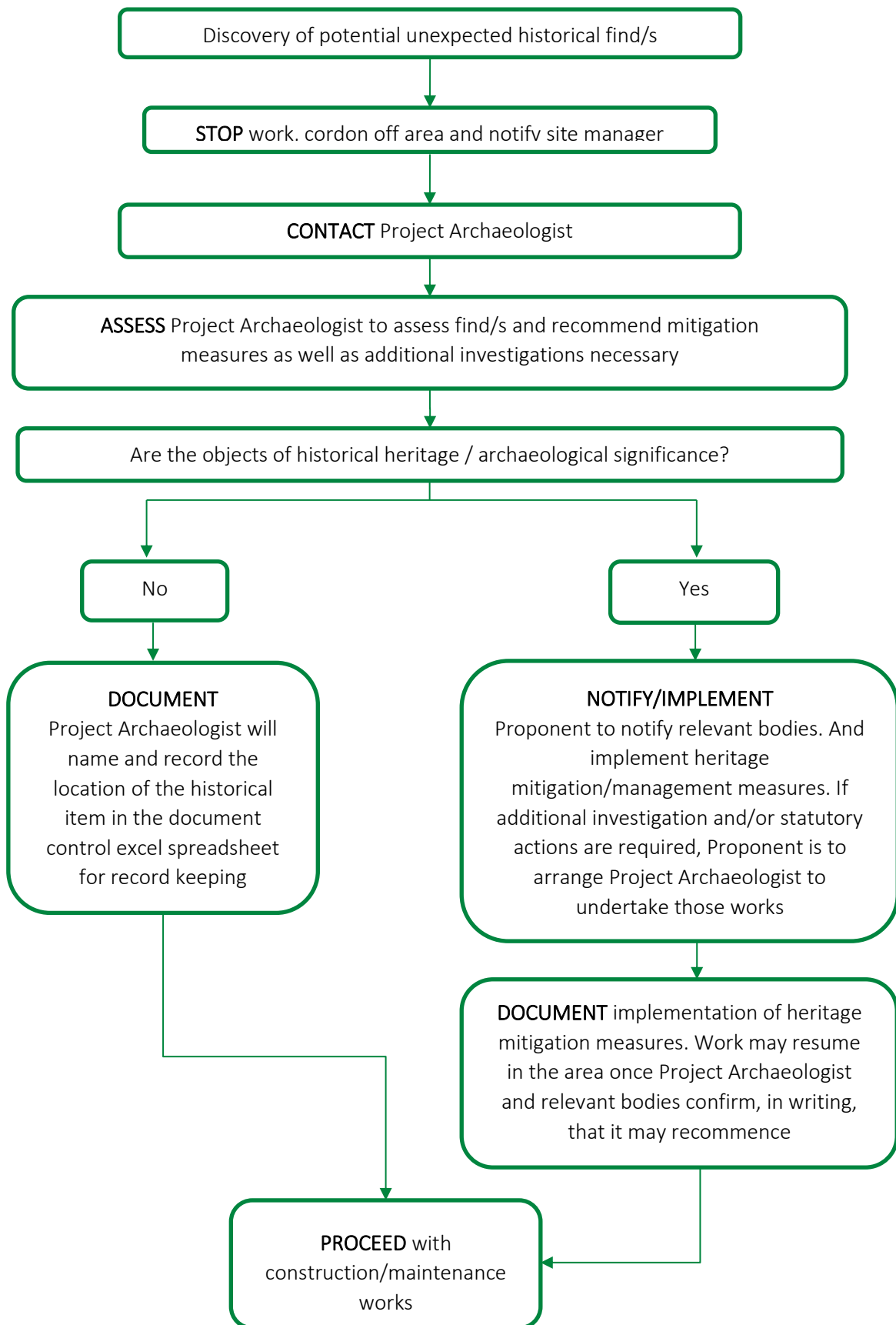


Figure 10: Procedure for unexpected finds (historical heritage)

5. Unexpected finds procedure: human skeletal remains

5.1. Discovery

- If any human remains or suspected human remains are found during any activity, work in the vicinity must cease.
- The remains must be left in place and protected from harm or damage, through low-impact fencing and protective, waterproof tarp.
- All personnel should then leave the immediate area.

5.2. Notification and confirmation

- The relevant project/site manager must be contacted immediately, who must then contact NSW Police.
- NSW Police will make an initial assessment to determine if the remains are human. If thought to be the remains of an Aboriginal person, Heritage NSW must be notified and an officer will confirm in writing if the remains are an Aboriginal person.
- Where it is suspected that less than 100 years has elapsed since death, human skeletal remains come under the jurisdiction of the State Coroner and the *Coroners Act 2009 (NSW)*. Under section 35(2) of that Act, a person must report the death to a Police Officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old regardless of ancestry. Public health controls may also apply.
- Where remains are suspected of being more than 100 years old, they are considered to be either Aboriginal objects (hereafter referred to as “Aboriginal ancestral human remains”) or non-Aboriginal relics depending on the ancestry of the individual. Aboriginal ancestral human remains are protected under the *NPW Act 1974*, while non-Aboriginal human remains are protected under the *Heritage Act 1977*.
- If there are reasonable grounds to be suspect that the remains are Aboriginal ancestral human remains, the following steps must be followed:
 - The Heritage NSW Environment Line (131 555) must be contacted as soon as possible and be provided all available details, including the location and nature of the remains.
 - The relevant Aboriginal community groups, as advised by Heritage NSW, must be notified immediately.
 - The relevant Project Archaeologist may be contacted to facilitate communication between NSW Police, Heritage NSW, and the Aboriginal community groups.
- If it is assessed that the finds are not human and no archaeological constraint exists for the project, advice should be provided in writing (e.g. via email) by the Project Archaeologist. Additional clearance documentation may also be required from NSW Police. Works may continue with caution once the relevant advice and clearance has been received.

5.3. Next steps – Aboriginal ancestral human remains

- If the remains are considered to be Aboriginal ancestral human remains (more than 100 years old) by NSW Police and Heritage NSW, no work can recommence at the particular location unless authorised in writing by Heritage NSW. The remains must continue to be protected from

the elements and from visibility. Public access must be restricted to the area in which the remains have been identified.

- A human remains management strategy must be developed by Heritage NSW, relevant Aboriginal community groups, and the Project Archaeologist.
- The Proponent must ensure that the human remains management strategy is implemented, and that the implementation is documented.
- Recording of Aboriginal ancestral human remains must be undertaken by, or conducted under the direct supervision of, a specialist physical anthropologist or other suitably qualified specialist. Recording of Aboriginal ancestral human remains must involve the relevant Aboriginal community groups.
- Archaeological reporting on Aboriginal ancestral human remains must be undertaken by, or reviewed by, a specialist physical anthropologist or another suitably qualified person. It is imperative that specialists do their utmost to use respectful and appropriate language in consideration of the ancestral remains as the remains of an Aboriginal person rather than as a scientific specimen.

5.4. Next steps – non-Aboriginal human remains

- If the remains are considered to be forensic non-Aboriginal human remains (less than 100 years old), it is assumed that the NSW Police will take control of the site and provide direction. All directions from NSW Police must be followed. Works may not recommence until written authorisation is received from NSW Police and any other relevant statutory bodies.
- If the remains are assessed to be historical relics (more than 100 years old), an appropriate management and mitigation and/or salvage strategy will be developed by the Project Archaeologist following further consultation with Heritage NSW.
- Works may resume once a clearance certificate is provided by the Project Archaeologist and, if required, approvals from NSW Ministry of Health and Heritage NSW.

A summary of the procedure for unexpected finds (human skeletal remains) is provided in Figure 11.

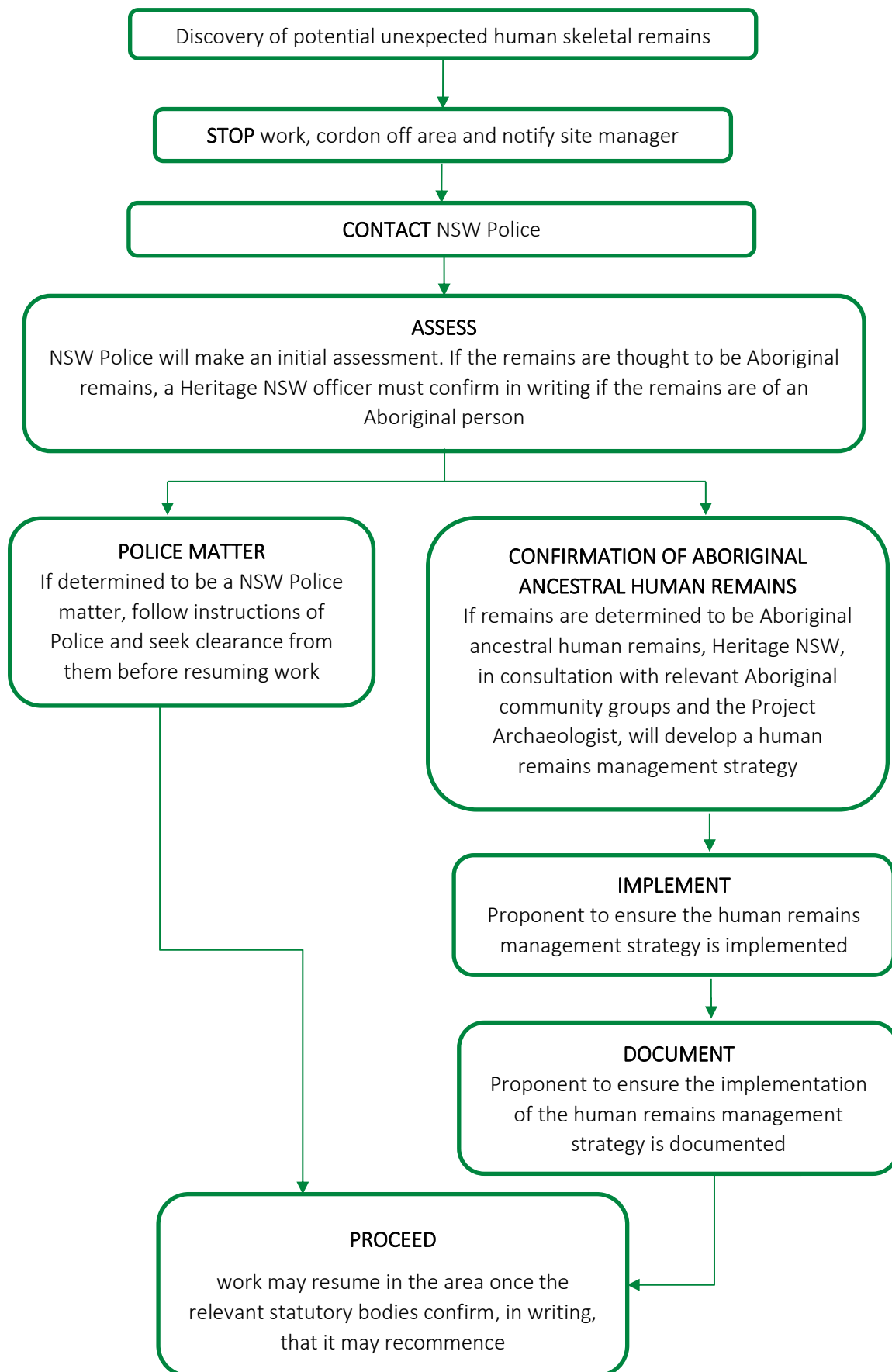


Figure 11: Procedure for unexpected finds (human skeletal remains)

Appendix A – AHIP 5532

Department of Climate Change,
Energy, the Environment and Water



Our ref: DOC26/105070

Mr Michael Parkinson
General Manager
Ingham Property Group
Suite 1.02, 4F Huntley Street
ALEXANDRIA NSW 2015
michaelp@inghamproperty.com.au

Subject: Aboriginal Heritage Impact Permit 5532 - Masterplan WSA-MP01 staged civil works - Badgerys Creek Road Bradfield

Dear Michael

Thank you for the application for an Aboriginal Heritage Impact Permit under section 90 of the *National Parks and Wildlife Act 1974* received on 20 January 2026.

I understand that the proposed development involves civil works as part of the Aerotropolis Precinct Plan and all associated works as documented in your Aboriginal Heritage Impact Permit application and Master Plan issued on 11 July 2025.

Your application has been assessed and approved. Your Aboriginal Heritage Impact Permit is attached.

Aboriginal cultural heritage is important and irreplaceable. Please be aware of your responsibilities in relation to Aboriginal cultural heritage and the conditions of the attached permit.

Advice

Your works may need approval from other local, State or Commonwealth government authorities.

You may need to report any discovery of Aboriginal remains under the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

The Aboriginal Heritage Impact Permit holder is responsible for obtaining permission to enter land from the owner and/or occupier of the land.

Section 164 of the *National Parks and Wildlife Act 1974* allows authorised officers to enter land if they suspect that an offence has been or is being committed.

heritagemailbox@environment.nsw.gov.au
Locked Bag 5020, Parramatta NSW, 2124
Aboriginal Heritage Impact Permit 5532

www.environment.nsw.gov.au/topics/heritage

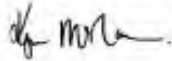
Page: 1 of 14

Right of appeal

Under section 90L of the *National Parks and Wildlife Act 1974*, the Aboriginal Heritage Impact Permit holder may appeal to the Land and Environment Court if they are dissatisfied with any condition of this Aboriginal Heritage Impact Permit. The appeal must be lodged within 21 days of the date this Aboriginal Heritage Impact Permit was issued.

If you require any further assistance do not hesitate to contact Kosta Contos, Senior Assessments Officer, at Heritage NSW on 9873 8500 or kosta.contos@dcceew.nsw.gov.au.

Yours sincerely



Kym McNamara
Strategic Manager ACH Approvals
Heritage NSW
Department of Climate Change, Energy, the Environment and Water
As Delegate under *National Parks and Wildlife Act 1974*

6 March 2026

Cc: Charlotte Bradshaw, Heritage Consultant/ Archaeologist, Eco Logical Australia -
charlotteb@ecoaus.com.au

Aboriginal Heritage Impact Permit: 5532

Aboriginal Heritage Impact Permit issued to:

Ingham Property 4 Pty Ltd

T/A Ingham Property Group

ABN: 48 673 229 073

Suite 1.02, 4F Huntley Street

ALEXANDRIA NSW 2015

Additional details for Public Register

Name of development or project	Masterplan WSA-MP01 staged civil works - Badgerys Creek Road Bradfield
Location	475 Badgerys Creek Road, Bradfield, NSW
Local government area(s)	Liverpool City Council
Description of harm authorised	Certain Aboriginal objects must not be harmed Harm to certain Aboriginal objects through the proposed works
Aboriginal Heritage Impact Permit commencement date and duration	Commencement date: 6 March 2026 Duration: 15 years

Aboriginal Heritage Impact Permit to Harm Aboriginal objects

Part A. Aboriginal Heritage Impact Permit issued subject to conditions

This Aboriginal Heritage Impact Permit is issued pursuant to section 90 of the *National Parks and Wildlife Act 1974*. All actions on the land must be carried out in accordance with the application except as otherwise expressly provided by a condition of this Aboriginal Heritage Impact Permit.

An Aboriginal Heritage Impact Permit is issued to harm Aboriginal objects identified in Schedules B and C, in accordance with the conditions of this Aboriginal Heritage Impact Permit.

***Note:** a dictionary defining terms used in this document are in Appendix A.

Part B. Commencement and duration of Aboriginal Heritage Impact Permit

This Aboriginal Heritage Impact Permit commences on the date it is signed unless otherwise provided by this Aboriginal Heritage Impact Permit.

Unless otherwise revoked in writing, this Aboriginal Heritage Impact Permit remains in force for 15 years from the date of commencement.

Part C. Proposed works

The proposed works involve civil works to prepare for future development as part of the Aerotropolis Precinct Plan for Western Sydney Aerotropolis and Western Sydney International Airport.

Impacts as part of the civil works include bulk earthworks, road connections, major transport corridors connecting the property with the larger transport network of the Aerotropolis Precinct as well as internal roads for lot access. Associated infrastructure (electricity, water, internet and drainage) to supply the individual lots and future development. Associated works will involve landscaping and revegetation.

Part D. Land to which this Aboriginal Heritage Impact Permit applies

The land to which this Aboriginal Heritage Impact Permit applies is that land bound by the blue line shown as 'AHIP Area' and listed grid references in Attachment 1.

Part E. Conditions

The conditions of this Aboriginal Heritage Impact Permit specify the actions that are permitted and/or required in relation to areas and Aboriginal objects, detailed in the schedules that follow.

Any requirement to provide written notice to Heritage NSW may be complied with by emailing the notice to heritagemailbox@environment.nsw.gov.au.

Condition number	Condition
Persons undertaking actions or works covered by this Aboriginal Heritage Impact Permit	
1	The Aboriginal Heritage Impact Permit holder must ensure that all persons involved in actions or works covered by this Aboriginal Heritage Impact Permit (whether employees, contractors, sub-contractors, agents, or invitees) are made aware of and comply with the conditions of this Aboriginal Heritage Impact Permit.
2	A suitably qualified and experienced individual must be appointed as a project manager who is responsible for overseeing, for and on behalf of the Aboriginal Heritage Impact Permit holder, all the actions relating to this Aboriginal Heritage Impact Permit.
3	If an alternative to the nominated project manager is appointed, Heritage NSW must be notified of their contact details within 14 days of this appointment.
Notification of registered Aboriginal parties	
4	A copy of this Aboriginal Heritage Impact Permit must be provided to each registered Aboriginal party, within 14 days of receipt of the Aboriginal Heritage Impact Permit from Heritage NSW and at least 7 days before the start of works under this Aboriginal Heritage Impact Permit.
5	Where this Aboriginal Heritage Impact Permit is varied or transferred, a copy of the Aboriginal Heritage Impact Permit variation or transfer notice must be provided to each registered Aboriginal party, within 14 days of receipt of the notice.
Indemnity	
6	This Aboriginal Heritage Impact Permit holder agrees to indemnify and keep indemnified, the Crown in right of NSW, the Minister administering the <i>National Parks and Wildlife Act 1974</i>, the Department Secretary, and their employees, agents, and contractors, in the absence of any wilful misconduct or negligence on their part, from and against all actions, demands, claims, proceedings, losses, damages, costs (including legal costs), charges or expenses suffered or incurred by them resulting from: a. Any damage or destruction to any real or personal property; and

Condition number	Condition
	b. Injury suffered or sustained (including death) by any persons arising out of or in connection with any actions undertaken pursuant to this Aboriginal Heritage Impact Permit.

Breach of Aboriginal Heritage Impact Permit conditions

7	The Aboriginal Heritage Impact Permit holder must notify Heritage NSW on heritagemailbox@environment.nsw.gov.au and the NSW Environment Line on 131 555 or info@environment.nsw.gov.au in writing within 48 hours after becoming aware of: a. Any contravention of s.86 of the <i>National Parks and Wildlife Act 1974</i> not authorised by an Aboriginal Heritage Impact Permit, and/or b. Any contravention of the conditions of this Aboriginal Heritage Impact Permit. Where Heritage NSW suspects that an incident has occurred which may have breached the <i>National Parks and Wildlife Act 1974</i> or Aboriginal Heritage Impact Permit, Heritage NSW and/or Authorised Officer appointed under the <i>National Parks and Wildlife Act 1974</i> may request a written incident report, which includes the following: a. the nature of the incident b. the actual or likely impact of the incident on Aboriginal objects and/or Aboriginal places c. the nature and location of these Aboriginal objects/or Aboriginal places, referring to and providing maps and photos where appropriate d. any conditions of an Aboriginal Heritage Impact Permit which may have been breached, and e. the measures which have been taken or will be taken to prevent a recurrence of the incident. The incident report must be provided to the Heritage NSW office within the timeframe specified in the request.
---	--

Human remains

8	All human remains in, on or under the land must not be harmed.
9	If any human remains (other than any human remains described in the attached schedule) are discovered and/or harmed in, on or under the land, the Aboriginal Heritage Impact Permit holder must: a. Not further harm these remains b. Immediately cease all work at the location c. Secure the area to avoid further harm to the remains

Condition number	Condition
	d. Notify the local police and the <u>NSW Environment Line</u> on 131 555 as soon as practicable and provide any available details of the remains and their location, and e. Not recommence any work at the location unless authorised in writing by Heritage NSW.
Prevention of harm	
10	The Aboriginal objects described in Schedule A must not be harmed. To ensure that the Aboriginal objects described in Schedule A are not harmed, the following measures must be implemented as soon as practicable and complied with: a. visual markers must be installed to clearly indicate the location of the Aboriginal objects and 'no-harm area' described in Schedule A, to any persons entering on foot or in a vehicle in the vicinity of the objects and or area b. employees, contactors, sub-contractors, agents, and invitees must be provided with a copy of any map referred to in Schedule A c. appropriate sediment control measures must be installed, operated, and maintained to prevent harm to the Aboriginal objects and 'no-harm areas' described in Schedule A d. vehicles must not be driven on or in the immediate vicinity of an Aboriginal object described in Schedule A e. vehicles must not be driven on any part of a 'no-harm area' described in Schedule A f. plant, equipment, or any materials including fill, must not be stored on any part of a 'no-harm area' described in Schedule A.
11	All personnel involved in the proposed works must participate in Aboriginal cultural heritage awareness training before undertaking any works.
12	All registered Aboriginal parties must be provided with the opportunity to participate in the development of the Aboriginal cultural heritage awareness training.
Harm	
Harm through the proposed works	
13	The Aboriginal objects described in Schedule C may be harmed. Nothing in this condition authorises harm to Aboriginal objects described in Schedule A (whether human remains, Aboriginal objects or 'no-harm areas').
14	Aboriginal objects described in Schedule C must not be harmed unless: a. all movement of Aboriginal objects described in Schedule B1 has occurred in the area, b. all excavations described in Schedule B2 have been completed in the area,

Condition number	Condition
	c. and all opportunities for community collection of Aboriginal objects described in Schedule B3 have been provided in the area.
Harm report	
15	A report must be prepared about the actions relating to the harm of Aboriginal objects (as permitted by this Aboriginal Heritage Impact Permit). The report must: a. include a short summary of the report b. describe any ongoing consultation with or involvement of representatives of registered Aboriginal parties in relation to this Aboriginal Heritage Impact Permit c. describe how any Aboriginal objects or 'no-harm areas' described in Schedule A were managed during the period covered by the Aboriginal Heritage Impact Permit d. provide details of the Aboriginal objects which were fully or partially harmed while undertaking the actions e. comment on the effectiveness of any mitigation measures that were implemented f. if any Aboriginal objects were moved to a temporary storage location, a description of the nature and types of Aboriginal objects which are now at that location g. detail the results of any analysis of Aboriginal objects h. detail the long-term management arrangements for any Aboriginal objects, and i. include a statement confirming that all Aboriginal Site Impact Recording Forms have been completed and submitted.
16	The report must be submitted to Heritage NSW heritagemailbox@environment.nsw.gov.au and the Aboriginal Heritage Information Management System Registrar ahims@environment.nsw.gov.au within 4 months of the completion of the actions.
17	A copy of the report including a summary of the report in plain English must be sent to each registered Aboriginal party within 14 days of the report being submitted to Heritage NSW.
Temporary storage	
18	Any Aboriginal objects that are removed from the land by actions authorised by this Aboriginal Heritage Impact Permit, must be moved as soon as practicable to the temporary storage specified below: Location name: Eco Logical Australia Office Address: Level 13/420 George St, Sydney NSW 2000 Storage particulars: Lockable facility
19	Heritage NSW must be notified of an alternative temporary storage location at least 7 days prior to the move.

Condition number	Condition
20	Any Aboriginal objects stored at the temporary storage location must not be further harmed, except in accordance with the conditions of this Aboriginal Heritage Impact Permit.
Long term management	
21	If objects are to be transferred under a Care and Control Agreement to an Aboriginal person or organisation representing Aboriginal people in accordance with section 85A(1)(c) of the <i>National Parks and Wildlife Act 1974</i> an application for a Care and Control Agreement must be completed.
22	If reburial is to be undertaken of objects Requirement 26 'Stone artefact deposition and storage' in the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW</i> , must be complied with unless the registered Aboriginal parties agree to an alternative deposition method.
Aboriginal site impact recording form	
23	Aboriginal Site Impact Recording Form must be completed and submitted online to the Aboriginal Heritage Information Management System Registrar, for each Aboriginal Heritage Information Management System site identified in Schedule C, within 4 months of the completion of the harm actions authorised by this Aboriginal Heritage Impact Permit. Note: - The Aboriginal Site Impact Recording Form must be updated with information about the site in each relevant field. Reference to a report is not an acceptable substitute for site information. - Details for the Aboriginal Heritage Information Management System Registrar and accessing the online system can be found here.

Schedule A: Aboriginal Objects that must not be harmed

A1. Human remains

All human remains in, on or under the land must not be harmed.

A2. Aboriginal objects that are identified on Aboriginal Heritage Information Management System

The following Aboriginal objects identified on Aboriginal Heritage Information Management System must not be harmed:

Portion of site (whole or part)	AHIMS site number	Site feature	Site name	Restricted access (Y/N)	Easting	Northing	Datum and zone
Whole	45-5-5370	Artefact/PAD	BCLL AS1	N	291175	6246791	GDA 56
Whole	45-5-5372	PAD	BCLL PAD01	N	293117	6246205	GDA 56

A3. No-harm areas

The following no harm areas apply.

Area name	Information access restriction? (Y/N)	Map reference
Conservation Area	N	The polygons shown with black lines labelled as 'Conservation Area' on Attachment 1.

Schedule B: Aboriginal objects that may be harmed through certain actions

B1. Movement only

Not applicable.

B2. Salvage excavations

Not applicable.

B3. Community collection

Not applicable.

B4. Other

Not applicable.

Schedule C: Aboriginal Objects which may be harmed through the proposed works

The Aboriginal objects described in this schedule may be harmed, but only in accordance with the conditions of this Aboriginal Heritage Impact Permit (excluding any Aboriginal objects described in Schedule A).

C1. Harm of Aboriginal objects identified on Aboriginal Heritage Information Management System

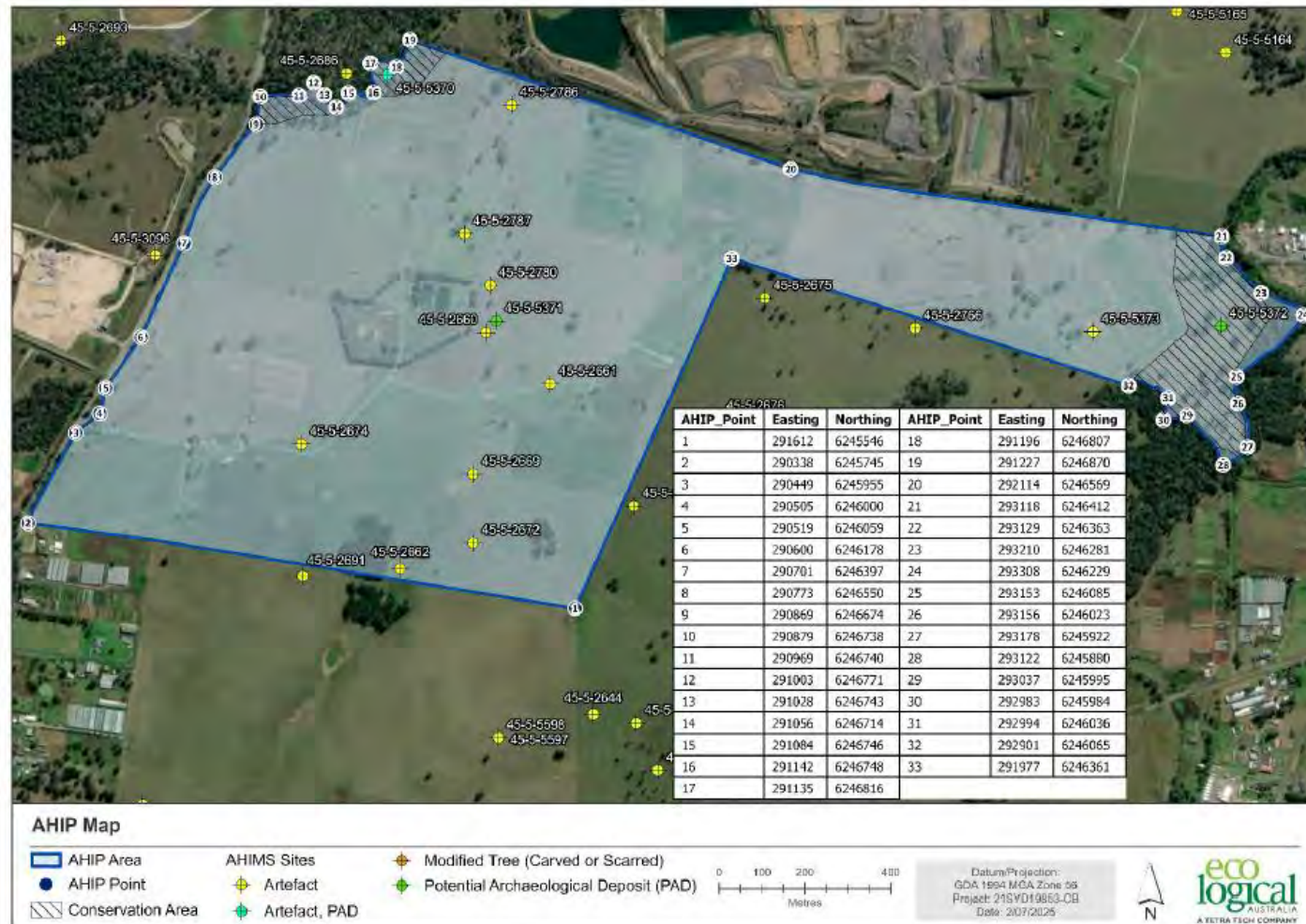
Portion of site (whole or part)	AHIMS site number	Site feature	Site name	Restricted access (Y/N)	Easting	Northing	Datum and zone
Whole	45-5-2660	Artefact	B64	N	291300	6246000	GDA 56
Whole	45-5-2661	Artefact	B63	N	291450	6245880	GDA 56
Whole	45-5-2662	Artefact	B61	N	291100	6245450	GDA 56
Whole	45-5-2669	Artefact	B96	N	291270	6245670	GDA 56
Whole	45-5-2672	Artefact	B97	N	291270	6245510	GDA 56
Whole	45-5-2674	Artefact	B100	N	290870	6245740	GDA 56
Whole	45-5-2680	Artefact	B65	N	291310	6246110	GDA 56
Whole	45-5-2786	Artefact	B109	N	291360	6246530	GDA 56
Whole	45-5-2787	Artefact	B110	N	291250	6246230	GDA 56

Portion of site (whole or part)	AHIMS site number	Site feature	Site name	Restricted access (Y/N)	Easting	Northing	Datum and zone
Whole	45-5-5371	PAD	BCLL PAD02	N	291429	6246217	GDA 56
Whole	45-5-5373	Artefact	BCLL IF01	N	292819	6246192	GDA 56

C2. Areas where harm of Aboriginal Objects is authorised

All Aboriginal objects in, on or under the land identified by the blue line shown as 'AHIP Area' on Attachment 1.

Attachment 1: Land to which this Aboriginal Heritage Impact Permit applies



heritagemailbox@environment.nsw.gov.au
 Locked Bag 5020, Parramatta NSW, 2124
 Aboriginal Heritage Impact Permit: 5532

www.environment.nsw.gov.au/topics/heritage

Appendix A: Dictionary

In this Aboriginal Heritage Impact Permit, unless the contrary is indicated, the terms below have the following meanings:

Aboriginal object	has the same meaning as in the <i>National Parks and Wildlife Act 1974</i>
AHIMS	means the Aboriginal Heritage Information Management System maintained by Heritage NSW, as defined in section 90Q of the <i>National Parks and Wildlife Act 1974</i>
AHIP	means Aboriginal Heritage Impact Permit
Aboriginal Heritage Impact Permit holder	means the entity or person listed on the cover page under the heading "Aboriginal Heritage Impact Permit issued to"
Application	means the completed application form and all other documents in written or electronic form which accompanied the application when it was lodged, or which were subsequently submitted in support of the application
Community collection	means the collection of Aboriginal objects by one or more registered Aboriginal parties or their representatives
Community collection area	means an area described as a community collection area in relevant schedule
Department Secretary	means the Secretary of the NSW Government Department with current responsibility for the <i>National Parks and Wildlife Act 1974</i>
No-harm area	means those areas described in relevant schedule
Proposed works	means the works described in the table at the front of this Aboriginal Heritage Impact Permit under C. Proposed works.
Public register	means the public register established under section 188F of the <i>National Parks and Wildlife Act 1974</i> , that contains details of Aboriginal Heritage Impact Permits issued by Heritage NSW, as described under the heading "Additional details for Public Register"
Registered Aboriginal parties	means registered Aboriginal parties listed in the application
Salvage excavation	means an archaeological excavation carried out in accordance with the methodology accompanying the application, as per conditions of this Aboriginal Heritage Impact Permit. The purpose of salvage excavation is to recover a sample of Aboriginal objects as a record of Aboriginal life from a site that will be destroyed
Salvage excavation area	means any area described as a salvage excavation area in the relevant schedule
Test excavation	means an archaeological excavation carried out in accordance with methodology accompanying the application, as per conditions of this Aboriginal Heritage Impact Permit. The purpose of test excavation is to collect a sample of Aboriginal objects and to assist in the assessment of management options for the site
Test excavation area	means any area described as a test excavation in the relevant schedule

